Rev Port Cardiol. 2020;**39(Espec Congr):**42-221

Portuguese Society of CARDIOLOGY

Revista Portuguesa de **Cardiologia**

Portuguese Journal of ***Cardiology***

www.revportcardiol.org

POSTERS (P)

Painel 1 - Insuficiência cardíaca 1

P 1. PROGNOSTIC VALUE OF THE CARDIORESPIRATORY OPTIMAL POINT DURING SUBMAXIMAL EXERCISE TESTING

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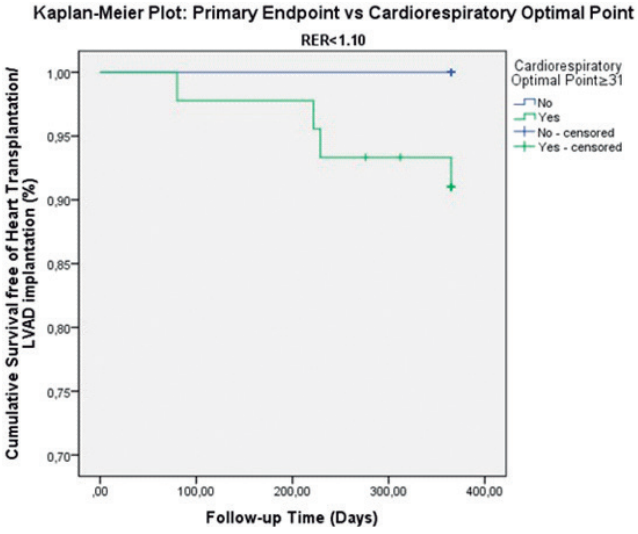
Centro Hospitalar de Lisboa Central, EPE/Hospital de Santa Marta.

Introduction: Peak oxygen consumption (pVO_2) is a key parameter in assessing the prognosis of heart failure with reduced ejection fraction (HFrEF) patients (pts). However, it is a less reliable parameter when the cardiopulmonary exercise test (CPET) is not maximal. It is crucial to identify the submaximal exercise variables with the best prognostic power (PP), in order to improve the management of pts that cannot attain a maximal CPET.
Objectives: The aim of this study was to evaluate and compare the PP of several exercise parameters in submaximal CPET for risk stratification in pts with HFrEF.
Methods: Prospective evaluation of adult pts with HFrEF submitted to CPET in a tertiary center. A submaximal CPET was defined by a respiratory exchange ratio (RER) ≤ 1.10. Pts were followed up for at least 1 year for the primary endpoint of cardiac death and urgent heart transplantation/ventricular assist device implantation. Several CPET parameters were analyzed as potential predictors of the combined endpoint and their PP (area under the curve-AUC) was compared to that of pVO_2, using the Hanley and McNeil test.



Results: CPET was performed in 487 HF pts, of which 317 (66%) performed a submaximal CPET. Pts averaged 57 ± 12 years of age, 77% were male, 45.7% had ischemic cardiomyopathy, with a mean LVEF of 30.4 ± 7.6%, a mean heart failure survival score of 8.6 ± 1.1. The mean pVO_2 was 17.1 ± 5.5 ml/kg/min and the mean RER 1.01 ± 0.08. During a mean follow-up (FU) time of 11 ± 1 months, 18 pts (6%) met the primary endpoint. Cardiorespiratory optimal point (OP-VE/VO_2) had the highest AUC value (0.915, $p = 0.001$), followed by the partial pressure of end-tidal CO_2 at the anaerobic threshold-PET_{CO2L} (0.814, $p < 0.001$). pVO_2 presented an AUC of 0.730 ($p = 0.001$). OP ≥ 31 and PET_{CO2L} ≤ 37 mmHg had a sensitivity of 100 and 76.9% and a specificity of 71.1 and 67%, respectively, for the primary outcome. OP presented a significantly higher PP than pVO_2 ($p = 0.048$), whether PET_{CO2L} didn't achieve any statistical significance ($p = 0.164$). Pts with an OP ≥ 31 presented a significantly lower survival free of HT during FU (log rank $p = 0.002$).
Conclusions: OP had the highest PP for HF events of all parameters analyzed for a submaximal CPET. This parameter can help stratify the HF pts physiologically unable to reach a peak level of exercise.

P 2. A NEW CARDIOPULMONARY EXERCISE TESTING SCORE FOR PREDICTING HEART FAILURE EVENTS

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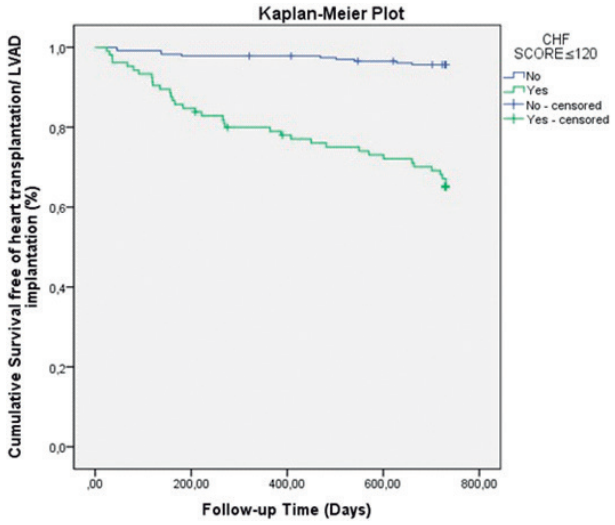
Introduction: Cardiopulmonary exercise test (CPET) provides several variables (V) that are strong predictors of events in patients (pts) with heart failure (HF).
Objectives: Our aim was to develop and evaluate the predictive power (PP) of a CPET-based score, comparing to that of the Heart Failure Survival Score-HFSS.
Methods: Retrospective evaluation of adult pts with HF submitted to CPET in a tertiary center. Pts were followed up for at least 1 year for the primary endpoint of cardiac death and urgent heart transplantation/ventricular assist device implantation (MTV). The PP of several CPET V's was assessed using ROC curve analysis, which was used to define optimal threshold values for each V. A multiple regression analysis was performed to identify independent prognostic predictors and to determine the regression coefficient (β) for the Vs included in the model, each expressed dichotomously using the threshold value. According to β, a weight was assigned to each V and summed to calculate the composite score. ROC curves were compared using the Hanley and McNeil test.
Results: CPET was performed in 487 HF pts, with a mean age of 56 ± 13 years, 79% were male. 46% of pts were of ischemic etiology, with a mean LVEF of 30 ± 8%, a mean HFSS of 8.6 ± 1.1 and a mean BNP value of 509 ± 668 pg/ml. The mortality rate during a mean follow-up of 21 months, was 19% (93 pts) with 23 pts (5%) undergoing HT. The primary endpoint was reached by 55 (11%) pts. The variables with higher predictive power were OUES (AUC 0.796), ventilatory power (AUC 0.790), the partial pressure of end-tidal CO_2

at the anaerobic threshold ($PETCO_{2L}$-AUC of 0.787), the pVO_2 (AUC 0.767) and heart rhythm (HR) during the test (AUC-0.640). LVEF also presented a high predictive power with AUC of 0.755. The multivariate analysis revealed that pVO_2, $PETCO_{2L}$, AF, and LVEF were independent prognostic predictors. According to the β of these Vs, the equation was calculated as follows: (pVO_2 × 2.194) + ($PETCO_{2L}$ × 1.545) + (LVEF x 1.134) + (HR × 1.055; 0 if AF, 1 if sinus rhythm). The score presented a high PP with an AUC of 0.866. A cut-off of 120 had an 83.6% sensitivity and a 75% specificity for MTV, and pts with a score value of < 120 had a markedly lower rate of MTV (log-rank p < 0.001). When compared to HFSS, our score presented a higher PP (0.866 vs 0.774, p = 0.011).



Conclusions: A multivariable score based on readily available CPET Vs provides a simple, integrated and powerful method to predict HF events.

P 3. SLEEP APNEA IN HEART FAILURE: IN SEARCH OF A BETTER PROGNOSIS PREDICTOR...

Sérgio Maltês[1], Gonçalo Cunha[2], Bruno Rocha[2], Joana Duarte[3], Rita Gomes[3], Rita Silvério[3], Carla Maravilha[3], João Presume[2], Luís Campos[3], Célia Henriques[3], Catarina Rodrigues[1], Inês Araújo[1], Cândida Fonseca[3]

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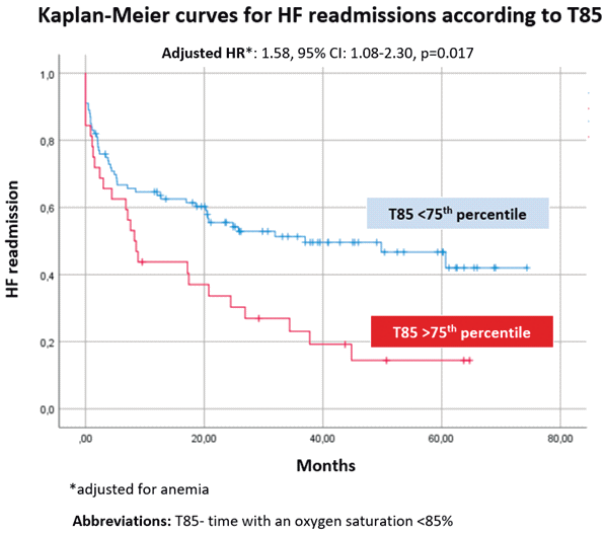
Introduction: Sleep apnea (SA) is a burdensome and often underdiagnosed condition in heart failure (HF). Portable devices, such as ApneaLink™, are currently validated as a screening tool for SA. The apnea-hypopnea index (AHI) has been long considered the gold-standard measurement for the diagnosis of SA, also having a prognosis impact. Recently, however, other respiratory variables have been proposed as better prognosis predictors in patients with HF. The main goal of this study was to assess the prognostic value of other respiratory measurements evaluated by ApneaLink™ at discharge in a population admitted for HF.
Methods: This was a single-center retrospective study enrolling consecutive patients admitted in a HF Clinic for acute HF from 2013 and 2018. All stable patients without previously known sleep-disordered breathing underwent ApneaLink™ screening the night before discharge in the euvolemic state. Those with a total respiratory evaluation time < 180 minutes or in need of supplemental oxygen were excluded. A primary endpoint of long-term HF hospitalizations was evaluated.
Results: Overall, 231 patients (mean age 74.5 ± 10.6 years; 47% male; 83% hypertension; 41% chronic kidney disease; 44% anemia; 18% with a NYHA > 2 at discharge; 43% ischaemic HF; 41% with a left ventricle ejection fraction lower than 50%) were assessed. One-hundred and sixty-nine patients (59.1%) had an AIH > 15, with a median of 19 (IQR 7-42); the median number of obstructive apneas and central apneas was 13 (IQR 2-68), and 2 (IQR 0-10), respectively. Two-hundred patients (69.9%) had nocturnal periods of an oxygen saturation below 85% (T85), with a median time under that value of 8 (IQR 0-47) minutes. Over a median follow-up of 34.1 (IQR 18.40-54.37) months, 105 (45.7%) patients died and 128 (55.7%) were readmitted for AHF. After adjustment for cofounders (namely, the presence of anemia) a T85 above the 75th percentile was significantly correlated with a higher risk of HF readmission in a multivariate analysis (adjusted HR: 1.58, 95%CI: 1.08-2.30, p = 0.017) (Figure). These results were independent of the apnea-hypopnea index.



Conclusions: Nocturnal hypoxemia (T85) was an independent predictor of rehospitalization in patients with HF. These results further validate the utility and prognosis impact of other respiratory measurements (other than AHI) evaluated by ApneaLink™ screening at discharge in a population of patients admitted for HF.

P 4. QUAL O IMPACTO DE INSTRUMENTOS DE AVALIAÇÃO NA EDUCAÇÃO DO DOENTE COM INSUFICIÊNCIA CARDÍACA?

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Introdução: A educação para a saúde na consulta de enfermagem de insuficiência cardíaca é fundamental para o conhecimento do doente sobre a síndrome, reconhecimento de sinais de alerta, de forma a prevenir a descompensação, idas ao serviço de urgência e internamentos. A consulta de enfermagem de insuficiência cardíaca pretende capacitar o doente e cuidadores de estratégias de adaptação de estilo de vida, de fatores de risco e adesão terapêutica.
Métodos: Utilização das escalas KCCQ (*Kansas City Cardiomyopathy Questionnaire*) e EEAIC (*Escala Europeia de avaliação do autocuidado em Insuficiência Cardíaca*) como base de avaliação do estado atual do doente e orientadoras de ensinos ao doente e cuidadores. A avaliação das escalas KCCQ e EEAIC é realizada nos seguintes momentos: 1.ª consulta, aos 3 meses, 6 meses, 9 meses e 12 meses. Os resultados reportam-se até aos 9 meses, uma vez que a amostra dos 12 meses ainda não é significativa.
Resultados: Ao longo dos 9 meses de avaliação, verificou-se uma melhoria da pontuação em ambas as escalas aplicadas (em relação ao KCCQ, 14% dos doentes melhorou o score e os restantes mantiveram-se nos scores mais elevados; quanto à EEAIC, houve uma redução em média de 6 valores na escala). De acordo com os resultados das escalas, foi efetuada uma adaptação à dinâmica de cada indivíduo, dirigindo os ensinos às necessidades do doente e cuidadores.

Conclusões: Concluiu-se que a utilização das escalas contribuiu para uma maior objetividade na realização de ensinos, permitindo verificar a melhoria da qualidade de vida do doente com insuficiência cardíaca, capacitando o mesmo de um maior reconhecimento de sinais de alerta que conduzissem a um pedido de ajuda através do telefone de serviço e aumentando a adesão às ações de prevenção de agravamento da doença.

P 5. TELEMONITORIZAÇÃO NA IC: EXPERIÊNCIA DE UM CENTRO PORTUGUÊS

Sofia Barquinha, João Alves, Miguel Trindade, Carlos Franco, António Gonçalves, Fátima Farias, Rui Ferreira

Centro Hospitalar de Lisboa Central, EPE/Hospital de Santa Marta.

Introdução: A Insuficiência Cardíaca (IC) caracteriza-se por episódios de agravamento frequentes, que a tornam na maior causa de internamento hospitalar acima dos 65 anos de idade. Estas hospitalizações associam-se a um pior prognóstico dos doentes e são responsáveis por uma elevada percentagem dos custos associados a esta doença. O crescimento exponencial na tecnologia capaz de transmitir dados clínicos em tempo real permitiu um desenvolvimento nas técnicas de monitorização dos doentes com IC. Alguns estudos prévios demonstraram que a telemonitorização com uma equipa de IC preparada para receber, tratar e responder atempadamente às informações recolhidas pode reduzir os internamentos por IC e a mortalidade. O objetivo deste estudo é de apresentar os resultados iniciais da telemonitorização num centro com equipa multidisciplinar de IC.
Métodos: Foram selecionados para o programa de telemonitorização doentes com IC com fração de ejeção ventricular esquerda = 45%, classe NYHA = III e pelo menos um internamento no último ano por IC apesar de terapêutica médica otimizada. A cada doente foi entregue um equipamento de telemonitorização que continha uma balança com bioimpedância, um relógio com pedómetro e capacidade de avaliar a frequência cardíaca, um esfigmomanómetro para avaliação da tensão arterial e um telemóvel para onde a toda a informação é exportada, de forma a estar acessível aos doentes. Para cada doente foi estabelecido uma série de alarmes de acordo com os parâmetros anteriores que a equipa de Enfermagem foi diariamente observando. Na presença de um dos critérios de alarme previamente estabelecidos, a equipa de Telemonitorização contactou os doentes no próprio dia de forma a realizar uma resposta clínica atempada. São apresentados os resultados do primeiro ano de *follow-up* do programa de telemonitorização.
Resultados: No primeiro ano do programa de telemonitorização foram incluídos 15 doentes. A idade média foi de 63 ± 12, sendo todos os doentes do género masculino. Um total de 424 contactos foram estabelecidos entre a equipa de Telemonitorização e os doentes (Tabela), sendo a maioria pela presença de um dos alarmes pré-definidos de monitorização (71%). O grau de adesão ao programa nos doentes referenciados foi de 100%. Doze (80%) doentes terminaram o primeiro ano de *follow-up*, já que 1 (7%) doente teve mortalidade cardíaca (IC terminal após extração de CRT por infeção de device) e 2 (13%) tiveram morte de causa não cardíaca (AVC hemorrágico em doente com HeartMate III e hematoma subdural após TCE). Nestes 12 doentes, todos eles com pelo menos um internamento por IC no ano anterior, apenas 1 (8%) doente teve recorrência de internamento por IC no ano seguinte.
Conclusões: A criação de uma equipa multidisciplinar capaz de dar resposta ao elevado número de alarmes que um programa de telemonitorização acarreta foi capaz de reduzir os internamentos por IC numa população de alto risco.

P 6. NEUTROPHIL-TO-LYMPHOCYTE RATIO IN ACUTE DECOMPENSATED HEART FAILURE: CAN IT PREDICT THE PROGNOSIS?

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Introduction: Inflammation plays an important role in the pathogenesis and progression of heart failure. Raised inflammatory cytokines are associated with adverse outcomes, but these are not routinely assessed in clinical practice. Neutrophil-to-lymphocyte ratio (NLR) has been proposed as reliable indicator of immune activation, inflammation and oxidative stress injury, and its measurement has been considered a valuable tool for predicting mortality in patients with cardiovascular disease.
Objectives: To assess the value of the NLR in predicting in-hospital and mid-term outcomes in Acute Decompensated Heart Failure (ADHF).
Methods: Retrospective, observational study including ADHF patients hospitalized in a tertiary hospital, between November 2016 and December 2017. Exclusion criteria were patients with active cancer, hematopoietic diseases, chronic inflammatory conditions, chronic glucocorticoid therapy, or patients in whom a complete blood cell count was not performed within 24h from hospital admission. The endpoints were all-cause in-hospital and follow-up mortality. Median follow-up time was 5 [IQR 3-11] months. A receiver operating characteristics (ROC) curve was used to test NLR as a predictor of mortality and to obtain the best cut-off point. We transformed NLR into a categorical variable with 2 groups: group 1 (NLR < 7.27, n = 253) and group 2 (NLR ≥ 7.27, n = 147). Multivariate models were elaborated including all clinically relevant significant variables identified in univariate analysis: a logistic regression model was used to analyze in-hospital mortality and a Cox regression model for long-term mortality.
Results: We included 400 patients (age 77.5 ± 10.9; 224 males). AUC was 0.644. We considered the best cut off point to be 7.27 (sensitivity 64%, specificity 68%). In-hospital mortality was 13.4% (n = 53): group 2 had an increase rate of death (23.6% [n = 34]) compared to those in group 1 (7.5% [n = 19]) (p < 0.001). In the multivariate logistic regression analysis NLR ≥ 7.27 was found to be associated to worst outcome (adjusted OR: 4.64, CI 1.56 to 13.77, p = 0.006). During follow up, group 2 had higher mortality rates (23.6% vs 12.8% in group 1, log rank < 0.001, Figure). In the multivariate Cox regression NLR ≥ 7.27 was an independent predictor of mid-term mortality (HR: 2.68, CI 1.39 to 5.19, p = 0.003).

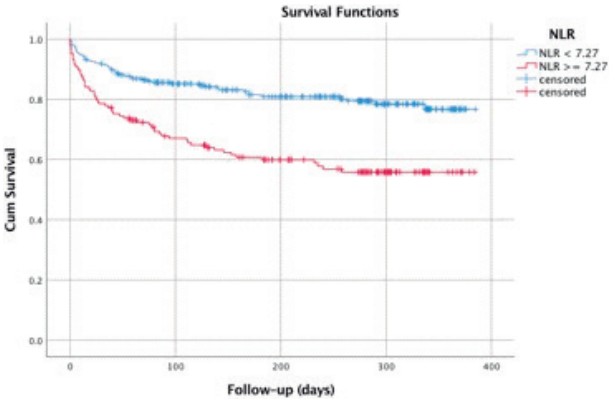

Tabela P 5

Contato telefónico		Motivo contacto telefónico						
		Resolução de alarmes		Duvidas relacionadas com a patologia	Questões relacionadas com os aparelhos			
Profissional	Utentes	Profissional	Utente	Utente	Profissional	Utente	Hospital de Dia	Internamento
342	84	299 (71%)	28 (7%)	27 (6%)	16 (4%)	29 (35%)	22 (7%)	5 (2%)

Conclusions: RNL may be used as a predictor of both in-hospital and follow-up mortality after an episode of ADHF.

Painel 10 - Doença Valvular 2

P 56. AORTIC VALVE CALCIUM SCORE PRE-TAVI: IS 3MENSIO® SOFTWARE AN ALTERNATIVE TO THE AGATSTON SCORE?

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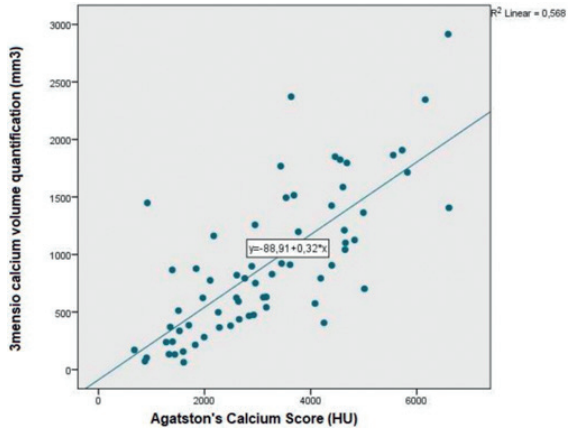
Introduction: CTangio (CTA) is currently the recommended method for planning transcatheter aortic valve implantation (TAVI). Calcium (Ca) score seems to be associated with the severity of valvular disease and may be an important predictor of complications, as peri-prosthetic leak. Currently there are softwares that allow quantification of Ca in the valve using CT with and without contrast.
Objectives: To compare two methods of Ca quantification in the aortic valve (3mensio Valves® and Agatston's score) and to evaluate its relation with the severity of valvular disease and the prognosis.
Methods: Retrospective, single-center study, that evaluates CTA from patients (pts) submitted to TAVI between October 2017-October 2018, with Ca quantification by the 2 methods. Demographic, clinical, echocardiographic, and procedure-related data were collected. The correlation between the 2 forms of Ca measurement with the echocardiographic measurements of aortic stenosis quantification was done with correlation tests (Pearson). The existence of an association between these scores and the occurrence of events or complications was performed using t-Student and chi-square tests (χ^2).



Results: 112 consecutive pts (55.4% women, 81 ± 6.8 years) were included. Most of pts had severe aortic stenosis (95.5%), 2.8% had prosthesis dysfunction and 1.8% had aortic insufficiency. The mean EuroScore II was 3.91 ± 3% and the STS was 5.7 ± 4.2%. In 43.8% of the pts a CoreValve® was implanted and in 51.8% a Sapien®. After procedure, 1.8% of pts had stroke (only 1 major stroke) and 24.1% required a pacemaker. Only 6.3% pts had significant leaks after the procedure, all of moderate severity. A significant calcification of the valves was observed, with a mean Ca score calculated by the Agatston's method of 3,140 ± 1,489 HU and 892 ± 592 mm^3 by the 3mensio®. There was a strong correlation between the two forms of quantification (r = 0.769, p < 0.001). Ca quantification performed by the 3mensio® software correlated with the mean gradient (r = 0.25 p = 0.015) and the indexed AVA (r = -0.35 p = 0.015). Ca quantification by the Agatston score and 3mensio® were associated with mortality (p = 0.034 and p = 0.001, respectively), but were not independent predictors. None of the scores were associated with other complications.
Conclusions: the amount of Ca in the aortic valve by 3mensio Valves® software shows a strong correlation with the conventional method using the Agatston's score, both associated to mortality. There was also a correlation between the quantification of the Ca volume by the 3mensio® and the severity of the aortic stenosis. With the future likelihood of performing TAVI in patients at lower risk, reduction of radiation dose in imaging methods is critical. This study suggests that 3mensio® can be used alternatively to the Agatston's score, allowing the quantification of Ca in CT with contrast, reducing the dose of radiation.

P 54. PERFORMANCE OF SURGICAL RISK SCORES PREDICTING SHORT- AND LONG-TERM MORTALITY FOLLOWING TAVI IN PATIENTS WITH ACUTE HEART FAILURE

Cátia Serena[1], Cláudio Guerreiro[2], Joel Monteiro[3], Pedro Teixeira[2], Pedro Queiros[2], Raquel Barbosa[2], Mariana Silva[2], Gualter Silva[2], Alberto Rodrigues[2], Pedro Braga[2]

[1]Hospital do Divino Espírito Santo, Ponta Delgada. [2]Centro Hospitalar de Vila Nova de Gaia/Espinho. [3]Hospital Dr. Nélio Mendonça-Hospital Central do Funchal.

Introduction: The STS and EuroSCORE II are the most used scores for surgical risk stratification for transcatheter aortic valve implantation (TAVI). However the capacity of said scores to predict short- and long-term mortality following TAVI implanted in an acute setting is unclear.
Objectives: To evaluate the performance of the EuroSCORE II and STS as predictors of 30-day and 1-year mortality in patients with severe aortic stenosis and acute heart failure requiring urgent intervention.
Methods: Retrospective analysis of all consecutively admitted patients with severe aortic stenosis and decompensated heart failure referred for urgent TAVI during the index admission between September 2007-2017. The scores' discriminative power to predict 30-day and 1 year mortality was evaluated using receiver operating characteristic curve (ROC) and area under the curve (AUC) with a 95% confidence interval.
Results: Study population composed of 112 patients, mean age was 79 ± 6.8 years (n = 112) and 55.4% were men. One quarter of the patients presented with severely depressed ejection fraction and 38% where in NYHA class IV at the time of the intervention. The mean EuroSCORE II was 8.4 ± 5.9% and STS for mortality and morbidity was 8.6 ± 5.8% and 57.8 ± 93.9% respectively. Transfemoral approach was performed in 92%, transapical in 5.4%, transaortic and transsubclavian in less than 1%. Observed procedural mortality was 2.7% (n = 3), 30-day mortality 12.5% (n = 14) and mortality at 1-Year was 22.3% (n = 25). At 30 days, both the STS and EuroScoreII scores performed poorly at predicting mortality (AUC: STS = 0.675 IC 0.532-0.818; EuroScore II = 0.648, IC 0.504-0.793). The same low performance status was observed at 1 year (AUC: STS = 0.613, IC 0.495-0.730; EuroScore II = 0.546, IC 0.420-0.672).
Conclusions: In patients submitted to TAVI in an acute setting, both the STS and EuroScore II showed very poor predictive power for both short and long-term mortality. New risk stratification tools are required for this increasingly common subset of TAVI patients.

P 57. LONG TERM DURABILITY OF SELF-EXPANDING TRANSCATHETER AORTIC VALVE PROSTHESES

Tiago Mendonça, Lino Patrício, Inês Rodrigues, Tânia Branco Mano, Duarte Cacela, Ruben Ramos, Hagen Kahlbau, Isabel Fragata, José Fragata

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Introduction: Transcatheter aortic valve implantation (TAVI) is an established treatment for patients with severe aortic stenosis. However, there is a paucity of long-term data on the durability of percutaneous valves.

Objectives: Evaluate the long-term valve durability and structural degeneration of self-expanding transcatheter valves.
Methods: We retrospectively examined inoperable or high-risk patients who underwent TAVI with a self-expanding valve from 2009 to 2014 at our institution. A descriptive statistical study was performed, and survival study was performed by Kaplan-Meier analysis.
Results: 70 patients (50% male, mean age 80.3 ± 6.3 years) who were successfully submitted to TAVI with a self-expanding Corevalve prosthesis and were discharged alive were analysed. All patients underwent TAVI for pure aortic stenosis. Mean STS score and mean Euroscore II were 5.8% and 6.2%, respectively. Baseline mean transvalvular gradient was 57 mmHg. Mean clinical follow-up was 52.2 ± 30.3 months. In the most recent echocardiographic evaluation (mean time after TAVI 34.7 months) there were no significant differences in peak aortic valve gradient (17.8 vs 15.9 mmHg, p = 0.08) or mean gradient (9.9 vs 8.8 mmHg, p = 0.3) at follow-up. Rates of mild and moderate paravalvular leak were 41.4% and 4.3% at baseline and at follow-up 35.7% and 1.4%, respectively. No patient developed new severe aortic regurgitation. There was one case of prosthetic dysfunction (mean gradient > 20 mmHg) and one case of infective endocarditis. There were no cases of prosthetic valve dysfunction requiring valve replacement. A total of 36 patients (51.4%) died during follow-up, 47.2% due to cardiovascular causes. The median survival estimated by Kaplan-Meier was 67.1 ± 5.3 months.
Conclusions: Long term valve function was excellent, with no increase in valve gradients or regurgitation over time. Long term survival was acceptable, considering the elderly and high risk population and was consistent with other long-term studies.

P 55. WHAT IS THE RISK OF A PATIENT WITH SEVERE AORTIC STENOSIS WHILE WAITING FOR AORTIC VALVE INTERVENTION?

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Introduction: Severe symptomatic aortic stenosis is associated with high mortality without intervention. However, true waiting times for aortic valvular intervention (AVI) and the risks associated with it are not known.
Objectives: To measure the waiting time between referral and AVI. To determine the impact of the waiting time for AVI by assessing the occurrence of adverse events during this period. To assess predictors of adverse outcomes during this period in view to identify patients (pts) who may require earlier AVI.
Methods: Retrospective single-center study of consecutive outpatients referred for AVI (either surgically or transcatheter (TAVI)) since 2014 to 2018. The primary endpoint was hospitalization due to heart failure or death from any cause, occurring in the waiting time for AVI. Cox regression analysis was performed.
Results: Were included 120 pts (54% male, mean age 75 ± 9 years). 113 (94%) pts had high-gradient aortic stenosis. They were mainly in NHYA class II (56%). Fatigue was the main symptom (83%). The median NT-proBNP value was 819 (IQR 319-1,780) ng/L. The mean peak velocity was 4.5 ± 0.5 m/s, median gradient of 45 (IQR 42-54) mmHg, mean VTIs ratio of 0,21 ± 0.04, with a mean estimated valvular area of 0.7 ± 0.2 cm^2 (0.4 ± 0.1 cm^2/m^2). During a mean follow-up of 24 ± 14 months since referral, 108 (90%) pts were submitted to AVI (75 pts underwent surgery; 33 pts underwent TAVI). The median waiting time for AVI was 4 (IQR 2-6) months (0-35 months). The median waiting time for surgery was 3 (IQR 2-6) months and for TAVI was 4 (IQR 3-8) months (p = 0.25). The primary endpoint occurred in 19 (16%) pts: 13 (11%) pts were hospitalized due to heart failure and 7 (6%) pts died. The median time between referral and the occurrence of the primary endpoint was 3 (IQR 1-9) months. In univariate analysis, age > 80 years, NHYA class ≥ 3, prior stroke and NT-proBNP were positively associated with the occurrence of the primary endpoint (p < 0.05). After multivariate analysis, prior stroke (HR 5; 95%CI 1.2-24; p = 0.03) and NT-proBNP (HR 1/unit; 95%CI 1-1.001; p = 0.01) were independently associated with events occurrence. NT-proBNP was an independent predictor of events with a good discriminative value (area under the ROC curve 0.73; 95%CI 0.61-0.83; p = 0.004). NT-proBNP cut-off value of > 1,207 ng/L identified pts with an event while waiting AVI with a sensitivity and specificity value of 69 and 73%, respectively. Left ventricle ejection fraction, severity parameters of aortic stenosis, systolic pulmonary artery pressure, concomitant coronary artery disease and the time between diagnosis and referral were not associated with the primary endpoint.
Conclusions: Mortality and worsening of heart failure while waiting for aortic valvular intervention occurred frequently. Factors such NT-pro-BNP and personal history of stroke can help to identify pts who may benefit from earlier intervention.

P 58. CHARACTERISTICS AND OUTCOMES OF VERY OLD PATIENTS WHO UNDERWENT TAVI-EXPERIENCE OF A TERTIARY CENTER

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Introduction: Transcatheter aortic valve implantation (TAVI) is an established procedure to treat patients with severe aortic stenosis. Older age has been linked to an increased risk of operative mortality. In elderly patients, TAVI is a possible alternative that has been shown to be feasible.
Objectives: To evaluate a subgroup of very old patients who underwent TAVI and compare with all sample.
Methods: We retrospectively analyzed a subgroup of very old patients who underwent TAVI from October 2014 to June 2018.Clinical features were collected and compared with other patients submitted to TAVI in that same center. Very old patients were defined has being older than 85 year-old, inclusive. To evaluate cardiovascular outcomes, we used major adverse cardiovascular events (MACE), defined as cardiovascular death, myocardial infarction or ischemic stroke at 6 months follow-up.
Results: Of our population of 214 patients, 64 were selected for this subgroup analyses, having a mean age of 87 ± 2.72 year-old. This subgroup had a lower prevalence of cardiovascular risk factors: hypertension (78.1 vs 85%), dyslipidemia (57.8 vs 70%) and diabetes (26.6% vs 36%). Conversely, the prevalence of chronic kidney disease (defined as eGFR < 60 mL/min/1.73 m^2) was higher than the general population (85.9% vs 67%) with a mean eGFR significantly different (43 vs 55 mL/min/1.73 m^2, p < 0.001). Atrial fibrillation was also higher, but not statistically different (37.5 vs 35%). As of previous cardiovascular history, this subgroup had a much lower incidence of previous heart surgery (6.3 vs 30%), including CABG (4.7 vs 16%); the prevalence of obstructive coronary artery disease was slightly lower (56.2 vs 61%), as was the incident of previous acute coronary syndrome (26.6 vs 23%). The prevalence of previous acute cerebrovascular disease was higher (23.4 vs 19%). Comparing with younger patients, very old patients had a tendency of higher rate of pacemaker implantation (23.4 vs 18%, p = 0.359), MACE (17.2 vs 10.7%, p = 0.188) and all-cause mortality (12.5 vs 8.0%, p = 0.300) at a follow-up of 6 months.
Conclusions: Very old patients that underwent TAVI had a lower prevalence of cardiovascular risk factors and lower rates of previous cardiac interventions at presentation. However, our sample showed that these populations tends to have higher risk of complications, MACE and all-cause mortality, although it has not reached statistical significance.

P 59. SECONDARY ACCESS FOR TAVI: RADIAL OR FEMORAL ARTERY IN MINIMALIST TAVI?

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Introduction: A radial artery (RA) secondary access has been proposed for minimalist TAVI. Improved patient comfort and decreased bleeding risk are

theoretical advantages. However, its use has been limited due to concerns regarding the performance of bailout interventions on femoral main access. This study aimed to describe the safety and efficacy with radial artery secondary access.
Methods: We performed a single center prospective cohort study of 298 consecutive patients undergoing transfemoral TAVI (TF-TAVI) from 2018-2019. RA access was progressively introduced during the study period, therefore a retrospective analysis with 1:1 propensity-score (PS) matched population was derived based on age, female sex, BMI, EuroScore II, pre-procedure hemoglobin, vascular closure device of the main access and Sheath-to-Femoral artery (SFa) ratio. A total of 250 matched patients (125 Radial vs 125 Femoral) were included. Median age was 84 (IQR 80-87), median ESII 4.2 (IQR 3.0-6.2) and 43.2% were male. The variables used in the PS were successfully balanced. The primary endpoint was the occurrence of major or life-threatening bleeding (VARC-2 definition) and the secondary were successful percutaneous bailout interventions (balloon and/or stent) on the main access.
Results: In the RA group, left side was used as the preferred approach (n = 115, 92%). The event rate of the primary endpoint was low in both groups (RA-7 patients, 5.6% vs FA-5 patients, 4.0%, p = 0.77). The incidence of the secondary endpoint was also low (RA-9 patients, 7.2% vs FA-10 patients, 8.0%, p = 1.000). Of note, in the patients from the RA group who needed a bailout intervention, a balloon-only angioplasty was performed in 4 patients and a stent was deployed in 5 patients. A total of 5 patients needed to be converted from a radial to femoral access (a single one required vascular surgery). Thus, the success rate of percutaneous bailout intervention was 88% for radial (8/9) and 100% with femoral artery (10/10).
Conclusions: Radial artery secondary access presented safe and efficacy. This minimalist approach should be tested in larger randomized trials.

Painel 11 - Cardiologia Intervenção 1

P 60. MULTIPLE VS SINGLE ARTERIAL GRAFTING IN CORONARY SURGERY AMONG DIABETIC PATIENTS: A META-ANALYSIS

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Introduction and objectives: The use of more than one arterial conduit in coronary surgery has been widely associated with better long-term results. We sought to investigate the benefits of Multiple Arterial Grafts (MAG) over Single Arterial Grafts (SAG), among diabetic patients, in short and long-term results throughout a meta-analysis of propensity score matching (PSM) studies.
Methods: MEDLINE and ISI Web of Science were used to find relevant literature (1960-2018). We included cohort studies with at least 200 patients and that reported one of these outcomes: long-term survival, early mortality or sternal wound infection (SWI). Survival was collected through hazard ratio (HR) along with their variance and the other endpoints using frequencies or odds ratio (OR) from the matched sample. Fixed effect models were used to compute statistical combined measures and 95% confidence intervals (CI).
Results: Eleven studies were included performing a total of 9,670 diabetic patients: 4,833 MAG and 4,837 SAG (1:1 PSM in all studies). MAG group consisted in bilateral internal mammary artery (BIMA) in 8 studies; single IMA (SIMA)+radial artery (RA) in 5 studies; and one study reported several MAG approaches: BIMA+RA+Gastroepiploic artery (GEA), SIMA+RA+GEA, SIMA+GEA or BIMA+GEA. SAG group consisted in SIMA with or without saphenous vein graft in all studies, except for one that included also patients with GEA instead of SIMA. Ten studies reported long-term survival and mean follow-up time ranged from 5 to 12 years (max. follow-up 30y). Overall, MAG had significantly improved long-term survival compared with SAG (pooled HR = 0.79, 95%CI: 0.74-0.85, p < 0.01). In-hospital mortality was reported by 6 studies (4,202 patients: 2,099 MAG and 2,103 SAG) and occurred in 3.0% vs 3.3% in MAG vs SAG patients, respectively (pooled OR: 0.91, 95%CI: 0.65-1.29, p = 0.60). SWI was reported by 6 studies (4,432 patients: 2,216 MAG and 2,216 SAG) and occurred in 2.8% vs 2.2% in MAG vs SAG patients, respectively (pooled OR: 1.31, 95%CI: 0.90-1.92, p = 0.15). Excluding one article in which MAG group consisted in IMA+RA, the remaining 5 BIMA vs SIMA studies reported an higher risk of SWI in MAG group (pooled OR: 1.63, 95%CI: 1.07-2.49, p = 0.02).
Conclusions: Considering PSM studies, MAG provides superior long-term survival compared to SAG in diabetic patients. This surgical technique does not implement additional risk regarding in-hospital mortality, but MAG with BIMA was associated with a higher risk of SWI in this specific subgroup of patients.

P 61. DUAL ANTIPLATELET THERAPY VERSUS ASPIRIN MONOTHERAPY AFTER CABG: SHORT AND LONG-TERM SURVIVAL

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Introduction: There is currently conflicting evidence regarding dual antiplatelet therapy's (DAPT) security profile and the outcomes of this pharmacological regimen in patients undergoing CABG.
Objectives: We aim to compare the effect of early DAPT in short and long-term survival versus aspirin in a monotherapy regimen (ASA). Therapy's safety was evaluated through early mortality and bleeding outcomes.
Methods: Single-center retrospective cohort study, on consecutive patients undergoing 1st isolated CABG surgery in 2010. Pre-, peri- and postoperative data were collected through clinical files and informatics databases. The DAPT and ASA groups were defined considering the institution of clopidogrel plus aspirin and only aspirin, respectively, within a 24h window after surgery. T-tests and Pearson's chi-squared tests were used for group comparison. Survival analysis was performed using Kaplan-Meier curves compared through log-rank test and multivariable Cox regression. Propensity scores (PS) were estimated using a multivariable logistic regression and included in multivariable regressions as a covariate along with DAPT. Median follow-up time was 9 years. Early mortality was defined if occurred before discharge or within the 30 days following the surgery; bleeding was assessed through red blood cells (RBC) transfusion, re-exploration of thorax and drainage.
Results: We included 351 patients and DAPT was performed in 251 patients (71.5%). Mean patient's age was 64 ± 10 years and 81% were male. DAPT patients were younger (63 ± 10 vs 66 ± 10 years, p = 0.007) but DAPT and ASA groups were similar regarding the cardiovascular modifiable risk factors. Kaplan-Meier curves showed similar cumulative survival between groups (75% in DAPT vs 67% in ASA group, Log-rank p = 0.103), as well as the PS adjusted analysis (HR DAPT: 0.928, 95%CI: 0.570-1.513). Regarding safety outcomes, we found no differences in early mortality (one patient per group, p = 0.489). Aligned with the similar post-operative total median drainage (1,220 mL in DAPT vs 1,300 mL in ASA, p = 0.490), the total median cell-saver transfusion (300 mL vs 250 mL, p = 0.318) and the re-exploration of thorax due to bleeding (1.6% vs 4% p = 0.231) showed no statistical significance either. However, there was a lower frequency of DAPT patients requiring 3 or more peri and postoperative RBC transfusions (8.5% vs 13.3% p < 0.001 and 4.8% vs 13%, p = 0.009, respectively). Redo-CABG was performed in 3 patients (2 DAPT vs 1 ASA), during follow-up.
Conclusions: Compared with ASA, DAPT showed non-significant impact in long-term survival but demonstrated to be a safe option within the assessed bleeding outcomes. Further studies are needed to provide recommendations on the therapeutical strategy following CABG.

P 62. TEN YEARS OF EXTENDED MYECTOMY FOR THE TREATMENT OF HYPERTROPHIC OBSTRUCTIVE CARDIOMYOPATHY

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Introduction: Hypertrophic obstructivecardiomyopathy (HOCM)is a hereditary condition affecting the heart and surgery plays a major role in its treatment. Gender differences in clinical presentation and treatment outcomes are currently in debate. Our aim is to describe the population of HOCMpatients in whom extended myectomy was performed in our tertiary care facility, between 2009 and 2019, and characterize sex differences before and after surgical treatment.
Methods: The data was collected from the clinical records (n = 33), in all patients with a main operative diagnosis of HOCM in the last 10 years. Pre-operative demographics, clinical and diagnostic work-up information, intra-operative variables and post-operative outcomes were collected. Statistical analysis was performed using appropriate non-parametric tests in SPSS software (v24.0).
Results: No intraoperative deaths were registered; hospital mortality was 3% (one patient; due to arrhythmia) and three deaths occurred during a median follow up time of 4.5 years (two cardiac and one respiratory in nature). Median time until hospital discharge was 8 days. From the 33 patients included in the analysis, 14 were male and 19 females. Female patients are older (median age 65 [40.6-66.5] vs 60 [62-72] years, p = 0.05) and more symptomatic than male patients at the time of surgery (84.2% of females vs 28.6% of males in class III-IV of New York Heart Association [NYHA]; p = 0.003); their pre-operative study showed higher left atrium dimension (median 30.38 [26-31.7] vs 24.7 [24-27.7] mm/m^2, p = 0.002) and interventricular septum thickness (median 11.9 [11.2-13] vs 9.4 [8.1-12.1] mm/m^2,p = 0.028) to body surface ratio and a higher incidence of atrial fibrillation (31.6% vs 0%, p = 0.027). During surgery, although extracorporeal circulation and aortic cross-clamp times did not differ significantly, females required more blood transfusions (median 2 [0-3] vs 0 [0-1] red blood cells units, p = 0.046). After surgery, interventricular septum and left ventricle outflow tract gradient reductions are similar between genders, but transition to lower NYHA classes is significant for females (p = 0.003), but not for male patients. Although survival curves seem to diverge, this was not statistically significant.
Conclusions: Female patients seem to be in worse clinical condition upon presentation to surgery and show markers of more advanced disease. Nevertheless, after surgery, females presented greater functional improvement. We need to focus on a more comprehensive approach in patient preoperative study and increase the sensitivity for disease diagnosis in earlier stages in the female population.

P 63. EFFECT OF PRE-OPERATIVE β-BLOCKER THERAPY AFTER CABG SURGERY: LONG-TERM SURVIVAL AND POSTOPERATIVE COMPLICATIONS

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Introduction: Perioperative medication in cardiac surgery recommends β-blockers' use but it is not clear if its prescription should be started before or after cardiac surgery.
Purpose: To determine the effect of preoperative β-blocker therapy in long-term survival and postoperative complications after coronary artery bypass grafting surgery (CABG). Also, to study if recent acute myocardial infarction (AMI) changes this therapeutic effect.
Methods: Retrospective single-center study including consecutive patients submitted to first isolated CABG in 2006-2007. Data was collected through clinical files and informatic databases. Patients were grouped according to their preoperative B-blocker regimen: without (noBB) or with β-blockers (BB). Chi-square, independent t-tests, Kaplan-Meier curves, log rank test and multivariable Cox regression were used. The mean follow-up time was 10 years, maximum 13 years.
Results: We included 562 patients, 468 (83%) were on preoperative β-blocker therapy. BB patients were younger (63 ± 10 vs 66 ± 11, p = 0.01) and predominantly male (79% vs 75%, p = 0.30). Recent myocardial infarction occurred in 46% BB vs 53% noBB, (p = 0.23) and BB patients presented less frequently moderate to severe left ventricular dysfunction (19% vs 32%, p < 0.01), history of stroke or transient ischemic attack (5% vs 11%, p = 0.04) and were less often in preoperative critical state (3% vs 9%, p = 0.01). Kaplan-Meier analysis showed an improvement in cumulative survival in BB group (13-years survival: 66% vs 57%, Log-rank, p = 0.01). After stratification by preoperative recent AMI occurrence, patients in BB group had better cumulative survival within patients with recent AMI (63% vs 48%, Log-rank test p < 0.01, BB vs noBB, respectively), while preoperative β-blocker therapy had no impact on 13 years' survival in patients without recent AMI (70% vs 67%, Log-rank test p = 0.73). After multivariable Cox regression, preoperative β-blocker therapy emerged as a protective agent (HR: 0.56, 95%CI: 0.39-0.81, p < 0.01). This effect is maintained in patients with recent AMI (n = 267, HR: 0.38, 95%CI: 0.22-0.65, p < 0.01) but lost significance in patients without this event (n = 295, HR: 0.99 95%CI: 0.55-1.80, p = 0.98). There were no significant differences in postoperative complications.
Conclusions: In this study, β-blocker therapy showed a beneficial effect on long-term survival, particularly in patients with recent AMI. However, we consider that subsequent studies should be performed in order to elaborate more solid conclusions.

P 64. THE IMPACT OF RENAL FUNCTION ON CARDIAC SURGERY- 3-YEAR EXPERIENCE OF A REFERRAL CENTER

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Introduction: Preoperative renal function (eGFR) is an important prognostic factor in patients undergoing cardiac surgery, being part of several international risk scores. The degrees of renal dysfunction may have a different impact on these patients, so it is essential to understand the risk depending on the dysfunction.
Objectives: Analyze the impact of renal dysfunction and its degrees on final outcome (MORT-death by all causes) in patients undergoing cardiac surgery.
Methods: Observational and retrospective study with descriptive and comparative analysis of patients undergoing cardiac surgery, sent from a Cardiology center, between 1 January 2016 and 31 December 2018. Created 4 groups: Group A-Patients with eGFR > 85 ml/min; Group B-Patients with eGFR [50-85 ml/min]; Group C-Patients with eGFR [30-49 ml/min]; Group D-Patients with eGFR < 30 ml/min (eGFR calculated according to MDRD). In the defined groups, MORT were evaluated through clinical records, and compared 1:1. Descriptive analysis on the demographic and clinical characteristics of patients has been carried out. In the comparative analysis, the chi-square test was used for categorical variables and the T-Student test for numerical variables, with a significance level of 95%. SPSS 24.0 was used for statistical analysis.
Results: N591 patients were identified, 71.1% male, mean age of 68.6 years, BMI 27.3 Kg/m^2. MORT in 13.7% of patients. Group A (33.3%) with MORT in 7.1%; Group B (45.3%) with MORT in 10.8%; Group C (14.2%) with MORT in 34.5%; Group D (2%) with MORT at 41.7%. In the comparison of MORT between the different groups (Group A vs Group B; Group A vs Group C; Group B vs Group C; Group A, B and C vs Group D) statistically significant differences were obtained for the comparison between Group A and C (p = 0.00), Group A and D (p = 0.00), Group B and C (p = 0.00) and Group B and D (p = 0.01).
Conclusions: Death by all causes in 13.7% of patients. The presence of MORT increases with the worsening of eGFR. Between subsequent groups (A Vs B and C Vs D) the differences between MORT were not significant. Statistically significant differences in MORT are evidenced between Group B (50-85 ml/min) and Group C (30-49 ml/min). The results of these analyses suggest that the cutoff with impact on the final outcome of these patients is eGFR 50 ml/min.

P 65. TO CBP OR NOT TO CBP: WHICH PATIENTS GREATER BENEFIT FROM AN OFF-PUMP CABG STRATEGY?

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Introduction: Over the past 3 decades the main strategy for surgical coronary revascularization has been on-pump CABG with cardioplegic

cardiac arrest. Off-pump CABG achieved great popularity in the 90's rising interest both by evicting CPB associated complications and cost. However, despite the large volume of evidence generated around both strategies, studies fail to demonstrate clear benefit of either strategy regarding mortality and most common complications. The objective of this study is to evaluate the long-term survival impact of off and on-pump strategies in all patients subject to isolated CABG in our institution, as well as specific risk groups.
Methods: This study consists of a retrospective single-centre intention to treat analysis including 843 consecutive isolated CABG patients with a minimum follow-up of 10 years. A propensity score matched analysis regarding age, CCS class, number of affected coronary territories, left main disease, complete revascularization, recent and previous AMI, impaired ejection fraction, previous cardiac surgery, diabetes mellitus, arterial hypertension, previous stroke, estimated glomerular filtration rate, urgent surgery, gender and only arterial grafts used; was conducted with a caliper of 0.025 and a 1:1 ratio. Two equally distributed groups (OFF- PUMP N = 246 and ON-PUMP n = 246) without statistically different characteristics were then compared using Kaplan-Meier analysis for the overall group and the following specific groups: Males; females; Diabetic patients; Elderly (> 80 years old); eGFR < 30 mL/min/1.73 m^2; previous stroke; previous AMI; EF < 30%; 2 territories/vessel disease; 3 territory/vessel disease; LM disease; patients in which only arterial grafts were used; complete and incomplete revascularization; size of main vessel and time from acute myocardial infarction.
Results: No difference in overall 30-days mortality a long-term survival (minimum follow-up of 10 years). Sub-group analysis showed no difference between the groups evaluated for long-term mortality except for the subgroup of patients operated between 8-21 days after acute myocardial infarction (mean survival time: 9 years in OFF-PUMP group *vs* 11 years in ON-PUMP group; p = 0.03).
Conclusions: Our results are similar of those found in the literature as neither strategy has unequivocal superior results. Certain subgroups of patients have been proposed to benefit from an off-pump strategy (chronic renal disease; severely impaired ejection fraction, recent AMI). In our analysis patients with recent AMI (but not in the first 7 days) seem to benefit from an off-pump strategy regarding long-term mortality. Major limitations include: analysis not matched for surgeon performance; cardiac related events, re-revascularization need and graft patency not evaluated, as well as other major morbidity causes.

Painel 12 - Prevenção/Reabilitação Cardíaca 1

P 66. COIMBRA UNITED BY THE HEART: COMMUNITY-BASED PROJECT FOR THE PREVENTION OF CARDIOVASCULAR DISEASES

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Objectives: Since 2016, through the project "Coimbra United by the Heart" (CUH) municipalities scaled-up efforts on CVD prevention, creating a community health network that: 1) early identifies citizens with cardiovascular risk; 2) provide awareness-raising strategies for a healthy lifestyle; 3) improve the health surveillance of people with CVR; 4) improve CVD management in primary health care; 5) monitor, evaluate and disseminate findings in the area of CVD prevention and treatment.
Methods: In Coimbra, Hospital, Community Care Units, Nursing and Health School mobilize various thematic posts throughout the city (healthy lifestyles, healthy eating, alcohol consumption, HBP, stress management; BLS training, smoking cessation, physical activity), where citizens can calculate CVR (SCORE) and raise awareness about CVD prevention. Three months after, citizens' surveillance is evaluated and the citizens without proper health surveillance according to their CVR are summoned by PHC.
Results: During 4 editions, it was evaluated the SCORE of 1,571 citizens, but only 977 citizens with a mean of 53.4 ± 17.8 years were registered in Coimbra primary health centers. Of these, 54.2% (530) were identified with low CVR, 17.4% (170) moderate CVR, 17.2% (168) high CVR and 11.1% (108) very high CVR. All participants without proper health surveillance (N = 89) were summoned. Three months after the various editions telephone interviews were conducted, and 117 (12%) citizens registered in Coimbra PHC were interviewed. When asked if the project motivated them to seek health services, 25 (21.5%) citizens said yes, namely the family doctor (23), the family nurse (1) or a cardiologist (1). 92 (78.5%) citizens report that they didn't feel the need to search health services because are properly supervised in PHC (48), did not feel the need (36), are properly supervised by private cardiologist (5) or by the public sector cardiologist (3). Evaluating the usefulness of this project, between 1 (not useful) and 10 (very useful), the project was rated 8.7 ± 1.4 points and that should continue.
Conclusions: The network between the Hospital's Cardiology department, the PHC and various community partners has made possible to create a lasting community intervention project to reinforce the importance of monitoring the RCV of the citizens of Coimbra, preventing CVD. This project proved to be useful in identifying citizens without proper health surveillance and rapid referral for Primary Healthcare Centers (PHC). Through the constant project monitoring, it was possible to underlie and plan new areas of intervention such as better articulation between differentiated health care and PHC, improvement of established indicators for CVD prevention and specialized training in PHC.

P 68. DIABETES AS A FACTOR FOR INCREASED NT-PROBNP LEVELS IN PATIENTS WITHOUT HEART FAILURE

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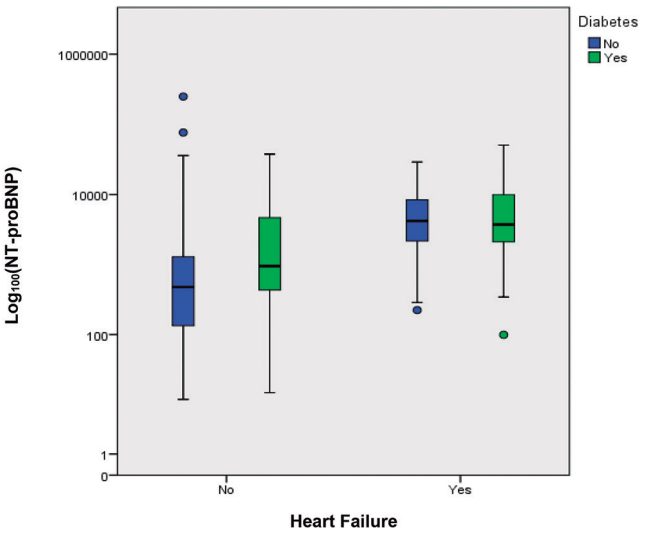
Introduction: Natriuretic peptides are of substantial medical value for the diagnostic evaluation of suspected heart failure (HF). However, there are several factors that influence their levels. Diabetes is a rather frequent comorbidity and is considered a risk factor for HF. Diabetes could be associated with NT-proBNP levels, in association with a subclinical dysfunction.
Objectives: Determine the impact of the presence of diabetes in the NT-proBNP levels in patients with and without clinical diagnosis of HF.
Methods: A 4-month prospective study, including all consecutive patients admitted to one of the medical wards of the Internal Medicine Department in our hospital. Patients were divided into two groups according to the existence of a clinical diagnosis of HF. For each patient, a characterization of demographic data, comorbidities, as well as determination of NT-proBNP, troponin I, haemoglobin and criteria for absolute and functional iron deficiency (ID) were collected. All patients with a diagnosis of heart failure had an echocardiogram performed. The influence of diabetes in the NT-proBNP levels was analysed for each group.
Results: The study included 284 patients of which 70 had a clinical diagnosis of HF. Patients with and without HF were similar in terms of sex (p = 0.737) obstructive sleep apnoea (p = 0.668), infection (p = 0.406), acute kidney injury (AKI) (p = 0.098), alcoholism (p = 0.591), haemoglobin (p = 0.098) and functional ID (p = 0.164). Within the group of patients without HF, median NT pro-BNP was significantly higher in patients with diagnosis of diabetes (954 pg/mL vs 479 pg/mL, p < 0.001). The same statistically significance was not found in patients with the diagnosis of HF (p = 0.944).



Conclusions: Our study demonstrates a correlation between the presence of diabetes and higher levels of NT-proBNP, within the group of patients without HF diagnosis. The same was not significant within the HF group. Perhaps, a correlation between diabetes and asymptomatic HF could exist, and further studies with ventricular function (both diastolic and systolic) are warranted.

P 69. IS BUD13-ZNF259 GENE VARIANT A RISK FACTOR FOR CORONARY PORTUGUESE POPULATION?

Joel Ponte Monteiro[1], Maria Isabel Mendonça[1], Andreia Pereira[2], João Sousa[2], Margarida Temtem[2], Marina Santos[2], Flávio Mendonça[2], Ana Célia Sousa[1], Eva Henriques[1], Sónia Freitas[1], Ilídio Ornelas[1], Graça Guerra[1], António Drumond[1], Roberto Palma dos Reis[3]

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Introduction: BUD13-ZNF259 is located on 11q23.3 and encodes Zinc finger protein (ZPR1), which is a cytoplasmic zinc finger protein that interacts with tyrosine kinase receptors. ZNF259 rs964184 variant has been associated with increased serum concentrations of triglycerides (TG) and LDL-C, augmenting the vulnerability of coronary artery endothelial cells (CAEC) to both oxidative stress and inflammatory response after damage.
Objectives: Study the association of the BUD13-ZNF259 rs964184 C > G variant with TG levels and HDL-C and evaluate CAD risk in GENEMACOR (Portuguese population).
Methods: 3,120 patients, 1,687 coronary patients and 1,433 controls were selected from GENEMACOR study. Genotyping of BUD13-ZNF259 rs964184 was performed by TaqMan allelic discrimination assay. Two separates pairwise comparisons assuming a specific underlying genetic model (recessive, dominant, additive and multiplicative) were applied and, then, the higher OR from these models was selected. Gene and biochemical variables (TG and HDL-C) were compared by Spearman correlation and Student's t-test. χ^2 test was used to confirm CAD association.
Results: As increases the risk allele number, also increases the TG levels (positive correlation). As expected, the opposite occurred with HDL-C levels (negative correlation). These correlations were statistically significant ($p < 0.0001$). Mean TG was higher in the risk genotype (CG + GG) when compared to the wild-type (CC) and the opposite occurred for HDL-C ($p < 0.0001$). χ^2 test showed that this dominant model and the other genetic models of this variant, did not reached CAD significance.
Conclusions: Our study demonstrated that rs964184 genotype correlates positively with TG levels and negatively with HDL-C. Although high TG levels increase the vulnerability of CAEC to both oxidative stress and inflammatory response after damaging, probably the relative small size of our sample, did not display evidence of this genetic effect.

P 67. CAROTID-FEMORAL PULSE WAVE VELOCITY ASSESSMENT IN MACE RISK PREDICTION IN CORONARY PATIENTS

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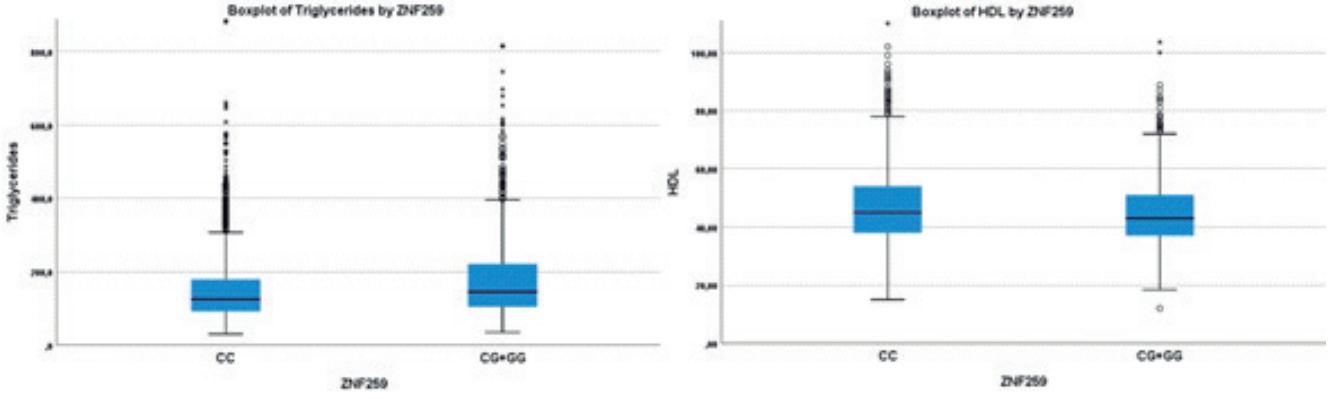
Introduction: Carotid-femoral pulse wave velocity (PWV), a direct measure of aortic stiffness, has become increasingly important for cardiovascular (CV) risk estimation, particularly in coronary patients. In this way, PWV could be a potent predictor of major adverse cardiovascular events (MACE). The use of PWV's measurement as a routine tool for clinical patient evaluation, providing better cardiovascular risk stratification, may help in therapeutic decision in secondary prevention.
Objectives: The aim of our study is to estimate the impact of PWV value in MACE risk prediction in patients with the diagnosis of coronary artery disease.
Methods: The study included 1,676 coronary patients with a mean age of 53.3 ± 7.9 years, 78.6% (n = 1,318) were male. PWV was measured by tonometry, through an automatic device, the Complior. It was created 2 groups, one with PWV ≤ 10 m/s and another with PWV > 10 m/s. This population was followed-up for a mean of 5.0 ± 4.2 years for the primary endpoint of MACE occurrence (combined endpoint of cardiovascular death, acute myocardial infarction, stroke, need for myocardial revascularization and need for hospitalization of any cardiac cause).



P 69 Figure

Results: During the follow-up of these 2 groups, MACE occurrence differed significantly. In the group with PWV ≤ 10 m/s, 33% had MACE vs 39% of MACE in the group with PWV > 10 m/s (p < 0.05). Overall, the patients with PWV > 10 m/s presented more MACE than those with PWV < 10 m/s, with an odds ratio of 1.29 (p < 0.05).

Table – PWV groups associated with MACE

	MACE			
PWV	**With**	**Without**	**Odds ratio (95% CI)**	**p-value**
≤10, n(%)	452 (78.3)	905 (82.3)	1.290 (1.003-1.659)	0.047
>10, n(%)	125 (21.7)	194 (17.7)		

MACE - major adverse cardiovascular events; Statistically significant for p<0.05.

Conclusions: Our results evidence that coronary patients with increased PWV levels have a higher probability of MACE, than those with lower PWV. These results reveal the predictive role of PWV measurement in the risk of MACE. The particular fact that these patients have a high CV risk, PWV is an important tool to guide our therapeutic strategy in secondary prevention.

P 70. E_COR STUDY: PREVALENCE OF CARDIOVASCULAR RISK FACTORS IN THE PORTUGUESE POPULATION

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Purpose: Cardiovascular disease (CVD) is a major cause of morbidity and mortality worldwide and a major public health problem. E COR is a national study whose objective was to evaluate the prevalence, treatment and control of cardiovascular risk factors (obesity, diabetes, hypercholesterolemia, hypertriglyceridemia and arterial hypertension) in the Portuguese population between 2012 and 2014.
Methods: This study was conducted on a sample of 1,688 individuals, 848 men and 840 women, aged 18 to 79 years old from 5 Portuguese continental sub-regions. Data was obtained from physical examination, biochemical analysis and a clinical questionnaire. 10-year risk of fatal CVD (SCORE, 2016 European Guidelines) was assessed for the 547 individuals aged 40 to 65 years old. Statistical analysis was performed using SPSS version 22.0 and included cell-weighting procedures so that the calculated prevalence were representative of the Portuguese population.
Results: Estimated prevalence rates were as follows: inadequate diet (71.3%), overweight (62.1%), arterial hypertension (43.1%), physical inactivity (29.2%), smoking (25.4%), alcohol abuse (18.8%), hypercholesterolemia (LDL-cholesterol ≥ 160 mg/dl-31.5%; LDL-cholesterol ≥ 130 mg/dl-51.5%), family history of premature CVD (11.8%), diabetes *mellitus* (8.9%) and hypertriglyceridemia (≥ 200 mg/dl-8.6%; > 150 mg/dL-18,6%). Awareness, treatment and control rate of risk factors, for the three considered age groups were, respectively: 80.7%, 82.0% and 64.0% for diabetes *mellitus*; 74.2%, 71.6% and 89.7% for hypercholesterolemia (total cholesterol ≥ 240 mg/dl); 49.2%, 39.9% and 64.3% for hypercholesterolemia (total cholesterol ≥ 200 mg/dl); 73.0%, 71.4% and 52.1% for hypercholesterolemia (LDL-cholesterol ≥ 160 mg/dl); 51.3%, 43.6% and 72.9% for hypercholesterolemia (LDL-cholesterol≥ 130 mg/dl) 24.7%, 24.7% and 12.9% for hypertriglyceridemia (≥ 200 mg/dl); and 62.8%, 69.9% and 32.1% for hypertension. About 68% of our population have at least 2 CVD risk factors and 22% have 4 or more CVD risk factors, considering only the most significant, as diabetes mellitus, hypercholesterolemia, hypertension, overweight and smoking. SCORE risk category prevalence was 31% for low risk, 47% for moderate, 13% for high and 9% for very high risk.
Conclusions: Identification and knowledge of how CVD risk factors are being managed are important numbers for health authorities to implement appropriate health promotion measures. The low control rates of risk factors such as diabetes or hypertension, is a serious public health problem that needs intervention through local and national health policies.

P 71. HYPERTENSIVE RESPONSE TO EXERCISE-TO TREAT OR NOT TO TREAT?

Pedro Alves da Silva, Mafalda Carrignton, Afonso Nunes-Ferreira, Pedro Silvério António, Sara Couto Pereira, Joana Brito, Pedro S. Morais, Rafael Santos, Fausto J. Pinto, Pedro Marques

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Introduction: Hypertensive response to exercise (HRE) is often documented in individuals without known cardiovascular disease. However, its impact on patient prognosis and the necessity of treatment are still not clear.
Objectives: We aimed to evaluate the impact of a hypertensive response (HRE) on exercise test (ET) on clinical prognosis and outcome.
Methods: This was a single-center retrospective study of patients with HRE on stress exercise testing (STE) performed between January 2012 and December 2015. In our center, we define HRE as systolic blood pressure (SBP) > 210 mmHg in men and > 190 mmHg in women, diastolic blood pressure (DBP) > 90 mmHg or an increase in baseline systolic BP at least 60 mmHg in men or 50 mmHg in women, during exercise. Demographic, clinical, echocardiographic, electrocardiographic data were collected, and results were obtained using chi-square and Student-t tests; logistic regression.
Results: We evaluated 500 patients who underwent STE, 457 of which had hypertensive response vs 43 patients without HRE (mean age 57 ± 11 vs 61 ± 8 years, p = 0.01). Among the two groups there were no differences between gender (76.5% men vs 69.7%) and race nor between the cardiovascular risk factors, namely hypertension, diabetes and dyslipidaemia. We evaluated their responses in STE and their outcomes, with a mean follow-up of 60 ± 22 months. In the univariate and multivariate analysis, presence of Sokolow-Lion criteria of left ventricular hypertrophy in the ECG was associated with HRE during the exam (OR 5.26; 95%CI 2.4-11.6; p < 0.001). In patients who had previously known hypertension, therapy with calcium channel blockers seemed to protect against hypertensive response prior to ET (OR 0.48, 95%CI 0.24-0.97, p = 0.004) compared to other antihypertensive drugs. Regarding the clinical outcomes, patients with HRE were associated with an increased risk of developing heart failure (p = 0.027) (versus patients without HRE) during follow up but failed to predict adverse outcomes such as acute coronary syndrome, atrial fibrillation or stroke. Within the patients with HRE in ET, 78 patients did not have an established diagnosis of HTA (mean age 49 ± 12.16 years, 75.6% men). In these patients we observed initiation on antihypertensive therapy after ET on 27.6% patients, but on univariate and multivariate analysis, starting therapy with anti-hypertensives did not have a significant impact on incidence of stroke, AF, HF, hospitalization for cardiovascular events or death.
Conclusions: We did not observe any significant differences among the studied groups regarding prognosis, except for the highest incidence of heart failure in patients with HRE. Initiation of antihypertensive therapy in patients with HRE failed to modify outcomes, however our sample was underpowered, so, further studies are required in order to clarify the value of treatment in patients with HRE.

Painel 2 - Insuficiência cardíaca 2

P 7. URIC ACID PROGNOSTIC IMPACT ON ACUTE HEART FAILURE

Ana Rita M. Gomes[1], Carolina Saleiro[1], Diana de Campos[1], Ricardo Ambrósio Rodrigues[1], João Lopes[1], José Pedro Sousa[1], Luís Puga[1], Joana Maria Ribeiro[1], Natália António[2], Lino Gonçalves[2]

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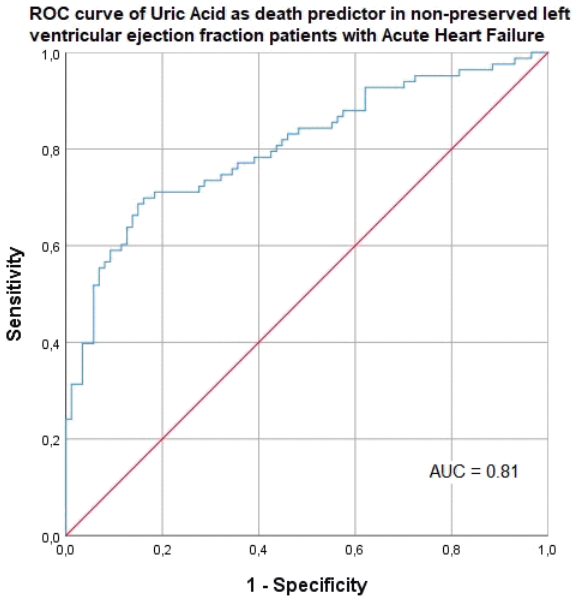
Introduction: Elevated uric acid (UA) levels have been associated with poorer prognosis in patients with acute heart failure (AHF), being considered

a metabolic and inflammatory marker. This study aims to evaluate UA impact on patients with AHF and different left ventricular ejection fractions (LVEF).
Methods: Retrospective analysis of 207 patients with AHF consecutively admitted to a single Cardiology Department. Patients were divided into two groups according to LVEF, one group had preserved LVEF (≥ 50%) while the other had non-preserved LVEF (< 50%). UA levels were measured during hospital stay. Cox regression analysis was performed to determine prognostic value of UA levels in each group. Receiver operating characteristic (ROC) curve analysis was conducted and area under the curve (AUC) was calculated.
Results: Mean age was 69.1 ± 14.3 years old, 81.2% were males and 17.4% had preserved LVEF. UA levels ranged from 135 to 1,298 μmol/L (506.4 ± 168.3 μmol/L). In cox regression analysis, higher levels of UA predicted death in non-preserved LVEF patients (HR 1.002; 95%CI 1.000-1.003; p = 0.012), but not in the preserved LVEF group (p = 0.909). In multivariate analysis (including age, presence of arterial hypertension, diabetes mellitus, chronic kidney disease and maximum furosemide dose during hospital stay), UA proved to be an independent predictor of mortality (HR 1.002, 95%CI 1.000-1.003, p = 0.021), as well as age and chronic kidney disease. For non-preserved LVEF patients, the AUC of UA to predict death was 0.81 (p < 0.001, sensitivity 69.9% and specificity 83.9%).



Conclusions: Increased UA levels are associated with greater mortality rates in patients with AHF and non-preserved LVEF, regardless of age, chronic kidney disease and intrahospital dose of furosemide. In contrast, in AHF patients with preserved LVEF, UA did not show prognostic value. These results show the importance of further studies on the role of UA and the possible benefit of UA lowering drugs in AHF.

P 10. PROGNOSTIC IMPACT OF ACUTE HEART FAILURE IN ACUTE CORONARY SYNDROME

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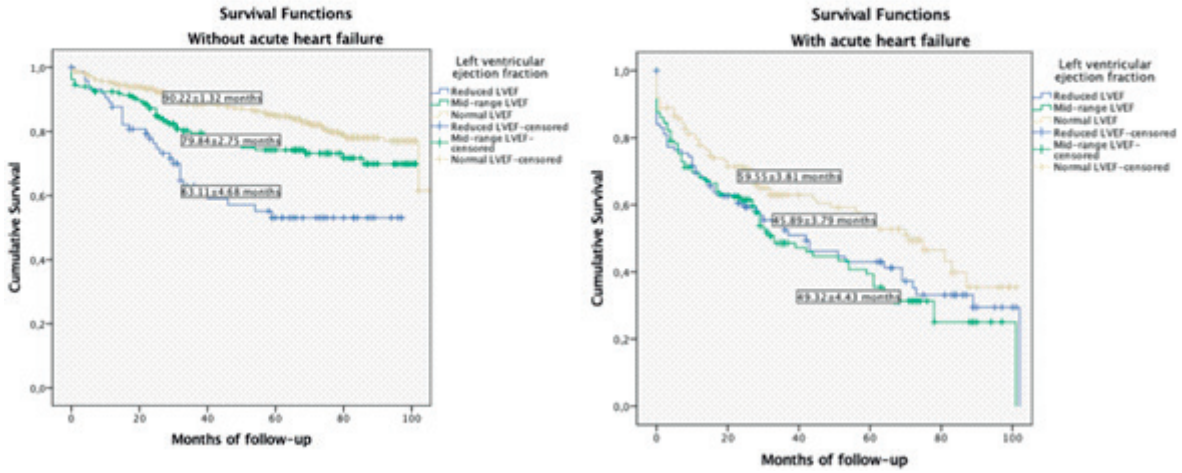
Introduction: Contemporary data on the incidence and prognosis of acute heart failure (AHF) and the influence of left ventricular ejection fraction (LVEF) in the setting of acute coronary syndrome (ACS) are scarce. The aim of this study was to compare the prognostic significance of AHF according to LVEF.
Methods: This is a retrospective observational study of patients consecutively admitted for ACS between 2009 and 2016 in a single coronary intensive unit. Patients were divided into 2 groups depending on the development of AHF (Killip-Kimbal = I or Killip-Kimbal ≥ II) and in each of these groups, they were further classified according to LVEF (normal ≥ 50%, mid-range 40% to 49% and reduced < 40%). All-cause death was the primary endpoint. Survival analyses using Kaplan-Meier curves were performed. All-cause mortality predictors were assessed by Cox regression models.
Results: A total of 1,395 patients (70.1% male, 67.4 ± 12.2 years, median follow-up of 47 months) were enrolled. Only 15% of the patients had previous history of heart failure. A total of 993 patients had an ACS without AHF and LVEF was normal in 71.3%, mid-range in 21% and reduced in 7.7% of the patients. The remaining 402 patients developed AHF: 36.6% with normal, 34.6% with mid-range, and 28.9% with reduced LVEF. The incidence of HF was increasingly higher with decreasing LVEF. Patients with AHF were older. ST-elevation myocardial infarction was more frequent in AHF patients but previous history of coronary artery disease was not different. Chronic kidney disease was more common among AHF patients. All-cause mortality was 27.7% and was much higher in patients with AHF (50% vs 18.7%, p = 0.000). Adjusted multivariate analysis of all-cause mortality showed that AHF was independently associated with the end-point and it was the most powerful predictor of the model (Hazard Ratio (HR) 1.89, 95%CI 1.49-2.36, p = 0.000).

Figure 1. Kaplan-Meier curves for time free of all-cause mortality according to LVEF categories in patients without AHF (left) and patients with AHF (right) during ACS hospitalization.



P 10 Figure

Conclusions: Clinical diagnosis of AHF is a long-term prognostic risk after ACS. LVEF in AHF subgroup was not related to long-term prognosis. This study suggests that these patients should be managed as very high risk, regardless of LVEF.

P 11. ACUTE HEART FAILURE: PULSE PRESSURE AS A PREDICTOR OF HOSPITALIZATION AND MORTALITY

João Borges Rosa[1], Patrícia Marques Alves[2], Manuel Oliveira Santos[1], Gustavo M. Campos[1], Ana Vera Marinho[2], José Paulo Almeida[2], Tatiana Gonçalves[1], Rui Baptista[2], Isabel Fonseca[1], Lino Gonçalves[2]

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Introduction: Pulse pressure (PP) increases after the fifth decade of life. While before 50 years of age, women have a lower PP compared to men, the inverse usually occurs after 60 years of age. We aimed to evaluate whether PP at admission can be used as a prognostic marker in acute heart failure (AHF).
Methods: We retrospectively studied 1,026 patients admitted to our emergency department between November 2016 and December 2017 with a discharge diagnosis of AHF. PP was calculated as the difference between systolic and diastolic blood pressure (BP) at admission and the patients were divided into two groups (group "Low": PP ≤ 40 mmHg and group "High": PP > 40 mmHg). Incidence of rehospitalization and cardiovascular (CV) or all-cause death was evaluated through multivariable logistic regression models and by Kaplan-Meyer survival curves.
Results: Patients were followed up over a median period of 5 months (IQR 3-11 months). All patients had BP values at admission. Median age was 80 (IQR 18-99) years and 52.7% were male (n = 541). Mean PP was 64.6 ± 24.0 mmHg, with 84.1% > 40 mmHg and 15.9% ≤ 40 mmHg. In group "High" median age was higher (81 IQR 30-99 years vs 77 IQR 18-96 years, p < 0.01), proportion of males was lower (51.2% vs 60.7%, p = 0.03) and mean LVEF was higher (44 ± 12% vs 35 ± 13%, p < 0.01). The age-, sex-, and LVEF-adjusted odds ratio (OR) for hospitalization in group "Low" was 1.6 (95%CI 1.03-2.48, p = 0.04) compared to group "High", but the duration of hospitalization was similar (9 IQR 0-60 days vs 9 IQR 1-89 days, p = 0.65). There was no difference in the incidence of rehospitalization (23.2% vs 29.1%, p < 0.126). The age-, sex-, and LVEF-adjusted OR for CV death in group "Low" was 2.58 (95%CI 1.40-4.75, p < 0.01) and for all-cause mortality 1.78 (95%CI 1.12-2.81, p = 0.01), compared to group "High". In women, the age-, and LVEF-adjusted OR for CV death in group "Low" was 5.21 (95%CI 2.17-12.54, p < 0.01) and for all-cause mortality 2.40 (95%CI 1.16-4.96, p = 0.02), while there was no difference among groups for men both for CV 1.52 (95%CI 0.64-3.65, p = 0.34) and all-cause mortality 1.49 (95%CI 0.82-2.69, p = 0.19). Kaplan-Meier estimates of CV mortality during follow-up by gender are shown in the Figure.

Conclusions: PP ≤ 40 mmHg at admission predicts hospitalization, CV and all-cause death in patients with acute heart failure. Whether this feature is only valid for females needs to be ascertained by other studies.

P 12. PROGNOSTIC IMPACT OF WORSENING RENAL FUNCTION IN B-TYPE ACUTE HEART FAILURE PATIENTS ON DECONGESTION

João Presume[1], Sérgio Maltês[2], Gonçalo Cunha[1], Luís Landeiro[2], Marta Roldão[2], Sara Trevas[2], Maria Inês Silva[2], Margarida Madeira[2], Catarina Rodrigues[2], Luís Campos[2], Inês Araújo[2], Cândida Fonseca[3]

[1]Centro Hospitalar de Lisboa Ocidental, EPE/Hospital de Santa Cruz. [2]Unidade de Insuficiência Cardíaca, Hospital São Francisco Xavier-Centro Hospitalar Lisboa Ocidental. [3]Centro Hospitalar de Lisboa Ocidental, EPE/Hospital de S. Francisco Xavier.

Introduction: Guidelines recommend usage of the lowest possible dose of diuretics, arguing that higher doses worsen renal function and prognostic. On the other hand, authors report that deterioration of renal function with decongestion is not a predictor of worse prognosis. Rise in serum creatinine often develops after the beginning of decongestive therapy in acute heart failure and may lead to subsequent inappropriate decrease in diuretic dose in order to preserve renal function. The aim of this study was to evaluate the prognostic impact of acute kidney injury (AKI) and worsening renal failure in response to diuretic treatment (WRF) on long term hospitalization and mortality of patients hospitalized for acute HF.
Methods: We analysed a retrospective cohort of patients admitted for decompensated heart failure with B-type clinical profile (warm and wet) in a dedicated HF clinic. Exclusion criteria were CKD on hemodialysis, need for renal replacement therapy or ultrafiltration, and unknown previous creatinine. AKI was defined as a rise in serum creatinine (Cr) = 0.3 mg/dL from outpatient to admission and WRF was defined as an elevation of Cr = 0.3 mg/dL during the first 48h of hospitalization. The combined endpoint was mortality by any cause and hospitalization for cardiovascular cause.
Results: A total of 249 patients were included (m = 77 ± 12.5 years old), 46.6% male, 62.2% HFpEF and 30.5% ischemic etiology. 139 patients had CKD and median creatinine level in outpatient setting (when stable) was 1.08 mg/dL.Patients were assigned to 1 of 4 groups according to their Cr evolution: no AKI/no WRF (n = 137); with AKI/no WRF (n = 63); no AKI/with WRF (n = 36); with AKI/with WRF (n = 13). When comparing the study groups, we found statistically significant differences regarding age (p = 0.028); ejection fraction (EF) (p = 0.001); hemoglobin (p = 0.001) and NT-proBNP at admission (p = 0.001); Kaplan-Meier survival analysis found statistically significant differences (log-rank test-p < 0.001) in the composite outcome between groups (Figure). Survival at 1 year for each group was: no AKI/no

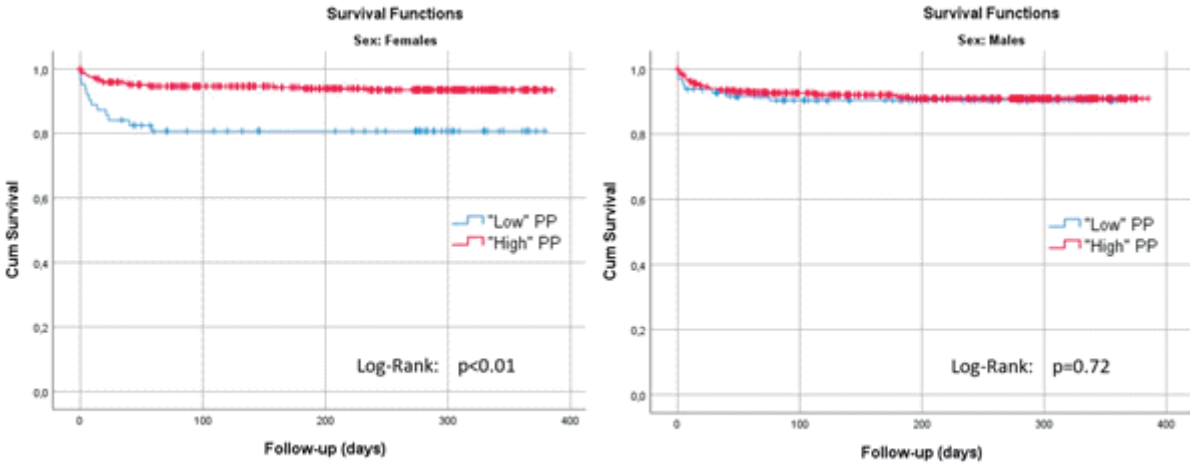
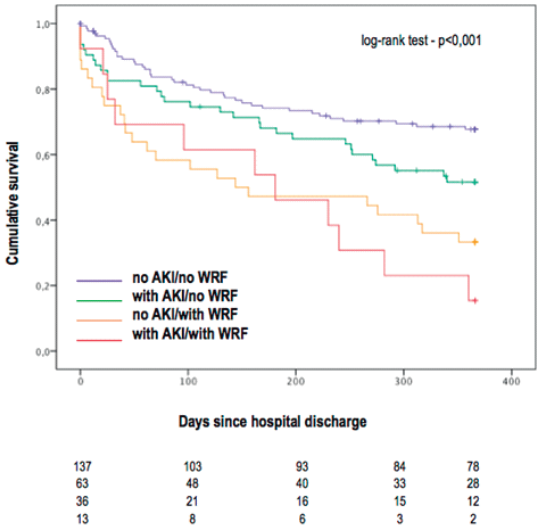


Figure 1. Kaplan-Meier curves for CV mortality according to PP group, for females (A) and males (B).

P 11 Figure

WRF-67.7%; with AKI/no WRF-51.6%; no AKI/with WRF-33.3%; with AKI/with WRF-15.4%.After adjusted Cox model (for age, EF, daily furosemide intake, number of comorbidities, admission hemoglobin, NTproBNP, and urea), this association remained significant (with AKI/no WRF (HR 1.880; 95%CI 1.114-3.172); no AKI/with WRF (HR 2.308; 95%CI 1.314-4.051); with AKI/with WRF (HR 2.625; 95%CI 1.170-5.888).



No at risk					
no AKI/no WRF	137	103	93	84	78
with AKI/no WRF	63	48	40	33	28
no AKI/with WRF	36	21	16	15	12
with AKI/with WRF	13	8	6	3	2

Figure - Kaplan-Meier survival curves for composite outcome (mortality by any cause and hospitalization for cardiovascular causes) in B-type acute heart failure patients. The graphs are truncated at 12 months.
AKI – Acute Kidney Injury; WRF – Worsening Renal Failure.

Conclusions: In this population of acute congestive HF patients (B-type profile), the presence of AKI on admission and the development of WRF with diuretic therapy were associated with increased incidence of all-cause mortality and cardiovascular hospitalization in patients with acute heart failure, and concomitant WRF and AKI confers worse prognosis.

P 8. CARDIOGENIC SHOCK WITHOUT SEVERE VENTRICULAR DYSFUNCTION IN STELEVATION ACUTE MYOCARDIAL INFARCTION

Bruno Piçarra[1], Ana Rita Santos[1], João Pais[1], Mafalda Carrington[1], Diogo Brás[1], Ana Rita Rocha[1], Rui Guerreiro[1], Kisa Congo[1], José Aguiar[1], em nome dos investigadores do RNSCA[2]

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Introduction: The presence of cardiogenic shock (CS) after ST-elevation acute myocardial infarction (STEMI) is associated with a high mortality. Traditionally, severe left ventricular dysfunction is assumed to be the main predictor of CS, however trials and registries show that in average left ventricular function is only moderately depressed in CS.
Objectives: To characterize the patients (pts) with CS after STEMI but without severe left ventricular dysfunction (defined as ejection fraction > 30%) and assess their impact in mortality.
Methods: We evaluated 7181 pts with STEMI and ejection fraction (EF) > 30%, and excluded all pts with STEMI and an EF < 30%. We considered 2 groups: Group 1-Pts who developed CS and Group 2-Pts who didn't developed CS. We registered age, gender, cardiovascular and non-cardiovascular co-morbidities, electrocardiographic presentation, reperfusion strategies, reperfusion times and coronary anatomy. We evaluated the following in-hospital complications: Re-Infarction, mechanical complications, high-grade atrial ventricular block (AVB), sustained ventricular tachycardia (VT), atrial fibrillation (AF) and stroke. We compared in-hospital mortality.
Results: Presence of CS without severe left ventricular dysfunction was observed in 5.2% pts (n = 376) with STEMI, being CS present at admission in 51.2% of these pts. The mean EF was lower in group 1 pts (44% ± 11 vs 51 ± 11%, p < 0.001). Patients in group 1 were older (70 ± 14 vs 63 ± 13 years, p < 0.001), more females (39.4% vs 23.3%, p < 0.001), had a higher prevalence of heart failure (4.8% vs 1.4%, p < 0.001), peripheral artery disease (5.5% vs 2.9%, p = 0.004), chronic kidney disease (6.4% vs 2.7%, p < 0.001) and chronic pulmonary obstructive disease (8.2% vs 3.1%, p < 0.001). At admission, Group 1 pts had more AF (10.4% vs 4.4%, p < 0.001) and more right bundle block (9.7% vs 4.4%, p < 0.001). Group 1 patients received less reperfusion (77.7% vs 83.0%, p = 0.008), without differences in the type of reperfusion performed or times to reperfusion. The presence of multivessel disease (60.0% vs 45.7%, p < 0.001), left main disease (6.6% vs 2.4%, p < 0.001) and left anterior descending disease (72.8% vs 66.0%, p = 0.016) were more prevalent in Group 1 pts. Group 1 pts had more in-hospital complications: Re-Infarction (3.5% vs 0.7%, p < 0.001), AF (22.1% vs 5.0%, p < 0.001), mechanical complications (9.6% vs 0.5%, p < 0.001), AVB (26.7% vs 3.7%, p < 0.001), VT (10.6% vs 1.9%, p < 0.001), stroke (1.9% vs 0.6%, p = 0.01) and major bleeding (10.4% vs 1.5%, p < 0.001). In-hospital mortality was also much higher in Group 1 pts (26.6% vs 1.4%, p < 0.001).
Conclusions: Cardiogenic shock is present in 5,2% of STEMI pts without severe ventricular dysfunction. These pts were older, had higher morbidities and in-hospital complications. Even without severe ventricular dysfunction, CS in these patients was associated with much higher in-hospital mortality.

P 9. REVASCULARIZATION STRATEGIES IN CONTEXT OF ACUTE CORONARY SYNDROME PRESENTING WITH CARDIOGENIC SHOCK

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Introduction: The use of early revascularization of the culprit artery with percutaneous coronary intervention (PCI) has been shown to improve outcome in patients with acute myocardial infarction (AMI) complicated with cardiogenic shock (CS). However, most of patients with CS have multivessel disease (MV), remaining under discussion the optimal timing of non-culprit revascularization and the best treatment strategy for patients with CS.
Objectives: The aim of this study was to determine the impact of PCI of the culprit lesion only (CLO) or immediate multivessel (IMV) PCI on procedural and clinical outcomes in patients with CS.
Methods: 150 consecutive patients with AMI, MV and CS treated with PCI admitted at a tertiary centre were included. The primary end point was all-cause mortality within 30 days. Safety endpoints included bleeding and stroke. Clinical characteristics, procedural features, antithrombotic therapies and MACE, including all-cause mortality, hospitalization for heart failure, myocardial reinfarction and repeated revascularization were registered in-hospital, 30-days and at 12-month follow-up (FU).
Results: Mean age was 69.0 ± 12.0 years (Y), 108 male (72.0%). 115 P (76.7%) presented with ST-segment elevation myocardial infarction (STEMI) and 37.3% with anterior STEMI. The patient cohorts, 114 P in CLO group and 36 P in IMV group, were comparable in age, sex, and cardiovascular risk factors. At 30 days, the primary endpoint had occurred in 46 P in CLO PCI group and in 22 P in the IMV PCI group, with an absolute 20.7% reduction in 30-day mortality (40.4% vs 61.1%; p = 0.031). Kaplan-Meier analysis showed that survival was significantly worse for P in IMV group (log-rank 0.036). At 12 months FU, all-cause mortality was not statistically different between groups (51.8% vs 66.7%, p = 0.120).
Conclusions: Among P presenting with CS in context of AMI and MV disease, 30-days outcomes were better in those who initially underwent PCI of the CLO comparing with IMV PCI. At 12 months FU, there was no difference in the incidence of ischemic events or death from any cause. These data are in line with recent publications that state culprit-lesion-only PCI with possible staged revascularization should be the preferred revascularization strategy.

	IMV PCI N=36	CLO PCI N=114	p value
Age (years)	69.0 ±10.9	69.0 ±12.3	0.995
Male	26 (72.2%)	82 (71.9%)	0.973
BMI (kg/m^2)	40.9±3.8	40.0±2.9	0.149
Hypertension	16 (44.4%)	72 (63.3%)	**0.049**
Hypercholesterolemia	11 (30.6%)	49 (43.0%)	0.187
Diabetes mellitus	9 (25.0%)	37 (32.5%)	0.399
Current smoker	9 (25.0%)	28 (24.6%)	0.958
Previous MI	3 (8.3%)	23 (20.2%)	0.114
Previous PCI	3 (8.3%)	9 (7.9%)	0.933
Previous CABG	-	6 (5.3%)	
Fibrinolysis <24 hr before randomization	5 (13.9%)	12 (10.5%)	0.580
STEMI	24 (66.7%)	91 (79.8%)	0.107
Anterior STEMI	10 (27.8%)	46 (40.4%)	0.177
Left bundle-branch block	3 (8.3%)	6 (5.3%)	0.503
Systolic blood pressure — mmHg	103±31	116±35	0.067
Diastolic blood pressure — mmHg	66±18	71±23	0.256
Heart rate — beats/min	85±23	80±26	0.377
Creatinine	1.54±1.29	1.50±0.92	0.850
No. of affected vessels — no./total no. (%)			
1 + left main artery	2 (5.6%)	4 (3.5%)	
2	22 (61.1%)	53 (46.5%)	
3	12 (33.3%)	56 (49.1%)	
Vessel related to the infarction — no./total no. (%)			
Left anterior descending artery	16 (44.4%)	56 (49.1%)	
Left circumflex artery	12 (33.3%)	9 (7.9%)	
Right coronary artery	5 (13.9%)	44 (38.6%)	
Left main artery	3 (8.3%)	4 (3.5%)	
Bypass graft	-	1 (0.9%)	
Left ventricular systolic function at presentation			
Severe impairment (LVEF<35%)	11 (30.6%)	35 (30.7%)	
Mild to moderate impairment (LVEF 35-50%)	13 (36.1%)	41 (36.0%)	
Normal (>50%)	4 (11.1%)	20 (17.5%)	
Intraortic balloon pump	15 (41.7%)	24 (27.1%)	**0.016**
Mechanical ventilation	25 (69.4%)	68 (59.6%)	0.293
Catecholamine therapy	25 (69.4%)	93 (81.6%)	0.125
Outcomes at 30 days			
Death from any cause	22 (61.1%)	46 (40.4%)	**0.031**
Renal-replacement therapy	1 (2.8%)	2 (1.8%)	0.705
Recurrent myocardial infarction	2 (5.6%)	4 (3.5%)	0.459
Staged or urgent repeat revascularization	4 (11.1%)	14 (12.3%)	0.851
Outcomes at 1 year			
Death from any cause	24 (66.7%)	59 (51.8%)	0.120
Recurrent myocardial infarction	3 (8.3%)	10 (8.8%)	0.935
Rehospitalization for congestive heart failure	1 (2.8%)	12 (10.5%)	0.283
Death, recurrent infarction, or rehospitalization	25 (69.4%)	74 (64.9%)	0.417
Repeat revascularization	4 (11.1%)	22 (19.3%)	0.258
PCI	3 (8.3%)	20 (17.5%)	
CABG	1 (2.8%)	2 (1.8%)	
Bleeding	1 (2.8%)	5 (4.4%)	0.668

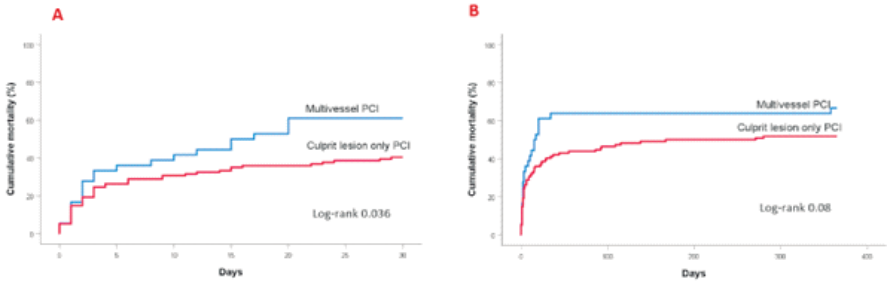

Figure 2. Kaplan-Meier curves for all-cause mortality according the revascularization strategy through 30 days (**Panel A**) and through 1 Year (**Panel B**).

P 9 Figure

Painel 3 - Imagiologia Cardiovascular 1

P 14. DOWNSTREAM TESTING AFTER AN HALTED CORONARY CT ANGIOGRAPHY DUE TO HIGH CORONARY ARTERY CALCIUM SCORE

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Introduction and objectives: In many centers, coronary artery calcium score (CACS) is performed immediately before coronary CT angiography (CCTA) in order to exclude heavy calcification that could hamper test performance. When high CACS values are found, CCTA is usually aborted and other tests suggested. However, there are no recommendations on which test to pursue, and little data on their diagnostic yield in this setting. The aim of this study was to assess the type and results of downstream testing among patients whose CCTA study was halted due to high CACS.
Methods: Single-centre retrospective study of consecutive patients undergoing CCTA for suspected obstructive coronary artery disease (CAD). A CACS threshold of > 400 was generally used to cancel CCTA. Downstream testing and its results were assessed using electronic medical records. A group of consecutive patients with CACS < 400 who underwent CCTA was used for comparison.
Results: Of the 795 patients who performed CCTA for suspected CAD, 86 (10.8%), had their test halted due to high CACS (57 men, mean age 71 ± 11 years). In this subgroup, the median pre-test probability for CAD was 27% (interquartile range 25) and the median CACS was 983 (interquartile range 930). Compared to patients who underwent CCTA, those who saw their tests cancelled were older, more frequently male, and had higher prevalence of cardiovascular risk factors and higher pre-test probability for CAD. Patient's downstream testing is illustrated in Figure. From the 86 patients enrolled, 12 are currently waiting for downstream tests and were excluded from further analysis. Overall, 35 patients ended up performing invasive coronary angiography (ICA, 47.3%) of whom 19 (54.3%) had significant CAD. Among those who underwent non-invasive testing (N = 19, 25.7%), 10 (52.6%) had significant ischemia and 4 (21%) underwent additional testing with ICA. In 24 patients (32.4%), no downstream testing was pursued. Finally, 17 (22.3%) patients underwent coronary revascularization, either percutaneous (N = 10, 13.5%) or surgical (N = 7, 10.8%).

Conclusions: Invasive coronary angiography is the most frequently used downstream test when CCTA is halted due to high CACS values, and shows significant CAD in roughly half of the cases. Considering the high prevalence of significant CAD, direct referral for ICA (with the possibility of invasive functional testing) seems a reasonable approach.

P 17. PREDICTORS AND PROGNOSTIC IMPACT OF EARLY EF RECOVERY IN PATIENTS WITH AS AND REDUCED EF AFTER TAVI

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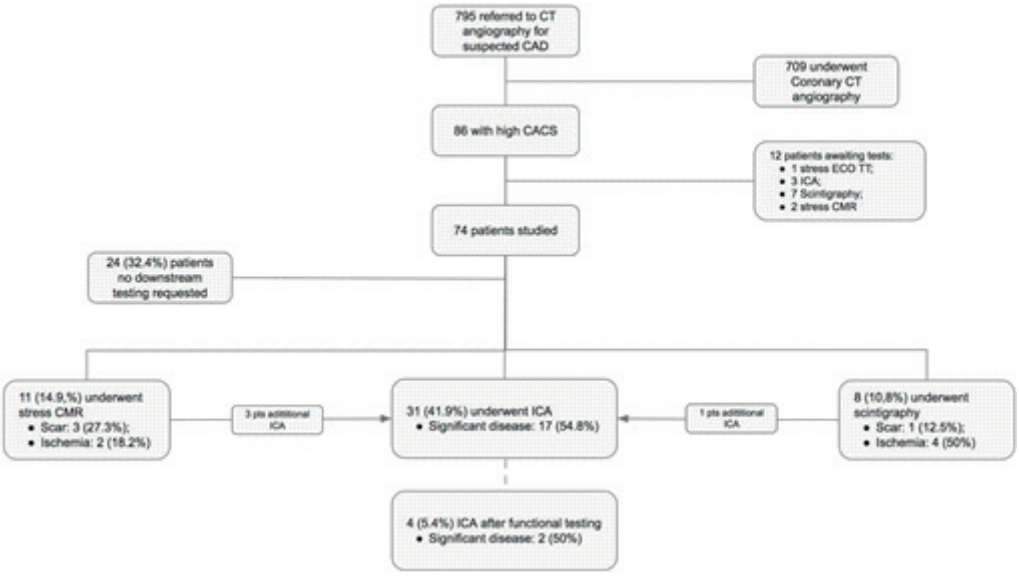
Introduction: Patients with severe aortic stenosis (AS) and reduced left ventricular ejection fraction (LVEF) have a dismal prognosis compared with patients with preserved LVEF. Transcatheter aortic valve implantation (TAVI) has evidenced favourable results in this setting. This study aims to determine predictors of early LV ejection fraction (LVEF) recovery after TAVI and its subsequent prognostic impact.
Methods: Prospective single-centre registry including 96 consecutive patients (mean age 81 ± 7 years, 43% female, median Euroscore II 5.3% [IQR 3.6-8.0]) with severe AS and LV dysfunction (LVEF < 50% assessed by biplane Simpson's method) who underwent TAVI between Jan/2015 and Apr/2019. A retrospective analysis defined early LVEF improvement as an absolute increase in LVEF ≥ 10% at discharge, in comparison to baseline LVEF. Survival analysis (Cox-regression hazards model and Kaplan-Meier) was performed at a median follow-up of 20 months (IQR 13-28). Univariable and multivariable analysis were performed to determine independent predictors of lack in LVEF recovery.
Results: The median interval between TAVI and pre-discharge TTE was 4 days (IQR 2-5). Early LVEF recovery occurred in 43% (n = 41) of the patients (R-group) and did not occurred in 57% (n = 55; no-R group). Mean LVEF before TAVI was 40 ± 9% in the R-group and 37 ± 9% in the no-R group (p = 0.083). The univariable analysis identified male sex, baseline indexed LV diastolic volume > 75 ml/m^2, relative wall thickness (RWT) < 0.42, and systolic pulmonary artery pressure (SPAP) > 50 mmHg associated with a reduced likelihood of LVEF improvement after TAVI. By multivariate analysis, indexed LV diastolic volume > 75 ml/m^2 (HR 5.174, 95%CI 1.115-24.010; p = 0.04) and RWT < 0.42 (HR 3.754, 95%CI 1.00-14.083; p = 0.05) were independent predictors of absent



P 14 Figure

early LVEF recovery. A total of 23 deaths occurred-8 on the R group and 14 on the no-R group (HR 0.30, 95%CI 0.30-1.74, log-rank p = 0.47).
Conclusions: Augmented left ventricle volume independently predicted the lack of early recovery of LVEF after TAVI, suggesting that patients without LV dilatation, may not have intrinsic myocardial disease but just afterload mismatch which could explain the rapid improvement of LVEF. However, and given a possible lack of statistical power, LVEF recovery was not associated with improved survival in this cohort.

P 16. LEFT VENTRICULAR REMODELLING PATTERNS AFTER MITRACLIP IMPLANTATION: DO ISCHEMIC PATIENTS HAVE THE SAME BENEFIT?

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Introduction: Percutaneous mitral valve repair has shown to prevent and even reverse adverse LV remodelling in most patients with moderate to severe mitral regurgitation (MR). This effect is, however, highly variable and may differ according to the MR etiology.
Objectives: The aim of the present study is to evaluate cardiac remodelling patterns and clinical outcomes after MitraClip implantation (MI) in ischemic and non-ischemic patients (P).
Methods: A standardized registry was prospectively performed between 2013 and 2019 for all P who underwent MitraClip insertion in a single tertiary care centre. Transthoracic echocardiographic information was assessed at baseline and 1, 6, 12 and 18 months after MI. Student's t-test was used to assess the procedure's effect on several variables. Clinical outcomes were compared with the use of Fisher's exact test or the chi-square test, as appropriate.
Results: 46 P, 61% male, mean age 65 ± 14 years. 39% had ischemic MR. Dyslipidemia was more frequent in ischemic P (52% versus 93%, p = 0.002) as well as history of smoking (32% versus 67%, p = 0.022). Atrial fibrillation was significantly associated with non-ischemic etiology (75% versus 44%, p = 0.036). MI success rate was 87% (proper placement and reduction in MR to grade 2 or less), with an average of 1.5 clips. Considering the 37 P that completed 18 months of follow-up (FU), the echocardiographic parameters at baseline were: left ventricular ejection fraction (LVEF) 36 ± 12%, LV end-diastolic dimeter (LVEDD) 68.2 ± 10.2 mm, LV end-systolic diameter (LVESD) 52.2 ± 13.5 mm and left atrial diameter (LAD) 53.1 ± 6.7 mm; there were no significant differences between groups. After MI, a compelling difference in LVEDD was noticeable early in the first month, with significant lower dimensions in non-ischemic P (66.6 ± 11.4 versus 72.8 ± 5.4, p = 0.039). Sustained differences in LVEDD were consistent at 6, 12 and 18 months (62.4 ± 12.3 versus 73.5 ± 7.4, p = 0.025). There was also a reduction in LVESD that became apparent in the sixth month (45.5 ± 15.1 versus 55.3 ± 9.8 mm, p = 0.047) and that was sustained after 18 months from MI (45.4 ± 11.7 versus 58.3 ± 8.9, p = 0.012). No significant differences in LVEF or LAD were noticed over time. Regarding clinical outcomes at 18 months, overall mortality (M) was 24% (9P) and 51% (19P) died or were hospitalized due to heart failure (MH). No difference was found between groups: M (p = 0.119), MH (p = 0.091).
Conclusions: This study reports better LV reshape effects after MI in P with non-ischemic etiology, with sustained improvement over time. However, no differences regarding mortality or hospitalization due to HF were apparent at the 18-month FU. Larger long-term studies are required to evaluate these results.

P 13. DELTA GLOBAL LONGITUDINAL STRAIN PREDICTS MAJOR CARDIOVASCULAR EVENTS AFTER A FIRST ACUTE CORONARY SYNDROME

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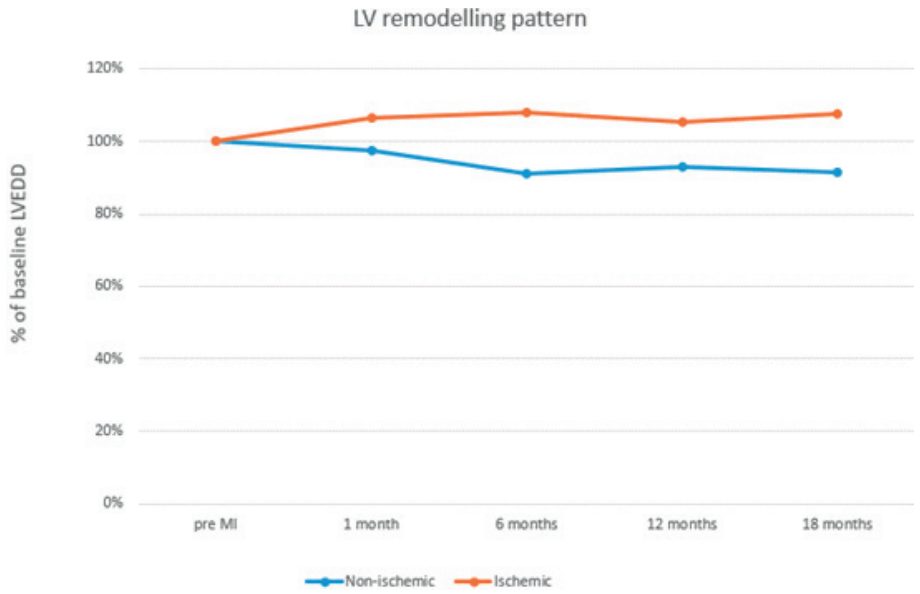
Introduction: Left ventricular ejection fraction (LVEF) is the classic parameter to characterize LV function and predict the occurrence of major adverse cardiac events (MACE) in pts with acute coronary syndrome (ACS). Assessment of LV deformation through quantification of strain by speckle-tracking is a technology with growing implementation in current practice whose prognostic value is increasingly recognized. The prognostic implication of changes in global longitudinal strain (GLS) after a first ACS is less explored.
Objectives: To evaluate whether LVEF, GLS, change in LVEF and change in GLS are associated with the occurrence of MACE after a first ACS.
Methods: We retrospectively analyzed consecutive pts admitted to our Department with a first ACS between June and December 2016. Routine TTEs were performed between 6 months and 1 year after the ACS. Follow-up data were collected until May 2018. MACE were defined as a composite of cardiovascular (CV) death, hospitalization due to CV causes, repeat ACS, repeat revascularization, and stroke. We collected the initial TTE LVEF (LVEF1) and LVEF at follow-up (LVEF2) and calculated initial GLS (GLS1) and



P 16 Figure

follow-up GLS (GLS2). Change in LVEF (deltaLVEF) and in GLS (deltaGLS) were calculated; positive values describe favourable changes. Descriptive statistics were calculated. Pearson's correlations compare continuous variables and one-way ANOVA compare variables between pts groups. A multiple linear regression was performed to study the predictive value of LVEF, GLS and delta scores on the occurrence of MACE.
Results: We analyzed 32 pts (81% men), whose mean age was 61 years. Mean LVEF1 was 47% (11-68) and mean GLS1 was -14% (-22 to -6.1). At follow-up, the mean LVEF2 was 56% (26-75) and mean GLS2 was -15% (-22.1 to -5.2). Mean deltaLVEF was +10% (-17 to +34) while mean deltaGLS was +1.37% (-6 to +14). There was a strong correlation between LVEF1 and GLS1 ($r = -0.73$, $p < 0.001$) and LVEF2 and GLS2 ($r = -0.82$, $p < 0.001$). One-way ANOVAs showed that pts who suffered MACE had significantly lower LVEF1 (35 vs 50, $p < 0.05$), LVEF2 (37 vs 61, $p < 0.001$), worse GLS2 (-9 vs -16, $p < 0.001$) and lower deltaGLS (-2.7 vs +2.3, $p < 0.05$). A stepwise multiple linear regression model showed that LVEF2 and deltaGLS explained 56% of the variance in MACE [$R2 = 0.559$, $F(2.29) = 4.9$, $p < 0.001$]. LVEF2 ($\beta = -0.612$, $p < 0.001$) and deltaGLS ($\beta = -0.312$, $p < 0.05$) significantly predicted the occurrence of MACE.
Conclusions: In a population of pts after the first ACS, LVEF and GLS were strongly correlated. However, overall positive changes in LVEF were mirrored by only marginal improvement in GLS during follow-up, suggesting that strain reflects persistent mechanical dysfunction unchanged by improvements in LVEF. While LVEF at follow-up predicted the occurrence of MACE, also did deltaGLS, suggesting a prognostic role for the dynamics of GLS after an ACS.

P 15. A NEW MODEL FOR ACCURATE NON-INVASIVE PREDICTION OF TRANSPULMONARY PEAK-TO-PEAK GRADIENTS

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Introduction: The threshold for intervention in congenital heart disease with right-sided obstructive lesions depends on the haemodynamic measurements obtained during the procedure. Therefore, the accurate non-invasive estimation of the stenosis is critical to avoid unnecessary invasive procedures. However, current non-invasive estimations lack precision. We sought to create a predictive model to fine tune these indications.
Methods: Retrospective review of all consecutive catheterizations for right-sided lesions in a single Paediatric Cardiology Department from 2016-2019. Data was gathered on demographics. Echocardiographic measurements included antegrade and tricuspid regurgitation peak instantaneous and mean estimated gradients, and end-systolic left ventricle eccentricity index (defined as the ratio between the anterior-inferior and septal-posterolateral cavity dimensions at the mid-ventricular level). Invasive measurements were peak-to-peak gradient and right to left ventricle pressure ratio. Statistical correlation and linear regression modelling were done using SPSS 20.
Results: We included 64 patients (56% male). Mean age was 8.3 years (SD 6.7), median weight was 22 (interquartile range 39). The main obstruction was located at the valve in 31 (48.4%) patients, branch pulmonary arteries in 15, right-sided conduit in 11 and supravalvular in 5. Diagnoses were pulmonary valve stenosis or atresia with intact ventricular septum (33 pts), operated tetralogy of Fallot and variants (17 pts), transposition of the great arteries (13 pts) and truncus arteriosus (6 pts). All five echocardiographic measurements had a significant ($p < 0.05$) but poor to moderate correlation (r value between 0.429 and 0.615) with invasive haemodynamic measurements. In the univariate analysis, echocardiography had a low predictive value of the invasive haemodynamics. In the subgroup analysis of the valvular obstruction patients, however, we were able to create a multivariate linear regression model that predicted accurately the peak-to-peak invasive gradient, using all five echocardiographic measurements, ($r^2 = 0.974$, $p = 0.014$). Associations in the other subgroups were not as strong.
Conclusions: In our sample, accurate peak-to-peak gradient prediction was possible using a regression model in the valvular obstruction subgroup. A larger prospective study is required to validate the usefulness of our model to plan invasive catheterization in patients with right-sided obstructive lesions.

Painel 4 - Arritmologia 1

P 18. NON-INVASIVE MAPPING: MINIMAL NUMBER OF LEADS NEEDED TO OBTAIN A GOOD SPATIAL RESOLUTION IS HIGHER FOR ATRIAL ARRHYTHMIAS

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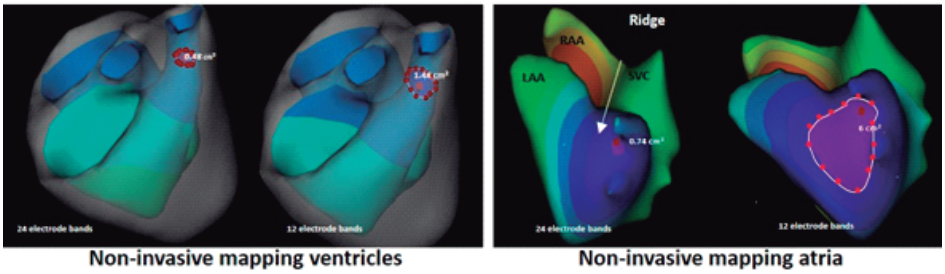
[1]Centro Hospitalar de Setúbal, EPE/Hospital de São Bernardo. [2]Centro Hospitalar de Lisboa Ocidental, EPE/Hospital de Santa Cruz. [3]Hospital da Luz Lisboa. [4]Unica-Unidade de imagem cardiovascular por TC e RM do Hospital da Luz Lisboa.

Introduction: Non-invasive mapping systems (ECGI) has already proven good accuracy for mapping different arrhythmic substrates.

Table

	PACs (N=6)	PVCs (N=14)	P value
Concordance with maximal electrodes, n (%)	6 (100)	11 (79)	0.521
Concordance with half the electrodes, n (%)	5 (83)	11 (79)	0.999
Concordance with 6 electrodes, n (%)	1(16%)	9 (64%)	0.141
Concordance with 12 leads, n (%)	0(0)	0(0)	
EAS area with maximal electrodes in cm^2, median (IQR)	0.95 (0.63-3.26)	0.64 (0.5-0.9)	P=0.179
EAS with half the electrodes in cm^2, median (IQR)	5.6 (2.9-10.3)	1.6 (1.4-2.6)	**P=0.041**
EAS area with 6 electrodes in cm^2, median (IQR)*		4.3 (3.2-5.4)	

*in case of concordance



Non-invasive mapping ventricles Non-invasive mapping atria

P 18 Figure

Objectives: Assess what is the minimal number of leads needed to obtain a precise mapping when using the ECGI.
Methods: We enrolled 20 patients (12 male, median age 61 (50-67) years) referred to our center for catheter ablation; 14 with premature ventricular contractions (PVCs), and 6 with premature atrial contractions (PACs). Patients underwent pre-procedural ECGI using the AMYCARD system, that uses up to 224 leads. All patients underwent mapping and ablation with the magnetic navigation system Stereotaxis and the Carto system. We analysed the number of recording leads used to construct the ECGI activation map. We then reprocessed the exam, with half the number of electrode bands; only 6 electrode bands (2 anterior, 2 posterior and 1 each side of the torso); and finally, with the standard 12 lead ECG. We evaluated the concordance with Carto and spatial resolution of the ECGI map. An area for the earliest activation site (EAS) ≤ 1.2 cm^2 is accepted as good resolution. Using a ROC curve, we assessed the minimal number of leads necessary to obtain a good spatial resolution.
Results: The median number of surface leads for the initial map was 143 (127-170), which did not differ between PACs or PVCs. The results are presented in the Table. According to the ROC curve the minimal number of electrodes to have a good spatial resolution was 80 for PACs (AUC 0.965) and 60 for PVCs (AUC 0.888).
Conclusions: Reducing the number of leads caused an increase in the area of EAS and a lower concordance rate, that was worse in case of atrial arrhythmias. However, the number of leads needed to achieve a good spatial resolution was much less than the maximal number available.

P 19. A NOVEL SIMPLIFIED APPROACH TO RADIOFREQUENCY CATHETER ABLATION OF IDIOPATHIC RIGHT VENTRICULAR OUTFLOW TRACT PREMATURE VENTRICULAR CONTRACTIONS

Leonor Parreira[1], Rita Marinheiro[1], Pedro Carmo[2], Dinis Mesquita[1], José Farinha[1], Pedro Amador[1], José Venâncio[1], Ana Soares[3], Diogo Cavaco[2], Lia Marques[2], Joana Pinho[3], Pedro Adragão[2]

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Introduction: Ablation of premature ventricular contractions (PVCs) is based on activation mapping. This strategy is impaired by the absence or paucity of PVCs on the day of the procedure. Frequently, in sinus rhythm (SR) isolated diastolic potentials are present at the successful ablation site, although their meaning is still a matter of debate.
Objectives: We intended to study a simplified approach based on mapping of diastolic potentials for ablation of idiopathic right ventricular outflow tract (RVOT) PVCs in patients that present with a low PVC burden during the procedure.
Methods: We included 10 consecutive patients referred for ablation of frequent (> 10,000/24 hours) idiopathic PVCs from the RVOT that present with less than 2 PVCs/min in the beginning of the procedure and 10 controls without PVCs. The ablation was based on fast mapping of the RVOT in SR looking for diastolic potentials, defined as isolated small amplitude potentials occurring after the T wave of the surface ECG in SR (Figure). The area with diastolic potentials was marked and a reduced activation mapping of the PVCs was done in the area. We evaluated the procedure, mapping, fluoroscopy and radiofrequency (RF) application times. The number of points used for the maps, the area of diastolic potentials, local activation time and success rate. Values are presented as median (IQR).
Results: The number of PVCs during the procedure was 1 (0.153-1.62)/min. All patients in the study group (age 44 (26-62) years, 6 males) had diastolic potentials in the RVOT. The procedure time was 107 (84-132) min; mapping time was 30 (19-52) min; fluoroscopy time was 5.5 (4.3-13) min and RF time was 450 (336-675) sec. The number of points sampled per RVOT map in SR was 634 (450-830) and during the PVC was 24 (18-31), the area with diastolic potentials was 27 (18-68) mm^2 and the local activation time at the successful ablation site was 39 (44-49) ms before the beginning of the QRS. The acute success rate was 100%. None of the control group (median age 40 (33-65) years, 6 male) had diastolic potentials in the RVOT, the number of points sampled per RVOT map in SR was 250 (182-268).
Conclusions: In these group of patients with very low PVC burden during the procedure, this approach partially based on substrate mapping, made ablation of the PVCs feasible, in a fast and efficient way.

P 20. MAPPING THE REPOLARIZATION NONINVASIVELY WITH THE EPICARDIAL AND ENDOCARDIAL MAPPING SYSTEM- A VALIDATION STUDY

Leonor Parreira[1], Maria Narciso[2], Pedro Carmo[3], Sílvia Nunes[2], Joana Pinho[2], António Ferreira[4], Pedro Gonçalves[3], Hugo Marques[2], Margarita Budanova[2], Stepan Zubarev[2], Diogo Cavaco[3], Pedro Adragão[3]

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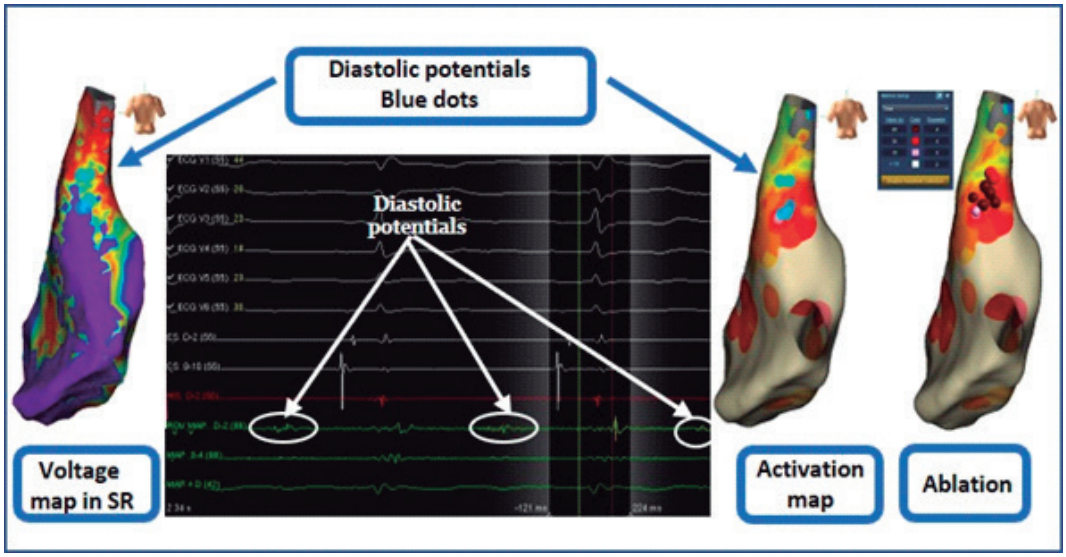
Introduction and objectives: The non-invasive endocardial and epicardial electrocardiographic imaging system (ECGI) is capable of displaying an automatic panoramic view of the ventricular repolarization. It is simple and



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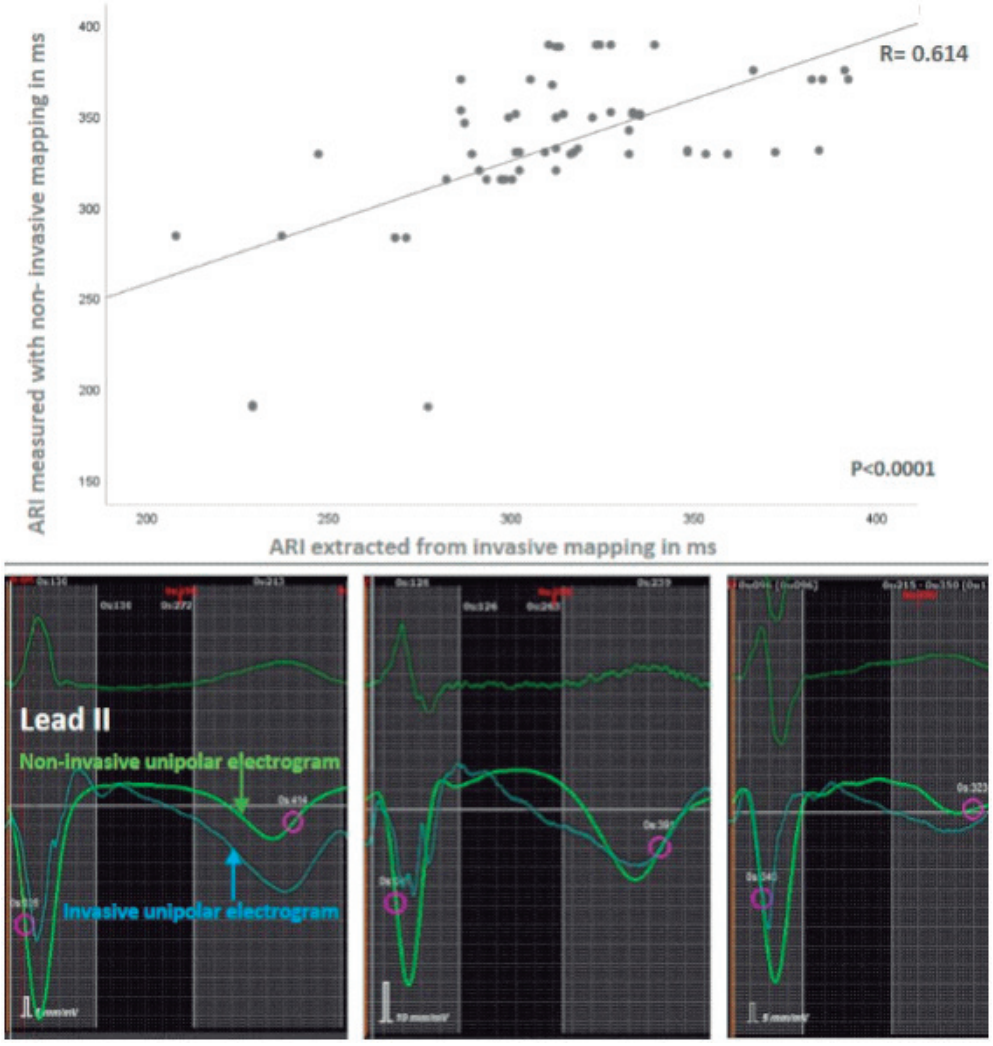

P 20 Figure

can provide valuable information into the arrhythmia substrate. However, although this method has been extensively validated for the assessment of depolarization, regarding repolarization there is a lack of validation studies. The aim of this study was to validate the measurements obtained with the ECGI by comparison with the ones obtained invasively with the electroanatomical mapping system.
Methods: We studied the repolarization pattern in patients that underwent ablation of premature ventricular contractions of the right ventricular outflow tract (RVOT) and performed an ECGI exam before the procedure. The RVOT was divided into 8 segments and the repolarization across the RVOT was measured by the activation recovery interval (ARI), calculated as the difference between the recovery time (RT) and the activation time (AT). The AT was defined as the time of maximal negative slope of the electrogram (EGM) during QRS, and the RT as the time of maximal positive slope of the EGM during T wave. These intervals were automatically obtained with the ECGI and calculated from the extracted invasive unipolar electrograms at the exact same site, using the MATLAB. We assessed the correlation between the measurements obtained with both methods.
Results: We assessed the ARI in 64 segments in 8 patients, median age 50 (42-63) years, 4 males. The median absolute value of ARI measured with the ECGI was significantly higher than the ARI assessed from the intracardiac unipolar electrogram, respectively, 332 (320-364) ms and 312 (292-333) ms, $p < 0.001$. However, we found a good correlation between both forms of measurement ($R = 0.614$, $p < 0.001$) (Figure).
Conclusions: The automatic measurement of ARI with the ECGI showed a good correlation with the intracardiac measurements.

P 21. ARRYTHMIA-INDUCED CARDIOMYOPATHY: CHARACTERIZATION AND OUTCOMES OF PATIENTS WITH RHYTHM OR RATE CONTROL IN A POPULATION WITH COMPLETE SUSTAINED RECOVERY OF FUNCTION.

João Grade Santos[1], Otilia Simões[1], Paula Fazendas[2], Alexandra Briosa[1], Ana Rita Pereira[1], Ana Marques[1], Daniel Sebaiti[1], Sofia Alegria[2], Sofia Almeida[1], Hélder Pereira[2]

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Introduction: Arrhythmia-induced cardiomyopathy (AIC) is characterized by left ventricular systolic dysfunction caused by tachyarrhythmia, being atrial fibrillation (AF) the most common in clinical practice. The hallmark of AIC is its reversibility once the arrhythmia is properly controlled.
Objectives: Our aim was to the evaluate the characteristics and outcomes of patients with confirmed AIC and complete sustained recovery of function.
Methods: Retrospective analysis was obtained of patients discharged from the Cardiology department of a tertiary hospital between 2011 and June 2016 with a confirmed diagnosis of AIC, either inward or during follow up, and sustained recovery of function at 1 and 5 years. Medical records were analysed for demographic and outcome data.
Results: Twenty four (24) patients fulfilled all inclusion criteria and were analysed. The mean age was 61 ± 11 years, with a male preponderance (75%) and an average body mass index (BMI) of 30.5 ± 1.57. Paroxysmal

AF was identified in 58.3%; persistent AF in 29.2% and permanent AF was assumed in 12.5%. At admission, a severely compromised ejection fraction (EF) was identified in 54.2% vs 45.8% with moderately compromised EF. In 62.5% of patients a rhythm control strategy was used, either at admission or follow up (with 41.6% of patients undergoing electrical cardioversion and 16.7% chemical cardioversion), with 86% success rate. At 1 year 37.5% of patients remained in sinus rhythm (SR) (vs 54% at AF) and at 5 years 12.5% (vs 54% at AF). The remainders were lost to follow up. Comparing patients at one year who where in SR, we found that patients had significantly lower BMI (26.9 ± 2.36 vs 33.1 ± 1.81; T Student test p = 0.04). We found no difference in age, sex or presence of comorbidities such as hypertension, diabetes mellitus, chronic kidney disease or lung disease in both groups. Furthermore patients in SR at 1 year had significantly higher EF (59, IQR 14 vs 48, IQR22; Mann Whitney U test p = 0.04). Regarding hospital admissions at 1 and 5 years we found no difference in sex, age or BMI. SR and EF, at admission and at 1 year, did not predict hospitalizations at 5 years.
Conclusions: In a population with AIC and complete sustained recovery of function, with a balanced distribution of maintenance of SR and rate control, a lower BMI predicted maintenance of sinus rhythm at year and these patients had higher EF than those in AF.

P 22. PERMANENT PACEMAKER IMPLANTATION AFTER TAVI-LONG-TERM DEPENDENCY OR RHYTHM RECOVERY?

Tânia Filipa Galvão Proença[1], Ricardo Alves Pinto[2], Miguel Martins De Carvalho[2], Pedro Diogo Grilo[2], Sofia Torres[2], Carlos Xavier Resende[2], Catarina Costa[2], Filipa Amador[2], João Calvão[2], Alzira Nunes[2], Paulo Maia Araújo[2], Roberto Rodrigues Pinto[1], Marta Tavares Silva[2], Gonçalo Pestana[2], Sílvia Oliveira[2], Raquel Mota Garcia[2], Ana Lebreiro[2], Luís Adão[2], João Carlos Silva[2], Júlia Maciel[2]

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Introduction: The occurrence of conduction disturbances remains the most frequent complication after transcatheter aortic valve implantation (TAVI). There is a lack of consensus on the management of these conduction disturbances, which has translated into significant differences in permanent pacemaker (PPM) implantation rates between centers.
Objectives: To characterize patients who implant PPM after TAVI due to new onset of conduction disturbances.
Methods: We retrospectively analyzed consecutive patients who underwent TAVI at a Portuguese tertiary center from October 2014 to November 2019. Clinical and ECG data was collected at presentation and up to 1 year afterwards, including systematic interrogation of implanted PPM at least twice after TAVI.
Results: 341 patients without previous PPM underwent TAVI (57% female, mean age 81 ± 8 years). 50% exhibited *de novo* conduction disturbance. The most frequent disturbance was *de novo* left bundle branch block (LBBB) (n = 109, 32%) and 12.3% of patients (n = 42) developed advanced AV block (AVB). Three cases of advanced atrioventricular block (AVB) reverted early during admission (less than 24h) and 56% LBBB reverted up to 6 months. After TAVI, 19% of patients implanted a PPM (n = 63), with a median time to implantation of 4 days. The main reason was advanced AVB (64%) followed by LBBB plus 1st degree AVB (21%), isolated LBBB (5%) and alternating bundle branch block (ABBB) (5%). At first PPM evaluation, patients with advanced AVB had a median percentage of ventricular pacing (VP) of 78% (43% had VP > 90% and 13% < 1%); one year after-TAVI, the median percentage of VP was 83%. Concerning patients with LBBB plus 1st degree AVB, median VP at first assessment was 6% (43% of patients had < 1% of VP, while in patients with isolated LBBB or ABBB median VP was 13% and 11% at first evaluation, respectively.
Conclusions: LBBB is the most frequent *de novo* conduction disturbance post-TAVI, with more than half of the cases resolving in the first 6 months. Advanced AVB is the main cause for PPM implantation after TAVI and is associated with a high percentage of ventricular pacing at 1-year follow-up, unlike patients with milder degrees of conduction delay.

P 23. SUPRAVENTRICULAR ECTOPIC ACTIVITY AS A PREDICTOR OF ATRIAL FIBRILLATION-WHAT WE DIDN'T SEE 10 YEARS AGO

Tânia Filipa Galvão Proença[1], Ricardo Alves Pinto[2], Miguel Martins De Carvalho[2], Alzira Nunes[2], Paulo Maia Araújo[2], Carlos Xavier Resende[2], Pedro Diogo Grilo[2], Sofia Torres[2], Mariana Paiva[2], Ana Lebreiro[2], Paulo Chaves[2], Manuel Campelo [1], Carla Sousa[2], Júlia Maciel[2]

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Introduction: Atrial fibrillation (AF) induced cardioembolic stroke is one of the major causes of all ischemic strokes. Excessive supraventricular ectopic activity (ESVEA), defined by ≥ 500 premature atrial contractions per 24 hours or any sustained tachycardia episodes, is also a stroke risk factor, probably related to the risk of develop AF. Diagnosing paroxysmal atrial fibrillation (PAF) has a prognostic impact in these patients.
Methods: Patients in sinus rhythm who performed Holter between October 2009 and October 2011 in the setting of post stroke or TIA were included. These patients were followed for 8 to 10 years. Clinical and echocardiographic data were collected. Patients with AF were compared to those without AF. Statistical analysis was conducted on IBM SPSS® Statistics software.
Results: In our population of 104 patients, 54% were male, with a mean age of 63.8 ± 14.7 years at the time of the event. In relation to the cardiovascular risk factors, 59% had hypertension, 47% dyslipidemia, 14% had diabetes, 44% were smokers or previous smokers. 67% of patients were high consumers of alcohol. 79.8% had a stroke and 21.2% a TIA. 24-hour Holter monitoring revealed ESVEA in 13.5% of the patients and PAF in 1.9%. At a follow-up of 8-10 years, new onset AF was detected in 11.5% of the patients; these patients had similar mortality comparing to those in sustained sinus rhythm (21.2% vs 16.7%, p = 0.724). Alcohol intake, an established risk factor for development of AF, was associated with a non-significant increase of AF (17.3% vs 11.5%) but not related to ESVEA (16% vs 15.4%). We found a statistically significant difference between patients with and without ESVEA concerning to new onset of AF (35.7% vs 8.0%, p = 0.010). ESVEA seems to be related with a higher mortality at a long follow-up, although this difference wasn't statistically significant (35.7% vs 18.2%, p = 0.132).
Conclusions: Our study showed that excessive supraventricular ectopic activity is a strong predictor of new onset AF. These findings demonstrate that Holter monitoring could be an important tool not only to diagnose AF but also to identify patients in risk of develop AF due to ESVEA.

Painel 5 - Arritmologia 2

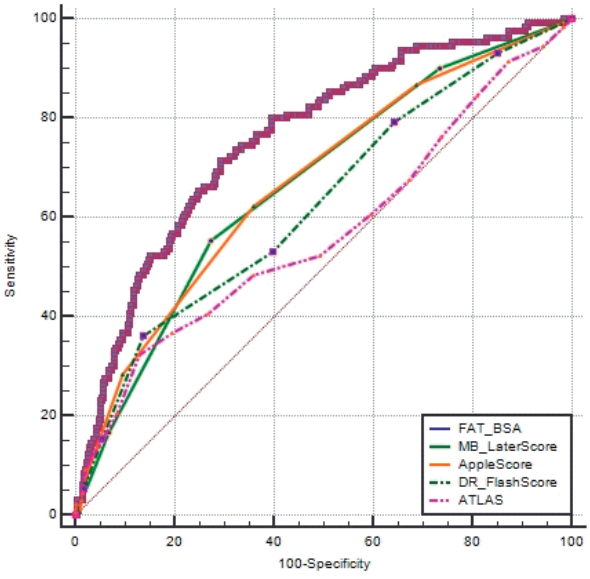
P 24. EPICARDIAL FAT VOLUME OUTPERFORMS CLASSIC CLINICAL SCORES FOR PREDICTING ATRIAL FIBRILLATION RELAPSE AFTER PULMONARY VEIN ISOLATION

Daniel Matos[1], António Miguel Ferreira[1], Diogo Cavaco[1], Adriano Sousa[2], Pedro Freitas[1], Gustavo Rodrigues[1], Joao Carmo[1], Joao Abecasis[1], Francisco Costa[1], Ana Coutinho Santos[3], Pedro Carmo[1], Carla Saraiva[1], Francisco Morgado[1], Miguel Mendes[1], Pedro Adragão[1]

[1]Centro Hospitalar de Lisboa Ocidental, EPE/Hospital de Santa Cruz. [2]Hospital Dr. Nélio Mendonça-Hospital Central do Funchal. [3]Hospital Santa Cruz.

Introduction: Epicardial adipose tissue has been implicated in the pathophysiology of atrial fibrillation (AF), but its relevance to clinical practice remains uncertain. The aim of this study was to compare the performance of the amount of epicardial fat with previously published clinical scores of AF-relapse risk after pulmonary vein isolation (PVI).
Methods: We assessed 575 patients (354 men, age 61 ± 11 years, 449 paroxysmal AF) with symptomatic AF undergoing cardiac CT prior to a PVI

procedure. Epicardial fat was quantified on contrast-enhanced images using a new simplified semi-automated method. The study endpoint was symptomatic and/or documented AF recurrence at 12 months. Epicardial fat was compared against the following scores: MB-LATER, APPLE, DR-FLASH, and ATLAS.
Results: Median follow-up was of 22 months (IQR 12-35), 232 patients relapsed, 130 patients (27%) within the first 12 months. After adjustment for BMI and other univariate predictors of relapse, three variables emerged independently associated with time to AF recurrence: non-paroxysmal AF (HR 2.03, 95%CI: 1.53-2.69, p < 0.001), indexed left atrial (LA) volume (HR 1.02 per mL/m2, 95%CI: 1.01-1.02, p < 0.001), and indexed pericardial fat volume (HR 1.55 per mL/m2, 95%CI: 1.43-1.67, p < 0.001). Based on the ROC curve analysis, the epicardial fat showed greater discriminative power, with a C-statistic of 0.76 (95%CI: 0.71-0.81) against 0.67 (p = 0.007 for pairwise comparison of ROC curves), 0.67 (p = 0.01), 0.63 (p < 0.001) and 0.57 (p < 0.001) for the MB-LATER, APPLE, DR-FLASH and ATLAS scores, respectively. The C-statistic for indexed LA volume and non-paroxysmal AF AUC were of 0.63 (p < 0.001) and 0.61 (p < 0.001), respectively.



Conclusions: Pericardial fat volume is a strong independent predictor of AF relapse after PVI, outperforming clinical scores of post-PVI AF. The underlying mechanisms of this association deserve further study.

P 25. EPICARDIAL ADIPOSE TISSUE AND ATRIAL FIBRILLATION: GUILTY AS CHARGED OR GUILTY BY ASSOCIATION?

João Adriano Sousa[1], Daniel Matos[2], António Ferreira[3], João Abecasis[2], Carla Matias[2], Pedro Freitas[2], João Carmo[2], Salomé Carvalho[2], Gustavo Rodrigues[2], Anaí Durazzo[2], Francisco M. Costa[2], Pedro Carmo[2], Francisco Morgado[2], Diogo Cavaco[2], Pedro Adragão[2]

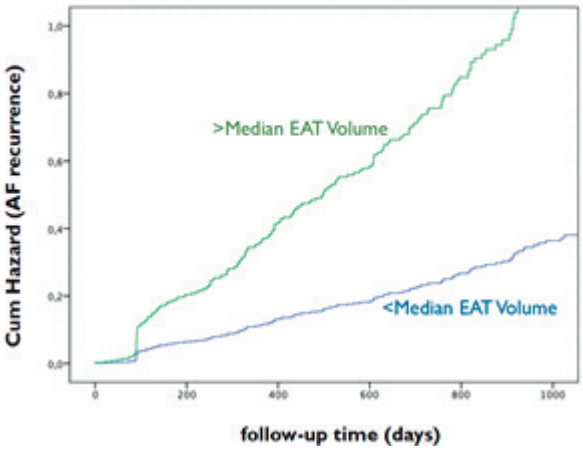
[1]Hospital Dr. Nélio Mendonça-Hospital Central do Funchal. [2]Centro Hospitalar de Lisboa Ocidental, EPE/Hospital de Santa Cruz. [3]Unica-Unidade de imagem cardiovascular por TC e RM do Hospital da Luz Lisboa.

Introduction: Epicardial adipose tissue (EAT) has been linked to the presence and burden of atrial fibrillation (AF). However, it is still unclear whether this relationship is causal or simply a surrogate marker of other risk factors commonly associated with AF.
Objectives: The purpose of this study was to assess the relationship between these factors and EAT, and to compare their performance in predicting AF recurrence after an ablation procedure.
Methods: We assessed 575 consecutive patients (mean age 61 ± 11 years, 62% male) undergoing AF ablation preceded by cardiac CT in a high-volume ablation center. EAT was measured on cardiac CT using a modified simplified method. Patients were divided into 2 groups (above vs below the median EAT volume). Cox regression was used to assess the relationship between epicardial fat, risk factors, and AF relapse.
Results: Patients with above-median EAT volume were older (p < 0.001), more often male (OR 1.7, p = 0.002), had higher body mass index (p < 0.001), and higher prevalence of smoking (OR 1.8, p = 0.002), hypertension (OR 2.2, p < 0.001), diabetes (OR 2.0, p = 0.01) and dyslipidemia (OR 1.8, p < 0.001). Non-paroxysmal forms of AF were also more commonly found in those with above-median EAT volume. During a median follow-up of 18 months, 232 patients (40.3%) suffered AF recurrence. After adjustment for BMI and other univariate predictors of relapse, three variables emerged independently associated with time to AF recurrence: non-paroxysmal AF (HR 2.1, 95%CI: 1.5-2.7, p < 0.001), indexed left atrial (LA) volume (HR 1.006, 95%CI: 1.002-1.011, p < 0.001), and indexed epicardial fat volume (HR 1.87, 95%CI: 1.66-2.1, p < 0.001). None of the classic cardiovascular risk factors were an independent predictor of AF recurrence over time (all p > 0.10).
Conclusions: Classic cardiovascular risk factors are more prevalent in patients with higher amounts of epicardial fat. However, unlike these risk factors, EAT is a powerful predictor of AF recurrence after ablation. These findings suggest that EAT is not merely a surrogate marker, but an important participant in the pathophysiology of AF.

Baseline characteristics of our population

	< Median EATVol	> Median EATVol	OR (CI95%)	p-value
Age (years)	58.6±12.3	64.1±9.4	-	<0.001
Gender (♂)	55.4%	67.7%	**1.7** (1.2-2.4)	0.002
BMI (Kg/m²)	26.8±4.0	29.3±4.0	-	<0.001
Smoking	19.2%	30.2%	**1.8** (1.2-2.7)	0.002
Hypertension	51.9%	70.5%	**2.2** (1.6-3.1)	<0.001
Diabetes	7.3%	13.5%	**2.0** (1.1-3.5)	0.015
Dyslipidaemia	41.8%	56.9%	**1.8** (1.3-2.6)	<0.001
Obesity (BMI>30)	21.6%	41.8%	**2.6** (1.8-3.8)	<0.001
Non-paroxysmal AF	17.1%	26.7%	**1.8** (1.2-2.7)	0.005

COX regression for AF recurrence over time



P 25 Figure

P 26. RANOLAZINE AS YOU HAVE NEVER SEEN IT BEFORE: AN ANTIARRHYTHMIC FOR ATRIAL FIBRILLATION

José Pedro Sousa[1], Luís Puga[1], Joana Ribeiro[2], João Gameiro Lopes[2], Carolina Saleiro[1], Rita Gomes[2], Diana Campos[2], Carolina Lourenço[2], Lino Gonçalves[2]

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Introduction: Currently available pharmacological options for rhythm control in atrial fibrillation (AF) are overshadowed by suboptimal efficacy and both frequent and potentially severe adverse events. Recent studies have added evidence to the hypothesis that ranolazine might exert antiarrhythmic effects, particularly in atrial tachyarrhythmias.
Objectives: To perform a systematic review with meta-analysis in order to ascertain the potential role of ranolazine in the management of AF.
Methods: We systematically searched MEDLINE, Embase and Scopus for randomized controlled trials (RCTs) and cohort studies addressing the association between ranolazine and AF outcomes, published up until December 1, 2019. The primary endpoint was incidence of AF, which was evaluated under a ranolazine versus placebo design. In this regard, patients in the setting of post-cardiac surgery were further investigated separately. Secondary endpoints included AF cardioversion outcomes, which were addressed through comparison between ranolazine plus amiodarone and amiodarone alone for proportional efficacy and temporal requirements (time-to-cardioversion). The latter analysis was also undertaken in a dose-sensitive fashion (≤ 1,000 mg vs 1,500 mg of ranolazine). Tertiary endpoints covered AF burden and episodes, in paroxysmal AF patients, and safety outcomes, namely death, QTc interval prolongation and hypotension. Study-specific odds ratios (ORs) were pooled using meta-analytic techniques with a random-effects model.
Results: A total of 10 RCTs comprising 8,109 participants and 3 cohort studies encompassing 37,112 patients were regarded as eligible for evaluation. Ranolazine was found to attenuate patients' odds of developing AF (OR 0.53, 95%CI 0.41-0.69, p < 0.001, i^2 = 58%). This effect held true, with an even larger effect size, in the context of post-cardiac surgery (OR 0.34, 95%CI 0.16-0.72, p = 0.005, i^2 = 64%). Ranolazine increased the chances of successful AF cardioversion when added to amiodarone over amiodarone alone (OR 6.67, 95%CI 1.49-29.89, p = 0.01, i^2 = 76%), while significantly reducing time-to-cardioversion [SMD -9.54h, 95%CI -13.3--5.75, p < 0.001, i^2 = 99%]. Interestingly, cardioversion was faster with ≤ 1,000 mg of ranolazine (SMD -13.16h, 95%CI -15.07--11.25, p < 0.001, i^2 = 95%) than with 1,500 mg (SMD -3.57h, 95%CI -5.06--2.08, p < 0.001, i^2 = 23%). In paroxysmal AF, ranolazine was also proved to significantly reduce both AF burden and episodes. There were no safety signals regarding mortality odds, QTc interval prolongation (mostly clinically insignificant) and hypotension (mostly transitory).
Conclusions: Current evidence suggests that ranolazine provides an effective and safe option for a chemical rhythm control strategy in AF management, a field in which medical breakthroughs are desperately needed.

P 27. PROTON PUMP INHIBITORS IN PATIENTS WITH ATRIAL FIBRILLATION AND NEW-ONSET ACUTE HEART FAILURE

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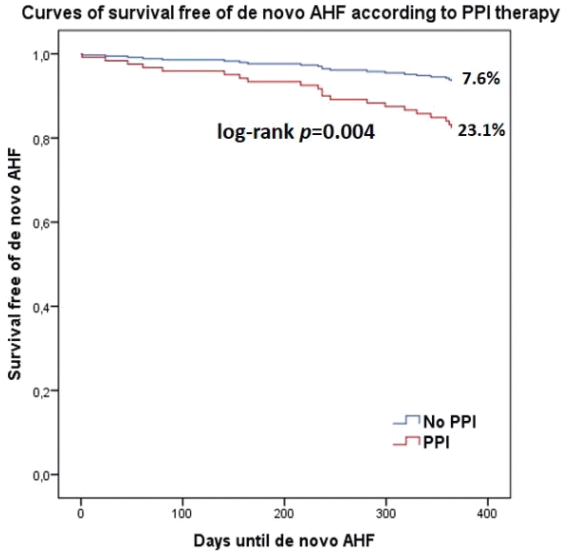
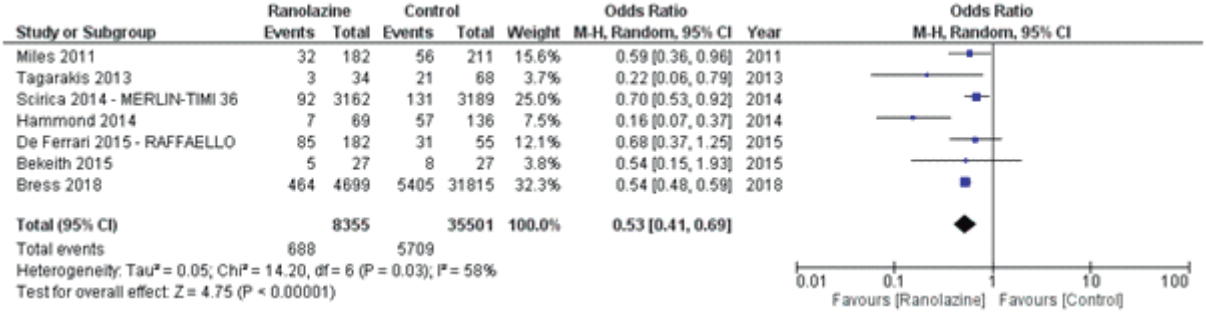
Hospital Fernando Fonseca, EPE.

Introduction: Proton pump inhibitors (PPIs) are frequently used among patients with atrial fibrillation (AF). In patients under PPI therapy, anaemia due to both iron and vitamin B12 deficiencies may ensue.
Objectives: We aimed to evaluate the incidence of hospitalization for de novo acute heart failure (AHF) at 12-month follow-up in patients with atrial fibrillation who were under PPI therapy.



Methods: We included retrospectively 2181 consecutive patients with AF who were evaluated in our Emergency Department (ED) in a 12 month period. Among them, 423 patients were admitted for in-hospital management. Patients who had previous known heart failure (n = 101), who were under antiplatelet therapy (aspirin, clopidogrel and/or ticagrelor) (n = 109) and those with history of dyspepsia, gastroesophageal reflux, peptic ulcer disease or gastrointestinal bleeding (n = 30) were excluded. We recorded the haematocrit (Htc) nadir during in-hospital stay. We further determined the proportion of PPI prescription at discharge. Primary outcome was the incidence of hospitalization for de novo AHF 12 months after discharge.
Results: We included 172 AF patients who were successfully discharged and followed for 12 months (mean age of 69.3 ± 12.8 years, 37.2% males). A total of 30.8% (n = 53) had a PPI prescription at discharge. In all of these cases, PPIs were also prescribed during in-hospital stay. Nadir Htc



P 26 Figure

during hospitalization was significantly lower in patients under PPI therapy (median of 37.4 vs 40.4%; p = 0.003). Kaplan-Meier analysis (Figure) showed that patients with AF who were taking PPIs had a higher incidence of de novo AHF 12 months after discharge (23.1 vs 7.6%; log-rank p = 0.004). Cox regression analysis controlled for age and chronic kidney disease showed that PPI therapy was an independent predictor of de novo AHF (HR 2.90; 95%CI 1.22-6.90; p = 0.016).
Conclusions: Approximately one third of the AF patients were treated with PPI, the vast majority without formal indication. PPI overuse was associated with anaemia and hospitalization for de novo acute heart failure and therefore its use must be carefully weighted in clinical practice.

P 28. SURGICAL ABLATION OF ATRIAL FIBRILLATION AND LEFT APPENDAGE OCCLUSION BY A TOTALLY VIDEOTHORACOSCOPIC APPROACH- A PARADIGM SHIFT?

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Introduction: Atrial Fibrillation leads to increased morbidity and mortality. Pharmacological and catheter therapies are unsatisfactory and with serious adverse effects. Cox- Maze III/IV, with the highest rates of success, had not been widely adopted because of complexity and low reproducibility.
Methods: We performed a descriptive analysis of the 15 patients that have been submitted to surgical ablation of atrial fibrillation and occlusion of the left appendage by a totally thoracoscopic approach, since we started using this technique in November 2017. We describe the surgical technique and our results, including duration of surgery, hospital stay, complications and conversion to sinus rhythm immediately after surgery, at one month, 6, 12 and 18 months of follow-up. We aim to evaluate if the results in our institution are comparable with the results of high volume centers.
Results: Of 15 patients, with ages between 39 and 75 years old, 53% (n = 8) are female. The mean time since the diagnosis of atrial fibrillation was 5.75 years. All had been submitted to prior catheter ablation (mean of 2 attempts). The mean diameter and volume of left atrium was 42 mm and 70 ml (43 ml/m^2). The mean duration of surgery was 2hours and 22 minutes. In only one patient we had to convert to a median sternotomy. The mean hospital stay was 4.8 days. Mean time of follow-up is 12 months. All patients were maintained on anti-coagulation after the surgery. At one month of follow-up, 91% were in sinus rhythm. At 6 months follow- up, 90% were in sinus rhythm. At one year, 80% were in sinus rhythm. Between patients that achieved 18 months of follow-up, 80% were in sinus rhythm.
Conclusions: We believe it represents a real benefit for those with multiple attempts of catheter ablation without success. It is a reproducible technique and it has a fast learning curve with promising results, even in low volume centers. It may represent a paradigm shift but it demands an active program.

P 29. ATRIAL FRIBILLATION, IS SURGICAL TREATMENT AN EFFICIENT OPTION?

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Introduction: Atrial Fibrillation (AF) is the most common cardiac arrhythmia, and its prevalence is increasing worldwide. It remains one of the major causes of stroke, heart failure, sudden death, and cardiovascular morbidity. Surgical ablation is currently considered one of the most effective treatments, with some of the best long term results even in the most "difficult" types of AF. Recent international guidelines advocate it for patients with symptomatic AF be as stand-alone or concomitant surgery. Despite this, it is still underperformed in our country.
Objectives: Evaluate the early results of an AF ablation surgery program.
Methods: Unicentric retrospective study, where all patients submitted to some form of surgical AF ablation (concomitant or stand-alone) from March 2016 till October 2019 were included. The indication for stand-alone surgery was symptomatic AF relapse after catheter ablation, and for concomitant surgery, symptomatic AF associated with structural heart disease. Cryoablation was used in open-right or left atrium surgery and radiofrequency in the other cases. The main primary outcome was establishment and duration of sinus rhythm in the course of follow-up. Mortality and morbidity (stroke, pace-maker implantation) were also evaluated.
Results: Fifty one patients with mean age of 62 years (37-79 years) were submitted to surgical AF ablation. AF type was paroxysmal in 23 (45.1%), persistent in 8 (15.7%) and long-standing persistent in 20 (39.2%). Stand-alone AF ablation surgery was performed in 14 patients (27.5%) and in 37 patients (72.5%) was associated with concomitant procedures: mitral surgery (n = 15), tricuspid surgery (n = 4), aortic valve surgery (n = 7), Morrow (n = 1), CABG (n = 4) and double valve surgery (n = 6). Regarding complications: three (5.9%) definitive pacemaker implantations were needed and one (2.0%) early death was observed. Sinus rhythm at hospital discharge was present in 42 patients (82.4%). Mean follow-up time was 13 months. Thirty-four patients (68%) had at least one long term monitoring exam during follow-up (holter 24h, 7 days monitoring, pacemaker interrogation), and, till the last overall evaluation, 36 patients (72%) had no evidence of AF. There were no strokes or late mortality.
Conclusions: Surgical AF ablation is a safe procedure with better results compared with those reported for catheter ablation. We demonstrate that even in an initial phase of a surgical program, results are satisfactory and encouraging, and during follow-up we had very few complications. Finally, surgical AF ablation is still an underused procedure which has to grow to keep up with demand of AF treatment.

Painel 6 - Doença Coronária 1

P 30. PREDICTORS OF ADVERSE IN-HOSPITAL PROGNOSIS IN NSTEMI WITH RBBB

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Introduction: Recent recommendations regarding myocardial infarction (MI) underline the adverse prognosis associated with right bundle branch block (RBBB). However, it is unclear if this is due to a more difficult and late diagnosis or to the clinical severity inherent to the patients (pts) with this electrocardiographic pattern.
Objectives: To characterize a population with non-ST segment elevation MI (NSTEMI) and RBBB and find predictors of worse in-hospital prognosis.
Methods: retrospective analysis of pts with NSTEMI included in a multicentric registry of Acute Coronary Syndromes, comparing pts with RBBB (group A) and pts without RBBB (group B), regarding clinical and demographic variables, diagnostic and therapeutic approaches. The primary endpoint was in-hospital heart failure, electrical or mechanical complications or mortality.
Results: We included 9,375 pts, 686 pts in group A and 8,689 pts in group B. Pts in group A were more likely to be male (Odds Ratio -OR- 1.58, p < 0.001) and over 75 years old (OR 2.77, p < 0.001). Also, they were more prone to have cardiovascular risk factors (hypertension-OR 1.8, p < 0.001, diabetes-OR 1.32, p < 0.001), history of coronary artery disease (stable angina-OR 1.26, p = 0.007, previous MI-OR 1.31, p = 0.002 and revascularization, either percutaneous-OR 1.27, p = 0.016 or surgical-OR 1.99, p < 0.001), stroke (OR 1.53, p < 0.001), chronic kidney disease (OR 1.69, p < 0.001) and cancer (OR 1.42, p = 0.025). There were no differences between time from onset of symptoms and first

medical contact or hospital admission between groups. Upon admission, pts in group A presented more frequently with hypotension (OR 1.73, p = 0.026), Killip class ≥ II (OR 1.71, p < 0.001) and atrial fibrillation (p < 0.001). The use of inotropes (p < 0.001), non-invasive (p = 0.008) and invasive ventilation (p = 0.018) and temporary pacing (p = 0.001) was significantly more frequent in group A. Pts with RBBB were less likely to undergo coronary angiography (CA) (OR 0.68, p < 0.001). However, among those who did, there were no differences in CA timing (p = 0.091). Multivessel disease (OR 1.21, p = 0.044) and the decision of no revascularization (OR 1.33, p = 0.012) were both more frequent in group A. The primary endpoint was met in 16.66% of all pts, which was significantly more common in group A (11% of pts), comparing to group B (6.6% of pts), p < 0.001. In a multivariate regression analysis, including variables such as gender, age, cardiovascular risk factors, previous evidence of cardiovascular disease, and clinical and coronary anatomy data, RBBB was an independent predictor of the primary endpoint (OR 1.3, p = 0.032)-area under the curve of 0.833.
Conclusions: In this population, pts with NSTEMI and RBBB had poorer in-hospital prognosis, partly due to a greater clinical complexity (older age, comorbidities and complex coronary anatomy), with RBBB itself being an independent predictor of adverse in-hospital outcome.

P 31. GLOBAL LONGITUDINAL STRAIN: THE NEW LEFT VENTRICULAR EJECTION DURING AN ACUTE CORONARY SYNDROME?

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Introduction: Global longitudinal strain (GLS) is an accurate parameter for the assessment of early left ventricular dysfunction. Previous studies have shown its value in multiple settings, but its role in the prognosis of patients with acute coronary syndromes (ACS) is still warranting validation.
Objectives: To assess the role of GLS as a prognostic marker after an ACS.
Methods: Patients admitted to a single coronary care unit with a diagnosis of ACS had their clinical, laboratorial and echocardiographic data evaluated. GLS was retrospectively assessed in a single software, resulting a in a total of 93 patients evaluated. The absolute GLS value |x| was used for a simpler interpretation. The primary endpoint was all-cause mortality. The best GLS cut-off value to predict the outcome was derived from the Youden index and two groups were created: Group A (GLS ≤ 14.7%)-N = 38; and Group B (GLS > 14.7%)-N = 55. Kaplan-Meyer survival curves and Cox regression were used to evaluate the impact of GLS on the primary outcome. The mean follow-up was 30 ± 14 months.

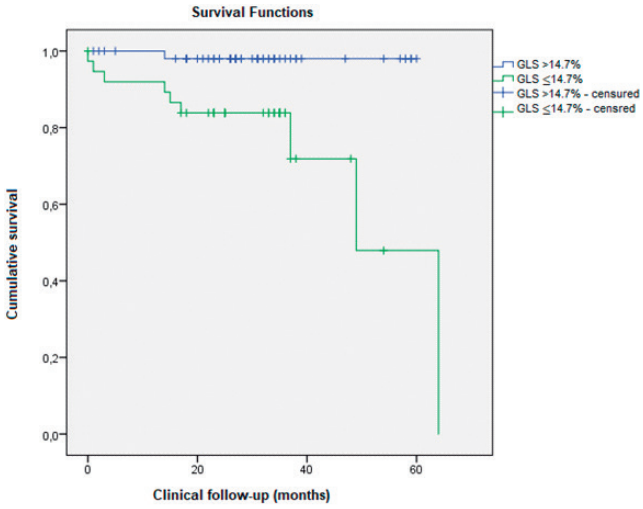

Figure 1 - Kaplan-Meyer curves for all-cause mortality according to GLS groups.

Results: Eighty percent of the patients were male, with a mean age 67 ± 13 years old. 44% had a previous diagnosis of coronary artery disease and the majority (46%) was admitted with non-ST elevation ACS. Sixty-three percent did not have acute heart failure and 55% had a left ventricular ejection fraction (LVEF) ≥ 50%. Mean GLS was 16 ± 4%. Ten patients met the primary endpoint. The area under the curve for GLS was 0.790 (95%CI 0.69-0.87, p < 0.001) and the best GLS cut point was 14.7%. Kaplan-Meyer curves showed that patients with more normal GLS had improved survival-GLS ≤ 14.7% vs GLS > 14.7% (48 ± 5% vs 59 ± 1%, log rank, p = 0.002-Figure) for all-cause mortality. In a model adjusted for LVEF (≥ 50% vs < 50%), GLS is the only variable associated with survival (HR 0.79, 95%CI 0.63-0.96, per each unit increase, p < 0.05). In another model, adjusted for acute heart failure, GLS remained the only variable associated with the outcome (HR 0.80, 95%CI 0.66-0.98, per each unit increase, p < 0.05).
Conclusions: In our exploratory analysis GLS had a prognostic impact in patients with ACS, regardless of acute heart failure or left ventricular ejection fraction. A GLS cut point of 14.7% had the best discriminatory effect.

P 32. ACUTE MYOCARDIAL INFARCTION RISK FACTORS AND SYMPTOMS: WHAT DOES THE PORTUGUESE POPULATION KNOW?

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Introduction: Prompt recognition of acute myocardial infarction (AMI) symptoms is critical to ensure timely medical care-seeking behaviors and adequate acute medical therapy. Also, population awareness about cardiovascular risk factors (CVRFs) plays a pivotal role in cardiovascular disease prevention.
Objectives: To assess the knowledge about CVRFs and AMI symptoms in patients (pts) admitted to our hospital due to AMI, as well as their ability to recognize these symptoms during the acute event.
Methods: Prospective evaluation of pts admitted to our hospital with AMI between june 2018 and july 2019, which included a questionnaire (performed in the first 24h of admission) and consultation of the clinical records.
Results: The study population consisted of 122 pts, of whom 76% were male, with a mean age of 63.7 years. Almost all pts (96.7%) had at least one CVRF, but only 36.4% considered to have any of them. When asked, the majority of pts correctly considered the following conditions as CVRFs: smoking-93.2%, hypertension-92.3%, obesity-92.3%, dyslipidemia-86.9%, sedentary lifestyle-81.2%, diabetes-73.8%, family history of coronary heart disease-80.3%. Recognition of AMI symptoms was assessed by asking the pts from a list of typical symptoms together with other symptoms not related with AMI. 26.2% declared that did not know the symptoms of AMI. Among pts who reported to know these symptoms, the most frequently identified were central chest pain (100%) and dyspnea (80.2%), while diaphoresis (73.0%), pain in other classic locations-epigastrium/left arm/neck (70.0%) and nausea/vomiting (56%) were less commonly identified. Furthermore, 87.0% mistakenly attributed non-cardiac symptoms to AMI, especially symptoms of stroke, such as hemiparesis (63.0%), paresthesia (60.0%) and dysarthria (51.0%). During the acute phase, less than half of the pts (42.5%) thought that they were having an AMI. The remaining attributed their symptoms to: indigestion-31.1%, anxiety-14.8%, respiratory causes-8.2%, muscular causes-6.6% and others-26.2%, while 13.1% did not consider their symptoms to be serious. For pts who correctly identified the acute symptoms as a possible AMI, the time until first medical contact (FMC) was significantly shorter- median time 70 minutes vs 123.5 minutes (p = 0.025). From the total population, 25.4% had a previous history of ischemic heart disease and these pts were more able to attribute their symptoms to AMI during the acute event (71.0% vs 32.6%; p < 0.001).
Conclusions: Although most pts were able to theoretically identify the main CVRFs and symptoms of AMI, less than half of them correctly identified their own AMI symptoms during the acute event, and this was associated with a significantly longer time until FMC. Health education programs for the

general population are needed to ensure a better knowledge of CVRFs and AMI symptoms to achieve better outcomes.

P 33. DIABETES AND PRE-INFARCT ANGINA. TIME TO RETHINK COMORBIDITIES IN THE REPERFUSION-INJURY PHENOMENON?

Marta Fontes de Oliveira[1], Susete Vieira[2], Mariana Santos[2], Ricardo Costa[1], André Frias[1], Andreia Campinas[1], Sofia Cabral[1], André Luz[1], Severo Torres[1]

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Introduction: Pre-infarct angina (PIA) reduces infarct by limiting the reperfusion-injury and represents the most efficient endogenous form of myocardial conditioning yet discovered. Diabetes is thought to be a major obstacle to conditioning. We aimed to study if the effect of PIA is influenced by diabetes and to appreciate its long-term effect on major adverse cardio-cerebrovascular events (MACCE).
Methods: We retrospectively evaluated consecutive patients with left anterior descendent (LAD)-related STEMIs admitted in a tertiary centre from January 2008 to August 2018 who underwent primary angioplasty (PCI). PIA was defined as at least one episode of chest, arm or jaw pain during the preceding 48h before STEMI diagnosis. Peak creatine kinase and peak Troponin T were used as a surrogate of infarct size. We evaluated the association between PIA, diabetes and infarct size using Kruskal-Wallis rank. Interaction between PIA and DM was analysed using multiple linear regression (logarithmic-transformed CK and TnT). Associations between the studied variables and clinical outcomes after reperfusion were assessed using Cox models.
Results: From 1,143 STEMI-patients, 484 were LAD-STEMI. A quarter had diabetes (25%, n = 119), 32.8% (n = 158) had PIA. The proportion of PIA was not different between diabetics and non-diabetics (approximately 25%). PIA globally reduced infarct size independent of age and sex, diabetes, ischemic time and glomerular filtration rate (β = -0.29, p = 0.003 for CK peak and β = -0.33, p = 0.002 for TnT peak). In subgroup analysis, the global protective effect of PIA was confirmed for non-diabetic patients (CK 1732 [959-3,574] vs 2,365 [1,366-4,282] U/L, p = 0.0061, TnT 3.78 [2.20-8.77] vs 5.66 [3.00-9.96] ng/mL, p = 0.0259). In diabetic patients, PIA was associated with reduced but not significantly different infarct size (peak CK 1540 [741-3,853] vs 2260 [1,169-4,752] U/L, p = 0.0724, peak TnT 4.72 [2.00-9.80] vs 8.14 [3.22-13.19] ng/mL, p = 0.0532). However, no significant interaction was found between PIA and diabetes for TnT or CK peaks (p for interaction 0.571 and 0.532, respectively). During a median follow-up period of 17.8 [12.2-25.4] months, 103 (21.4%) MACCE events occurred. PIA was associated with a significant reduction in the incidence of MACCE (HR 0.53 (95%CI 0.31-0.89)) driven by a significative reduction of mortality (HR 0.35 (95%CI 0.16-0.74)). No interaction was found between diabetes and PIA on its effect on MACCE events.
Conclusions: Our study confirmed PIA as a potent stimulus to reduce infarct size and improve prognosis in patients with anterior wall myocardial infarction. Contrary to previously presumed, this study does not confirm that diabetes blunts the protective effect of PIA on infarct size.

Figure 1. Distribution of Peak CK and Peak TnT according to the existence of PIA and diabetes.

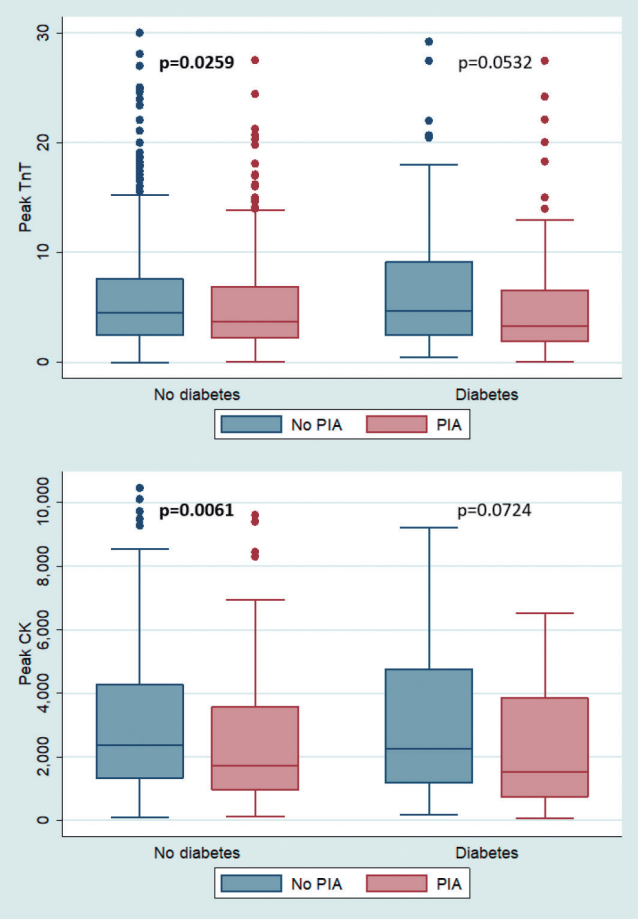
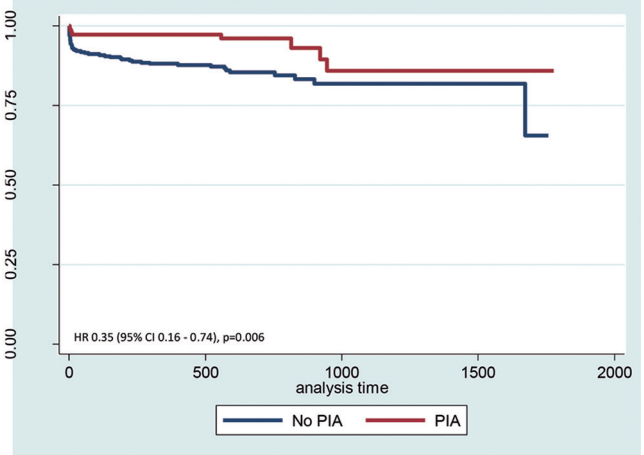


Figure 2. Kaplan–Meier estimates of death according to the existence of pre-infarct angina



P 33 Figures

P 34. SHOULD WE STILL USE BETA-BLOCKERS IN ALL PATIENTS AFTER ST-SEGMENT ELEVATION ACUTE MYOCARDIAL INFARCTION?

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Introduction: Beta-blockers (BBs) were initially developed in the 1960s for the treatment of angina pectoris. Nowadays they have a much larger therapeutic spectrum. The benefit of long-term treatment with oral BBs after acute myocardial infarction with ST-segment elevation (STEMI) was established in the pre-reperfusion era, almost 20 years ago and, today, controversy remains regarding the need for beta-blockers as well as treatment duration after patient release.

Objectives: To determine the association between BBs use and mortality after discharge in STEMI patients with preserved, mid-range and reduced left ventricular ejection fraction (LVEF).

Methods: We analysed data from 12.954 adult patients admitted to hospital for STEMI from 2010 to 2019. Patients with i) no information regarding left ventricular ejection fraction (LVEF) during hospitalisation, ii) hospitalisation in the previous 24 hours, iii) death during hospitalisation, iv) no follow-up information at 6 or 12 months, v) previously known heart failure or acute

Sexo										
Masc	2401/3145	76,3%	454/619	73,3%	1947/2526	77,1%	0,050	1,22	1,00	1,49
Fem	744/3145	23,7%	165/619	26,7%	579/2526	22,9%	0,050	0,82	0,67	1,00
Idade										
Média ± D.Padrão	64 ± 14		68 ± 14		62 ± 14		<0.001			
<45	256/3145	8,1%	27/619	4,4%	229/2526	9,1%	<0.001	2,19	1,45	3,29
45-64	1418/3145	45,1%	227/619	36,7%	1191/2526	47,1%	<0.001	1,54	1,29	1,85
65-74	718/3145	22,8%	152/619	24,6%	566/2526	22,4%	0,254	0,89	0,72	1,09
>=75	753/3145	23,9%	213/619	34,4%	540/2526	21,4%	<0.001	0,52	0,43	0,63
Antecedentes e Fatores de Risco										
Fumador	1218/3141	38,8%	233/619	37,6%	985/2522	39,1%	0,517	1,06	0,89	1,27
HTA	1856/3092	60,0%	354/607	58,3%	1502/2485	60,4%	0,338	1,09	0,91	1,31
Diabetes Mellitus	687/3077	22,3%	140/603	23,2%	547/2474	22,1%	0,558	0,94	0,76	1,16
Dislipidémia	1474/2988	49,3%	271/575	47,1%	1203/2413	49,9%	0,240	1,12	0,93	1,34
Hx Familiar DC	240/2898	8,3%	32/550	5,8%	208/2348	8,9%	0,020	1,57	1,07	2,31
Angina Peito prévia	435/3142	13,8%	91/618	14,7%	344/2524	13,6%	0,480	0,91	0,71	1,17
EAM prévio	0/3145	0,0%	0/619	0,0%	0/2526	0,0%	-----	n.a.	n.a.	n.a.
ICP prévia	55/3145	1,7%	14/619	2,3%	41/2526	1,6%	0,277	0,71	0,39	1,32
CABG prévia	18/3145	0,6%	4/619	0,6%	14/2526	0,6%	0,767	0,86	0,28	2,61
Pacemaker/CDI	11/3140	0,4%	5/618	0,8%	6/2522	0,2%	0,047	0,29	0,09	0,96
Doença Valvular	28/3114	0,9%	12/614	2,0%	16/2500	0,6%	0,002	0,32	0,15	0,69
ICC prévia	0/3145	0,0%	0/619	0,0%	0/2526	0,0%	-----	n.a.	n.a.	n.a.
AVC/AIT prévios	168/3145	5,3%	40/619	6,5%	128/2526	5,1%	0,167	0,77	0,54	1,11
D. Vascular Periférica prévia	65/3124	2,1%	23/616	3,7%	42/2508	1,7%	0,001	0,44	0,26	0,74
Insuf. Renal	63/3104	2,0%	23/602	3,8%	40/2502	1,6%	<0.001	0,41	0,24	0,69
Neoplasia	125/3102	4,0%	31/603	5,1%	94/2499	3,8%	0,122	0,72	0,48	1,09
DPOC	98/3109	3,2%	51/606	8,4%	47/2503	1,9%	<0.001	0,21	0,14	0,31
Demência	62/2798	2,2%	23/584	3,9%	39/2214	1,8%	0,001	0,44	0,26	0,74
Hemorragia prévia	40/2800	1,4%	11/584	1,9%	29/2216	1,3%	0,298	0,69	0,34	1,39
Medicação na Alta										
AAS	3058/3145	97,2%	579/619	93,5%	2479/2526	98,1%	<0.001	3,64	2,37	5,61
Clopidogrel	2598/3140	82,7%	476/619	76,9%	2122/2521	84,2%	<0.001	1,60	1,29	1,98
Prasugrel	8/2084	0,4%	3/439	0,7%	5/1645	0,3%	0,377	0,44	0,11	1,86
Ticagrelor	397/2294	17,3%	69/461	15,0%	328/1833	17,9%	0,138	1,24	0,93	1,64
Outros Anti-Plaq.	49/3136	1,6%	17/619	2,7%	32/2517	1,3%	0,008	0,46	0,25	0,83
Antag. Vit. K	90/3136	2,9%	13/619	2,1%	77/2517	3,1%	0,200	1,47	0,81	2,67
Dabigatrano	17/2087	0,8%	2/439	0,5%	15/1648	0,9%	0,550	2,01	0,46	8,81
Outros ACG	60/3136	1,9%	11/619	1,8%	49/2517	1,9%	0,782	1,10	0,57	2,12
BB	2526/3145	80,3%	0/619	0,0%	2526/2526	100,0%	<0.001	n.a.	n.a.	n.a.
IECA	2529/3143	80,5%	420/619	67,9%	2109/2524	83,6%	<0.001	2,41	1,97	2,94
ARA	169/3134	5,4%	28/618	4,5%	141/2516	5,6%	0,290	1,25	0,83	1,90
IECA ou ARA	2680/3143	85,3%	447/619	72,2%	2233/2524	88,5%	<0.001	2,95	2,38	3,66
Estatina	3043/3144	96,8%	579/619	93,5%	2464/2525	97,6%	<0.001	2,79	1,85	4,20
Outros Hipolipid.	186/3135	5,9%	33/619	5,3%	153/2516	6,1%	0,479	1,15	0,78	1,69
Nitratos/Nit.Like	337/3137	10,7%	66/619	10,7%	271/2518	10,8%	0,943	1,01	0,76	1,34
Antag. Ca	154/3135	4,9%	41/619	6,6%	113/2516	4,5%	0,028	0,66	0,46	0,96
Ivabradina	143/3134	4,6%	69/619	11,1%	74/2515	2,9%	<0.001	0,24	0,17	0,34
Antag. Aldosterona	318/3138	10,1%	65/619	10,5%	253/2519	10,0%	0,736	0,95	0,71	1,27
Diuréticos	649/3140	20,7%	161/619	26,0%	488/2521	19,4%	<0.001	0,68	0,56	0,84
Amiodarona	104/3137	3,3%	41/619	6,6%	63/2518	2,5%	<0.001	0,36	0,24	0,54
Digoxina	9/3135	0,3%	5/619	0,8%	4/2516	0,2%	0,018	0,20	0,05	0,73
Outros Anti-Arritm.	3/3135	0,1%	2/619	0,3%	1/2516	0,0%	0,101	0,12	0,01	1,35
Insulina	113/3134	3,6%	31/618	5,0%	82/2516	3,3%	0,036	0,64	0,42	0,97
ADOs	543/3137	17,3%	99/619	16,0%	444/2518	17,6%	0,334	1,12	0,89	1,43

Table 1. Baseline characteristics

Abbreviations: HTA, hypertension; EAM, acute myocardial infarction; ICP, percutaneous coronary intervention; ICC, heart failure; AVC, stroke; DPOC, chronic obstructive pulmonary disease; AAS, aspirin; BB, beta-blocker; IECA, ace-inhibitor; ARA, angiotensin-receptor antagonist; ADO, oral antidiabetics

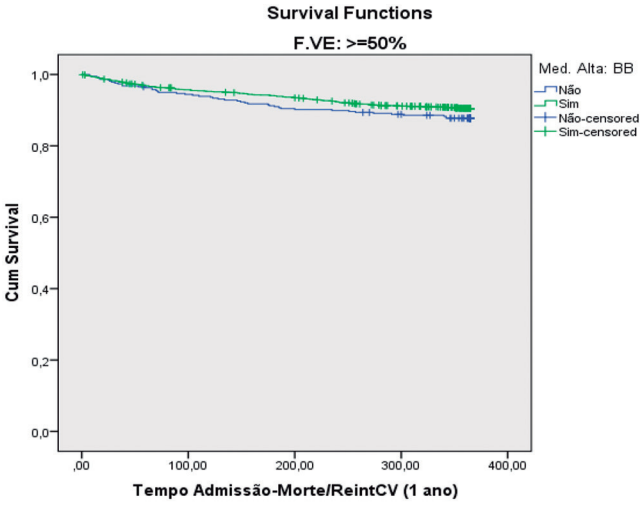

Figure 1. Kaplan-Meier Plots

Kaplan-Meier plots of composite of death or CV re-admission at 1 year for patients with LVEF > 50%

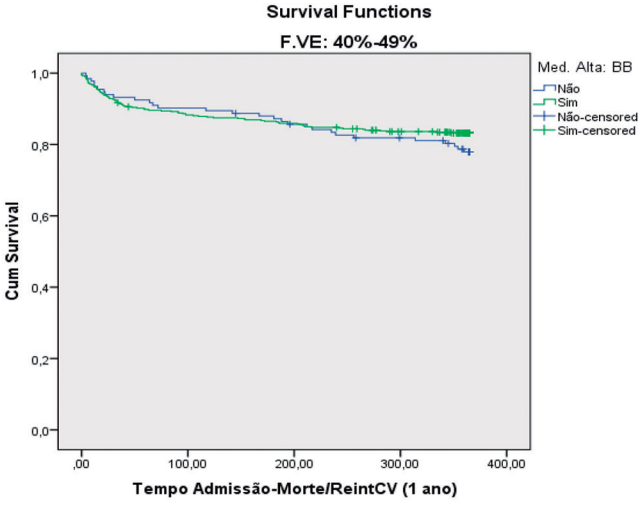

Figure 2. Kaplan-Meier PLOTS

Kaplan-Meier plots of composite of death or CV re-admission at 1 year for patients with LVEF 40-49%.

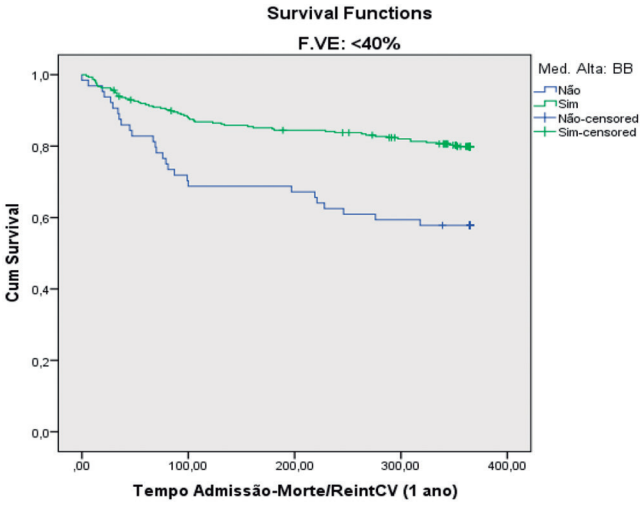

Figure 3. Kaplan-Meier PLOTS

Kaplan-Meier plots of composite of death or CV re-admission at 1 year for patients with LVEF < 40%.

myocardial infarction and, vi) no information regarding the use of BBs were excluded. We looked into the impact of BBs after discharge on all-cause mortality and on a composite outcome of all-cause mortality and cardiovascular re-admission at 6 and 12 months.

Results: 3,145 patients were included in the analysis, of which 2526 (80.3%) received BBs after discharge. A total of 5% of patients died (n = 121) and 13.5% (n = 202) registered an hospital re-admission of cardiovascular cause in 1 year. After nonadjusted Cox regression analysis, use of BB after discharge was associated with a significant reduced mortality at 1 year (HR 0.499, IC95% 0.353-0.705, p < 0.001) and mortality and re-admission for CV cause at 1 year (HR 0.690, IC95% 0.550-0.865, p = 0.001). However, after adjustment for important comorbidities, age, intra-hospitalar complications, discharge drugs and heart failure signs during hospitalisation, BB use after discharge was not associated with better survival at 1 year (HR 0.70, IC95% 0.37-1.33, p = 0.276) and survival or re-admission of CV cause at 1 year (HR 0.73, IC95% 0.51-1.04, p = 0.081). Despite our findings, after distribution of patients between LVEF groups (< 40%, 40-50% and > 50%), we found important differences in survival or re-admission of CV cause at 1 year in patients with LVEF < 40% (HR 0.43, IC95% 0.26-0.70, p = 0.001), while reduction in events did not happen in patients with LVEF 40-50% (HR 1.01, IC 95% 0.64-1.60, p = 0.959) nor in patients with LVEF > 50% (HR 0.73, IC 0.51-1.04, p = 0.081).

Conclusions: Despite having a class IIa indication in the most recent European STEMI guidelines and a class I indication in the American guidelines, the systematic use of BBs following STEMI was not associated with better survival after long-term follow-up in patients with mid-range or preserved LVEF.

P 35. LONG TERM IMPACT OF OBSTRUCTIVE SLEEP APNEA IN PATIENTS WITH ACUTE CORONARY SYNDROME

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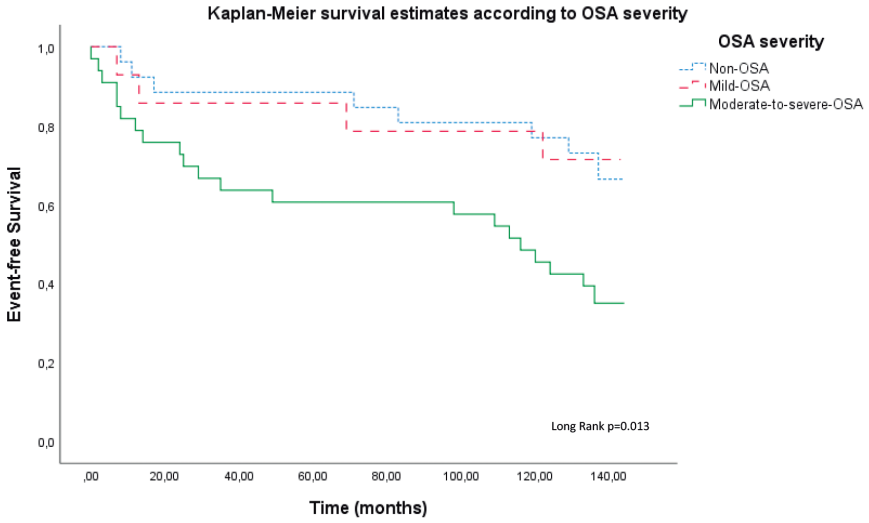
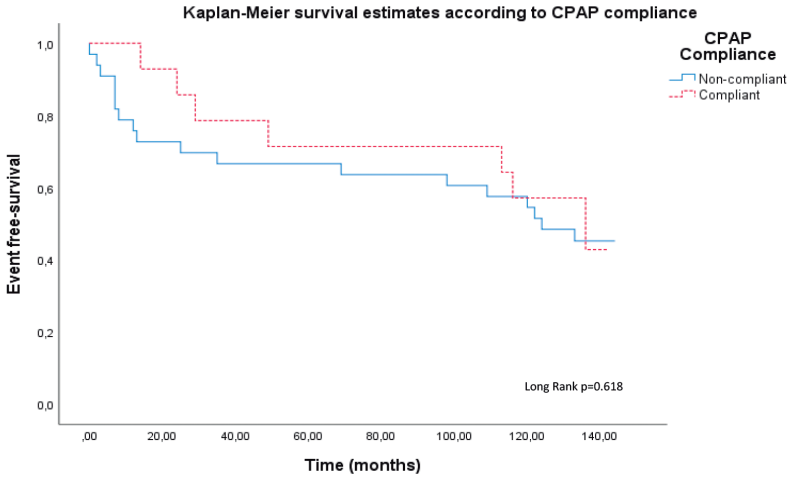
Introduction: The prognostic significance of Obstructive Sleep Apnea (OSA) in patients with Acute Coronary Syndrome (ACS) in the contemporary era is still unclear. There are several studies that have evaluated the impact of OSA in patients with ACS. However, they all have a short follow up time. The main goal of this study was to evaluate prognostic impact of OSA and continuous positive airway pressure (CPAP) therapy in patients hospitalized with ACS for more than 10 years.

Methods: We conducted a prospective longitudinal cohort study in which 73 patients were admitted on a cardiac intensive care unit for ACS. Cardiorespiratory sleep study and/or polysomnography were performed in all patients. CPAP was recommended if Apnea/Hypopnea Index (AHI) ≥ 5. OSA was defined as mild for AHI ≥ 5 and < 15, moderate for AHI ≥ 15 and < 30, and severe for AHI ≥ 30. The main study outcome was a composite of death for any cause, myocardial infarction and myocardial revascularization.

Results: The median follow-up time was 135 months (IQR 122 to 144). During the study period, 8 patients of non-OSA group had at least one event: 7 deaths, 1 myocardial infarction and 1 revascularization. Four patients of mild-OSA (m-OSA) group had events: 1 death, 3 myocardial infarctions and 2 revascularizations. Twenty-one patients of moderate-to-severe OSA group suffered at least one event: 15 deaths, 4 myocardial infarctions and 9 revascularizations. Composite end point of death for any cause, myocardial infarction or myocardial revascularization occurred in 33 patients: 8 in non-OSA group, 4 in m-OSA group and 21 in moderate-to-severe-OSA group. Event-free survival time (Kaplan Meier) was significantly different between groups (log-rank, p = 0.013). After adjustment for gender and age, patients with moderate-to-severe OSA had 2.92 times (95%CI 1.19 to 7.12, p = 0.019) the risk of incurring in death, myocardial infarction or myocardial revascularization than patients without OSA. Patients with m-OSA had the same risk as patients without OSA. Adherence to CPAP occurred in 14 patients (30% of those referred). During the study period, 7 (50%) compliant patients incurred in 4 death and 3 myocardial revascularizations. Eighteen (55%) patients of the noncompliant group suffered 7 deaths, 8 myocardial infarctions and 12 revascularizations. Compliance to CPAP did not reduce the risk of composite end point (Hazard ratio 0.80, 95%CI 0.34 to 1.92).





P 35 Figure

Conclusions: OSA is an underdiagnosed disease with high prevalence in patients with ACS. After 11 years of follow up, the patients with moderate-to-severe OSA still have a great risk of incurring in death, myocardial infarction or myocardial revascularization.

Painel 7 - Doença Coronária 2

P 36. SEVERE VENTRICULAR DYSFUNCTION AFTER STEMI COMPLICATED BY CARDIOGENIC SHOCK: PREDICTORS, PROGNOSIS

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Introduction: Left ventricular function is assumed to be the main predictor of prognosis in cardiogenic shock (CS), however trials and registries show that in average left ventricular function is only moderately depressed in CS after acute myocardial infarction.
Objectives: To characterize the population of patients (Pts) with CS after ST-elevation acute myocardial infarction (STEMI) and with severe left ventricular dysfunction (defined as ejection fraction (EF) < 30%) and to identify possible predictors of severe left ventricular function.
Methods: We evaluated 525 Pts with CS after STEMI. We considered 2 groups: Group 1-Pts with CS and EF < 30% and Group 2-Pts with CS and EF > 30%. We registered age, gender, cardiovascular and non-cardiovascular co-morbidities, electrocardiographic presentation, vital signs at admission, reperfusion strategies, reperfusion times and coronary anatomy. We also evaluated the following in-hospital complications: Re-Infarction, mechanical complications, high-grade atrial ventricular block, sustained ventricular tachycardia (VT) atrial fibrillation (AF) and stroke. We compared the in-hospital mortality and multivariate analysis was performed to assess the impact of EF in in-hospital mortality and to identify predictors of severe left ventricular function.
Results: Severe left ventricular dysfunction was observed in 28.4% of pts with CS after STEMI (n = 149). The mean EF in group 1 was (EF: 23% ± 5 vs 44 ± 11%, p < 0.001). Patients of group 1 had higher diabetes (38.9 vs 28.0%, p = 0.017), higher prevalence of previous acute myocardial infarction (AMI) (23.1 vs 8.9%, p < 0.001) and previous heart failure (11.5% vs 4.8%, p = 0.006), with no differences regarding age, gender or other co-morbidities. Group 1 pts had higher anterior STEMI (81.2 vs 46.0%, p < 0.001), higher prevalence of left main disease (21.2 vs 6.6%, p < 0.001), higher left anterior descending disease (87.2 vs 72.8%, p = 0.001), higher times symptom-reperfusion (median 304 vs 245 min, p = 0.003). No differences were observed in the rate of coronariography, rate or type of reperfusion and multivessel disease. Group 1 pts had higher VT (17.4 vs 10.6%, p = 0.034), stroke (5.4 vs

1.9%, p = 0.041) and in-hospital mortality (51.7 vs 26.6%, p < 0.001). After multivariate analysis EF is a strong predictor of in-hospital mortality in pts with CS after STEMI [OR: 2.58 (IC: 1.38-4.80), p = 0.003]. Diabetes [OR: 2.02 (IC: 1.17-3.49), p = 0.012], previous AMI [OR: 2.80 (IC: 1.24-6.31), p = 0.013] and left main disease [OR: 3.38 (IC: 1.56-7.31), p = 0.002] were identified as predictors of severe left ventricular function.
Conclusions: In our population, most of the patients with CS after STEMI had an EF above 30%. Besides this, a lower EF is still a strong predictor of in-hospital mortalityin patients with CS after STEMI. Left main disease, previous AMI and diabetes were identified as predictors of an EF < 30%.

P 37. INITIALLY ELEVATED TROPONIN I IN RAPID ATRIAL FIBRILLATION SHOULD LEAD TO CORONARY ANGIOGRAPHY

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Introduction: In patients admitted to the emergency department (ED) with rapid atrial fibrillation (AF), the decision to undergo coronary angiography is usually due to elevated cardiac biomarkers. However, a study evaluating the rentability of this approach has never been done.
Objectives: Evaluate the predictors of a positive coronary angiography performed in patients with rapid AF and elevated cardiac biomarkers.
Methods: We retrospectively studied patients admitted to the ED between January 2016 and December 2018 with rapid AF who have undergone coronary angiography. We analysed symptoms, risk factors, initial value, peak value and curve of troponin I (TnI) and ST-T segment abnormalities. We evaluated the presence of significant coronary artery stenosis with the need of revascularization at coronary angiography and we used logistic regression to assess the predictors of a positive result.
Results: From 2,265 patients admitted to the ED with rapid AF, 46 patients, 60.9% (28) male, median age 73 (IQR 14.75) years, were submitted to coronary angiography. Significant coronary artery stenosis was present in 24 (52.2%) patients. Regarding cardiovascular risk factors, 39 (85.6%) patients had hypertension, 15 (32.6%) had type 2 diabetes mellitus, 36 (78.3%) had dyslipidaemia, 25 (54.3%) were obese or overweight and 12 (26.1%) had a previous history of CAD. Twenty-eight (60.9%) patients presented with chest pain and 27 (58.7%) had ST-T segment abnormalities. Of note, in 17 (37.0%) cases high-sensitivity TnI was measured. In univariate analysis, ST-T segment abnormalities, the presence of typical TnI curve and an elevated initial TnI predicted the presence of significant CAD in coronary angiography (Table). In multivariate analysis, an initial TnI value above the upper reference limit (URL) was the only independent predictor of significant CAD in coronary angiography.

	Without CAD	With CAD	Univariate analysis OR (95% CI), p-value	Multivariate analysis OR (95% CI), p-value
Age in years, median (IQR)	69 (15)	77.5 (17)	1.045 (0.988-1.106), 0.127	0.967 (0.882-1.062), 0.484
Type 2 diabetes mellitus, n (%)	5 (23.8)	10 (41.7)	2.286 (0.629-8.313), 0.209	5.865 (0.566-60.806), 0.138
ST-T segment abnormalities, n (%)	8 (36.4)	19 (79.2%)	6.650 (1.788-24.730), 0.005	5.338 (0.491-58.063), 0.169
Typical TnI curve, n (%)	10 (52.6)	20 (90.9)	9.000 (1.628-49.756), 0.012	17.900 (0.475-674.480), 0.119
Elevated initial TnI, n (%)	10 (45.5)	18 (75.0)	3.600 (1.033-12.542), 0.044	15.167 (1.363-168.778), 0.027
Peak TnI elevation >2 times URL, n (%)	11 (50.0)	18 (75.0)	3.000 (0.863-10.428), 0.084	0.169 (0.005-5.298), 0.312

CAD: coronary artery disease
TnI: troponin I
URL: upper reference limit

Conclusions: In this group of patients with rapid AF an initial elevated TnI was the only independent predictor of the presence of significant CAD. Therefore, maybe it would be advisable to perform coronary angiography in these patients.

P 39. PARAGEM CARDIORRESPIRATÓRIA INTRA-HOSPITALAR E NSTEMI: SERÁ POSSÍVEL IDENTIFICAR OS DOENTES EM RISCO?

Hugo Miranda, Hélder Santos, Inês Almeida, Joana Chin, Samuel Almeida, Catarina Sousa, João Tavares

Centro Hospitalar Barreiro/Montijo, EPE/Hospital Nossa Senhora do Rosário.

Introdução: A ocorrência de paragem cardiorrespiratória (PCR) intra-hospitalar, mesmo que presenciada, está associada a piores *outcomes*. Torna-se fulcral identificar os doentes em maior risco, de modo a assegurar uma maior vigilância e uma postura mais «ofensiva» nestes casos.
Objetivos: Caracterização dos doentes admitidos por NSTEMI com evolução em PCR. Criação de *score* preditor de PCR intra-hospitalar nesta população e respetiva comparação com 2 *scores* (SAFER e CHADS2) recentemente publicitados em publicações internacionais.
Métodos: Estudo multicêntrico realizado durante um período temporal de 7 anos e 9 meses. Foram excluídos do estudo os doentes sem diagnóstico de NSTEMI, com PCR como sintoma de admissão hospitalar ou sem informação sobre a ocorrência de PCR intra-hospitalar.
Resultados: Admitidos no total 10.430 doentes, 95 dos quais com PCR intra-hospitalar. Os doentes com PCR revelaram ser mais idosos, com perfil mais hipotensivo e em classe Killip > 1. As alterações eletrocardiográficas (BCRE, BCRD e depressão ST) foram também mais frequentes neste grupo, bem como o uso de BIA, Ventilação Mecânica Invasiva e PM provisório. Por regressão logística foram identificadas 6 variáveis preditoras de PCR: 1) TAS na admissão ≤ 125 mmHg (1 ponto), 2) Classe Killip > 1 na admissão (1 ponto), 3) BCRE no ECG de admissão (2 pontos), 4) BCRD no ECG de admissão (1 ponto), 5) depressão ST no ECG de admissão (1 ponto), 6) BAV/TV/Choque cardiogénico nas primeiras 24h após admissão (2 pontos). Isto permitiu a criação de 3 grupos de risco, de acordo com a pontuação obtida: risco baixo (0-2 pontos), médio (3-4 pontos) e alto (5-7 pontos). Foram criadas curvas ROC comparando o novo score com o score SAFER e CHADS2. O novo score demonstrou ter um poder preditor superior aos 2 scores previamente referidos (AUC: 0,723; IC95% 0,714-0,731; p-valor < 0,05).
Conclusões: O nosso estudo permitiu criar um novo *score* de fácil aplicabilidade no dia-a-dia nas diversas unidades hospitalares. Uma validação interna e externa é crucial para avaliar o seu verdadeiro impacto.

P 38. RESUSCITATED CARDIAC ARREST AND NO ST-ELEVATION- WHAT TO EXPECT?

Rita Ribeiro Carvalho, Luís Graça Santos, Francisco Soares, Sara Fernandes, Fernando Montenegro Sá, João Morais

Centro Hospitalar de Leiria/Hospital de Santo André.

Introduction: Urgent coronary angiography after resuscitated cardiac arrest (rCA) is a class I recommendation in the presence of ST-elevation, however the management of those presenting with no ST-elevation and high suspicion for coronary artery disease (CAD) are still matter of debate. In fact, the prevalence of CAD in this group is high and it is reported a 25% of cases with identified culprit lesion, but one recent trial showed no benefit of an immediate strategy vs a delayed one in respect to overall 90-day survival. Our aim is to characterize this group of patients (pts), regarding the burden of CAD, the identification of a culprit lesion and the short-term and one-year prognosis.
Methods: A retrospective multicentric study, including pts admitted to percutaneous coronary intervention (PCI) after out-hospital rCA, from Oct 2010 to Jan 2019. Pts with no ST-elevation at admission were compared to those with ST-elevation, regarding clinical and angiographic characteristics. The primary endpoint was the composite of in-hospital death, cardiogenic shock (CS), myocardial infarction (MI) and stroke and the co-primary endpoint the composite of death or re-hospitalization at 12 months. Paired Student t-test an χ^2 test were used accordingly to assess baseline characteristics. Univariate logistic regression and cox regression analysis were used, to assess the primary and co-primary endopoints, respectively. Alpha level of 5%.
Results: 92 pts were included, mainly male (75%, n = 69), with mean age of 62 ± 13 years. Baseline characteristics are summarized in table 1. The

ST-elevation group, of which 60.0% (n = 45) with anterior MIs, were more frequently in Killip-Kimbal class IV (38.9% vs 11.8%, p = 0.03). This group had more frequently single-vessel CAD (55.9% vs 21.4%, p = 0.02), whereas the group with no ST-elevation had more frequently three-vessel CAD (16.9% vs 42.9%, p = 0.01). The culprit lesion was identified in the majority of pts (97.6%, n = 83) and similarly in both groups (table 2). 79 (85.9%) pts were managed with PCI, most of them in the ST-elevation group (92.0% vs 58.8%, p < 0.01). The primary endpoint was achieved in 39 pts (52%) of the ST-elevation group, mainly driven by death; and in 3 pts (20.0%) on no ST-elevation group (p = 0.23) (table 3). Data of 12 months follow-up was only available for 27 (29.3%) pts, and revealed a low event rate (3 deaths and 4 hospital admissions, one of which for cardiovascular causes), so that between-group survival analysis was not feasible.

Table 1. Baseline characteristics of the population studied.

Characteristics	Persistent ST-elevation (n=75)	No ST-elevation (n=17)	*p*
Male, %(n)	77.3% (58)	64.7% (11)	*NS*
Age, mean±SD	61±14	66±12	*NS*
BMI, mean±SD	26.5±3.7	27.0±4.6	*NS*
Hypertension, %(n)	60.0% (42)	64.7% (11)	*NS*
Dyslipidemia, %(n)	36.2% (25)	43.8% (7)	*NS*
Current Smoke, %(n)	45.8% (33)	23.5% (4)	*NS*
Previous Myocardial Infarction, %(n)	13.7% (10)	17.6% (3)	*NS*
Previous Stroke, %(n)	1.4% (1)	5.9% (1)	*NS*

Table 2. Angiographic characteristics

Angiographic characteristics	Persistent ST-elevation (n=75)	No ST-elevation (n=17)	*p*
Single-vessel CAD, %(n)	55.9% (33)	21.4% (3)	0.020
Three-vessel CAD, %(n)	16.9 (10)	42.9 (6)	0.011
Culprit lesion identified, %(n)	98.6 (68)	93.7% (15)	*NS*
Left main, %(n)	0.0% (0)	12.5% (2)	-
Anterior descendent, %(n)	52.2% (36)	31.3% (5)	*NS*
Circumflex, %(n)	17.4% (12)	31.3% (5)	*NS*
Right Coronary Artery, %(n)	29.0% (20)	18.8% (3)	*NS*
PCI, %(n)	92.0% (69)	58.8% (10)	0.002

Table 3. Primary endpoint results.

	Persistent ST-elevation (n=75)	No ST-elevation (n=17)	OR	*p*
Primary composite endpoint, %(n)	52.0 (39)	20.0 (3)	0.23	0.023
Death, %(n)	25.3% (19)	0.0% (0)	-	0.019
Cardiogenic Shock, %(n)	40.0% (30)	13.3% (5)	0.23	0.049
Myocardial infarction, %(n)	1.3% (1)	0.0% (0)	-	NS
Stroke, %(n)	2.7% (2)	6.7% (1)	2.61	NS

Conclusions: Pts admitted to PCI after rCA and no ST elevation have a high burden of CAD, nevertheless in the majority of them it was possible to identify a culprit lesion. This group presented less frequently with CS and was significantly less associated with the primary endpoint, driven by fewer deaths. No conclusions could be taken about the co-primary endpoint because of low event rate.

P 41. THE IMPACT OF A CLINICAL PROTOCOL IN THE MANAGEMENT OF THE RESUSCITATED CARDIAC ARREST PATIENTS

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[1]Hospital Santa Maria. [2]Serviço de Cardiologia, Departamento de Coração e Vasos, Centro Hospitalar Universitário Lisboa Norte, Centro Cardiovascular da Universidade de Lisboa, Faculdade de Medicina, Universidade de Lisboa.

Introduction: It is common to apply protocol strategies to standardize the approach and reduce errors in situations of cardiorespiratory arrest (CRA).

Objectives: To evaluate the differences in patients (pts) submitted to coronary angiography (CA) in the context of CRA before and after the in-hospital implementation of a protocol for the orientation of complementary exams/therapy after CRA.
Methods: Retrospective single-center study of consecutive pts submitted to CA by CRA between January 2015 and July 2018. Demographic, clinical, electrocardiographic and angiographic data were evaluated. The results were obtained using the Tstudent test and the chi-square test. The group referenced to CA was compared before and after the application of a diagnostic/therapeutic orientation algorithm. This protocol was initiated in November 2017 and suggests CA in < 2h after hospital admission in pts with CRA in probable context of infarction, with defibrillating rhythm (DR) CRA of unknown cause and nondefibrillating rhythm CRA (NDR) with previously known coronary disease (CAD) (after exclusion of other causes); and in < 24h in pts with NDR CRA without known CAD (after exclusion of other causes).
Results: 121 Pts (63.2 ± 13 years, 76% men) were included. The majority of CRA were extra-hospital (58.4%) and RD (69.4%). The most frequent cause was infarction (65.4%), most of type 1 (59.5%) and ST elevation (36.4%). On average the pts were submitted to CAT 1,3 ± 3 days after CRA. They performed 85 CA before protocol implementation and 36 after. The pts included in the protocol presented more advanced ages (median 71 vs 63 years, p = 0.018); (p = 0.004), more CRA in NDR (p = 0.003), lower prevalence of sinus rhythm after CRA (p = 0.033) and higher prevalence of atria fibrilation (p = 0.004). There was a tendency for cerebrovascular disease (p = 0.085) and a higher prevalence of CRA duration above the median (11 min) (p = 0.073). In this group of pts, there was a higher mortality (52.8 vs 29.9%, p = 0.019), a lower tendency for CAD (p = 0.064), with a similar angioplasty rate between the two groups.
Conclusions: After the institution of this protocol it seems that more patients are submitted to coronariography that may not benefit from the intervention because they tend to have less CAD. The evaluation of pts who underwent CA under the protocol revealed that it did not lead to a better prognosis and was associated with higher mortality, probably because it included pts without CAD and with more complex causes of CRA.

P 40. MINOCA PATIENTS PRESENTING WITH ST SEGMENT ELEVATION: LOOK BEYOND THE CATCHY NAME.

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Introduction: Myocardial infarction with non-obstructive coronary arteries (MINOCA) is a syndrome characterized by clinical evidence of myocardial infarction with normal or near-normal coronary arteries. It represents a conundrum given the various underlying aetiologies and pathogenic mechanisms related with this syndrome, presenting different patterns in electrocardiogram (ECG).
Objectives: Evaluate a cohort of pts with MINOCA diagnosis who underwent cardiac magnetic ressonance (CMR) and identify relevant clinical differences in pts presenting with ST segment elevation.
Methods: Unicentric, retrospective analysis of pts admitted with MINOCA who underwent CMR between 1/2013 and 9/2019. Clinical, analytical, ECG, imagiological features and follow-up-cardiovascular (CV) events and mortality-were analysed. Pts were divided according to the initial ECG presentation: ST segment elevation (G1) and non-ST segment elevation (G2).
Results: Out of the 781 CMR studies evaluated, 196 pts had the initial diagnosis of MINOCA (25.1%). Mean age was 47.4 ± 17.2 years (y) with female predominance (58.2%, p = 0.022). G1 had 75 pts (38.3%) and were younger (41.6 ± 17.2 vs G2 51.1 ± 16.2y, p < 0.001). There were no significant differences regarding cardiovascular risk factors nor previous medication or CMR features, except for the presence of late gadolinium enhancement (LGE) which was more prevalent in G1 pts (74.0% vs G2 52.1%, p = 0.003). Regarding definitive diagnosis, there was a lower prevalence of myocarditis diagnosis in G2 pts (60.0% vs G2 31.4%, p < 0.001) and Takotsubo syndrome diagnosis in G1 pts (4.0% vs G2 12.4%, p = 0.048). G2 pts presented more frequently with T wave inversion (24.0% vs G2 45.5%, p = 0.003). As for discharge medication, G2 had

higher prescription of aspirin (25.3 vs G2 52.1%, p < 0.001), P2Y12 inhibitors (20.0 vs G2 34.7%, p = 0.028) and statins (34.7 vs G2 66.1%, p < 0.001). There were no significant differences regarding CV events nor mortality.

Conclusions: In our cohort, pts presenting with ST segment elevation were younger, had higher prevalence of LGE on CMR and higher prevalence of myocarditis as definitive diagnosis. G2 had more frequently Takotsubo syndrome diagnosis and presented more with T wave inversion. On the other hand, pts with non-ST segment elevation presentation had more antiplatelet therapy and statins at discharge. No differences were found regarding CV events nor mortality.

Painel 8 - Doença Coronária 3

P 43. PROGNOSIS OF COMPLETE VS INCOMPLETE REVASCULARIZATION IN DIABETIC PATIENTS AFTER STEMI

Rita Ribeiro Carvalho, Francisco Soares, Luís Graça Santos, Sara Fernandes, Fernando Montenegro Sá, João Morais

Centro Hospitalar de Leiria/Hospital de Santo André.

Introduction: Different trials documented better long-term prognosis with staged Percutaneous Coronary Intervention (PCI) of non-culprit lesions after

Table 1. Baseline characteristics of the population studied.

Baseline characteristics	Complete revascularization (n=127)	Incomplete revascularization (n=423)	*p*
Male, %(n)	71.7 (91)	69.3 (293)	*NS*
Age, Mean±DP	65±12	68±12	0.014
BMI (kg/m²), Mean±DP	27.6±4.4	28±4.4	*NS*
Hypertension, %(n)	78.0 (93)	81.2% (341	*NS*
Dyslipidemia, %(n)	65.0 (78)	66.2% (261)	*NS*
Current smoke, %(n)	29.1 (37	21.4 (90)	*NS*
Previous myocardial infarction, %(n)	12.6 (16)	13.8 (58)	*NS*
Previous stroke, %(n)	7.1 (9)	10.6 (45)	*NS*
Known heart failure, %(n)	2.4 (3)	3.3 (14)	*NS*
Chronic Kidney disease, %(n)	4.7 (6)	6.0 (25)	*NS*

Table 2. Endpoint results.

Outcome	Complete revascularization (n=127)	Incomplete revascularization (n=423)	*p*
Primary composite endpoint, %(n)	7.1% (9)	8.6% (36)	*NS*
Re-infarction, %(n)	0.8% (1)	0.5% (2)	*NS*
Death, %(n)	7.1% (9)	8.3% (35)	*NS*
Secondary endpoint			
Stroke, %(n)	2.4% (3)	0.5% (2)	*NS*

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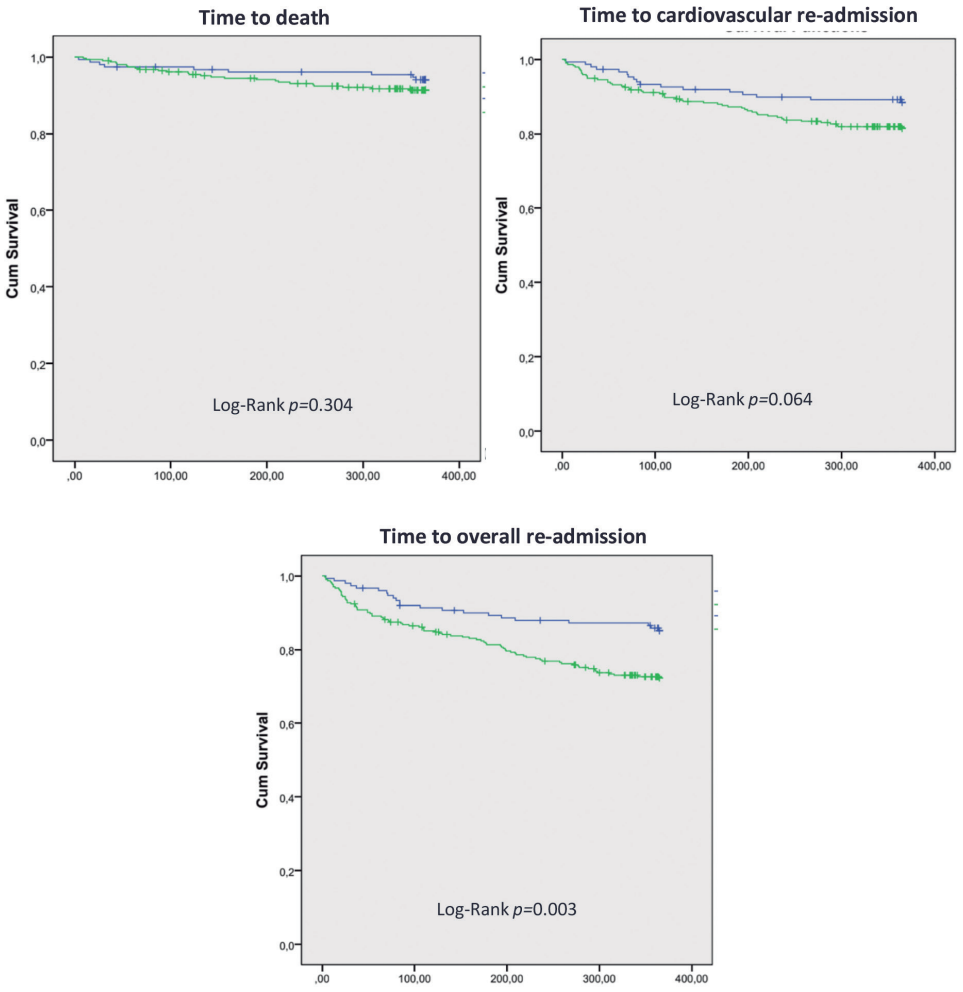

Figure 1. Kaplan-Meier curves showing one-year death and hospital re-admissions.

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ST-elevation Myocardial Infarction (MI). However, those trials included less than one fifth of diabetic patients (pts), and it remains unclear if there is such a benefit in a subgroup of pts associated with such high cardiovascular and renal failure risk. Our aim is to assess whether diabetic pts benefit of staged PCI of non-culprit lesions, after ST-elevation MI, in short term and within 12months follow-up.
Methods: A retrospective multicentric study done in a cohort of diabetic pts admitted to PCI, from October 2010 to January 2019, after ST-elevation MI and with documented multivessel coronary artery disease (CAD). Patients with previous CABG and without information about coronary anatomy or treated vessels were excluded. Complete revascularization (CR) was compared to incomplete revascularization (iCR), regarding the composite primary endpoint of in-hospital re-infarction or death and the co-primary endpoint of death and hospital readmissions, both cardiovascular and all-admissions, within one-year follow-up. Paired Student t-test an χ^2 test were used accordingly to assess differences in baseline characteristics, and univariate logistic regression was used to assess primary composite endpoint. For the co-primary endpoint, survival analysis with cox regression was performed. Alpha level for significance of 5%.
Results: 550 pts were included, of which 69.8% (n = 384) male and with a mean age of 67.2 ± 11 years. Demographic characteristics are summarized in table 1. The majority of pts underwent an iCR: 76.9% (n = 423) vs 23.1% (n = 127). These patients were older and were more frequently bradycardic and hypotensive (17.3% vs 9.4%, p = 0.03 and 50.1% vs 39.4%, p = 0.03, respectively). The majority of patients (43.8%, n = 241) presented with anterior ST elevation MI and 1.8% (n = 10) with de novo LBBB. Few pts achieved the primary endpoint (n = 45, 8.2%), with no difference between groups (Table 2). Regarding survival analysis, there were numerically fewer deaths (9 [5.8%] vs 26 [8.4%], log-rank p = 0.304) and fewer cardiovascular admissions (17 [11.4%] vs 53 [18.1%], log-rank p = 0.064) in the CR group, albeit not reaching statistical significance. All-cause re-admissions were lower in the CR group (22 [14.7%] vs 82 [27.1%], log rank p = 0.003, Figure 1 A-C).
Conclusions: These data suggest that, in diabetic patients, there is no difference between CR and iCR after ST-elevation MI, in the composite of in-hospital re-infarction or death, possibly signaling that differing complete revascularization may be safe short-term. However, within one year, there were fewer all-cause hospital re-admissions, and a signal for lower mortality.

P 45. ANTICOAGULATION IN PATIENTS WITH NEW-ONSET ATRIAL FIBRILLATION AFTER ACUTE CORONARY SYNDROME

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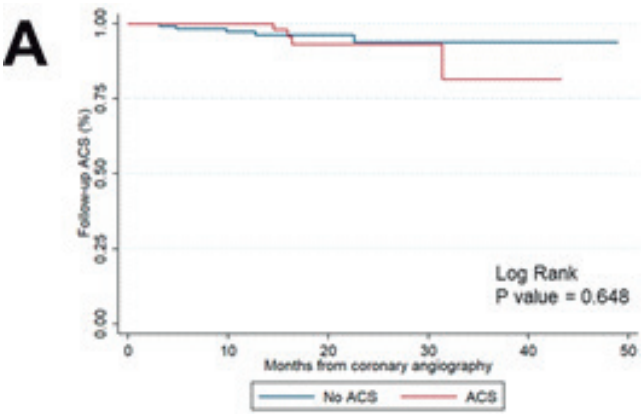
Introduction: New onset atrial fibrillation (NOAF) is a frequent complication on set of acute coronary syndrome (ACS) and its association with poor prognosis is well established. However, antithrombotic management remains challenging and requires a careful and balanced assessment of risk and benefit.Our aim was to evaluate the long term impact of anticoagulation in this population;
Methods: Retrospective study of patients with acute coronary syndrome (ACS) included in a single center between March/2013 and December/2018. NOAF was defined as paroxysmal or persistent atrial fibrillation unknown prior to admission. Primary endpoint was a composite of CV death, non-fatal myocardial infarction or stroke (MACE).
Results: We included 518 patients (67 ± 13 years; 73% males, 46% STEMI), of which 41 (8%) presented NOAF during hospitalization. At admission, NOAF patients were older, more frequently hypertensive and had a higher prevalence of heart failure (HF), pulmonary obstructive disease and dementia (all p value < 0.05). They presented more frequently with HF (higher Killip Kimball class as well as NT proBNP levels). Rhythm control strategy was chosen in 74% of the patients and maintenance of sinus rhythm was achieved in 78% of the cases. At discharge, only 49% of the patients with NOAF and CHA2DS2-VASC > 2 were anticoagulated. The most frequent reasons for not providing anticoagulation were short duration of AF followed by high bleeding risk; During a median follow-up time of 35 months, NOAF patients had higher risk of CV death (27%vs 7%, p = 0.001). Anticoagulation was not associated with reduction in mortality (p = 0.291), ischemic stroke or MACE (p = 0.337). Haemorrhagic events were slightly more frequent in anticoagulated patients but this difference was not statistically significant (p = 0.734). AF relapse occurred in about one third of the patients, especially in those with previous stroke/transitory ischemic attack (46% vs 8%, p = 0.008).
Conclusions: As observed previously, patients with NOAF have significantly worse prognosis; Despite the limitation of a small sample size, our findings suggest that anticoagulation of patients that achieved sinus rhythm may not modify long term outcomes; Patients with previous cerebrovascular events could be a subgroup that may particularly benefit from anticoagulation but randomized clinical trials, with longer follow up, are lacking.

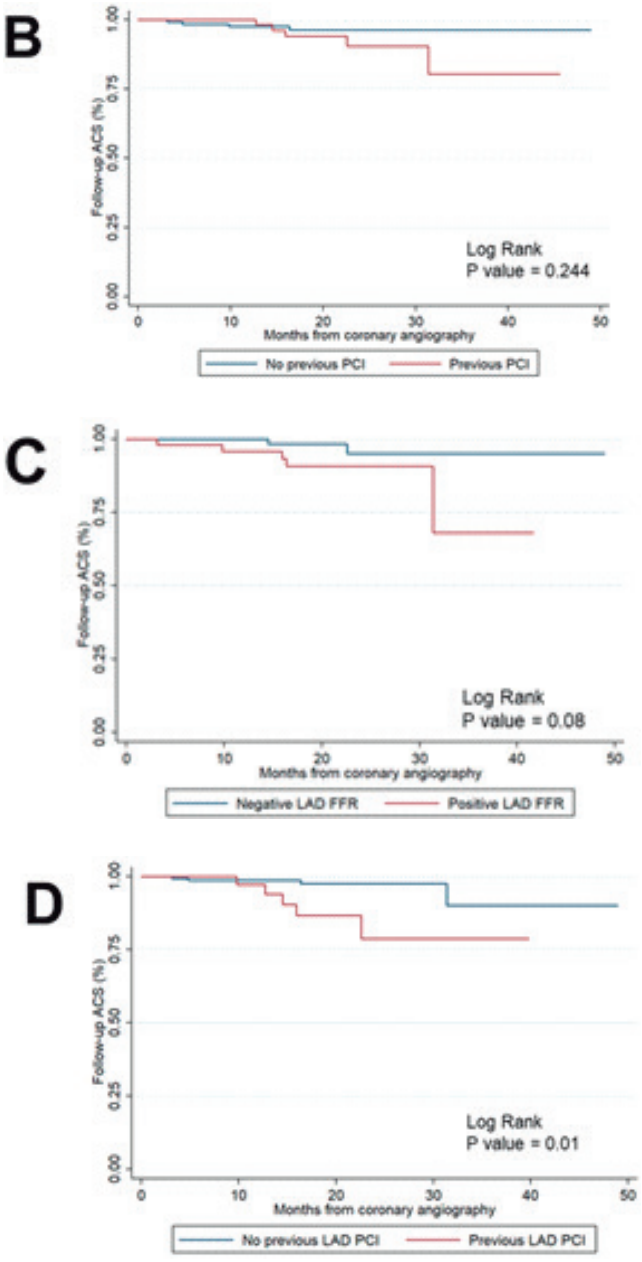
P 46. FRACTIONAL FLOW RESERVE-GUIDED ANGIOPLASTY PREDICTS ACUTE CORONARY SYNDROMES IN PREVIOUSLY NON-STENTED VESSELS

José Lopes de Almeida[1], Patrícia Marques-Alves[2], Célia Domingues[2], Ana Vera Marinho[2], Ana Maria Lé[2], Luís Leite[2], Elisabete Jorge[2], Sofia Martinho[2], Maria João Ferreira[2], Lino Gonçalves[2]

[1]Centro Hospitalar e Universitário de Coimbra/Hospitais da Universidade de Coimbra. [2]Centro Hospitalar e Universitário de Coimbra.

Introduction: Physiology guided revascularization (either by fractional flow reserve-FFR or instantaneous wave-free ratio-iwFR) is essential in the management of coronary artery disease. There are no specific orientations regarding its use after percutaneous coronary intervention (PCI). We aimed to assess the prognostic value of FFR/iwFR in previous PCI vessels *versus* non-stented vessels.
Methods: We conducted a retrospective study including all 196 patients that underwent coronary physiology assessment previous to angioplasty in our interventional cardiology unit from April 2015 to October 2017. A cutoff value of FFR ≤ 0.80 and/or iwFR ≤ 0.89 guided the decision of revascularization. Patients were followed-up for a median 18 (IQR 13-26) months. Outcomes regarding all cause death and ACS were collected.
Results: The mean age was 65.0 ± 10.9 years and 78.6% were male. About 27% had previous PCI. Left anterior descending coronary artery (LAD) was the most frequent diseased vessel (74.5% cases). PCI was performed in 38.3% cases, the majority in LAD lesions (27.6%). ACS at follow-up was predicted by LAD FFR and previous LAD PCI (p < 0.05), but not by ACS at presentation. LAD FFR was only associated with ACS at follow-up in patients with no previous LAD PCI (p = 0.038).
Conclusions: In this FFR-guided PCI study population, ACS at follow-up was predicted by LAD FFR and previous LAD PCI. Importantly, LAD FFR predicted ACS at follow-up in patients with no previous LAD PCI. These results might suggest the use of immediate post-PCI FFR evaluation, to exclude the presence of residual ischemia and improve outcomes.





P 44. TICAGRELOR TREATMENT STRATEGIES COMPARATIVE ANALYSIS IN PRIMARY PERCUTANEOUS CORONARY INTERVENTION

Luís Graça Santos, Rita Ribeiro Carvalho, Sara Fernandes, Fernando Montenegro Sá, Catarina Ruivo, Francisco Soares, Joana Correia, Sidarth Pernencar, João Morais

Centro Hospitalar de Leiria/Hospital de Santo André.

Introduction: There is some evidence favouring clopidogrel pretreatment in ST-elevation myocardial infarction (STEMI) patients (pts) undergoing primary PCI (pPCI). However, prasugrel has not been studied in this setting and a randomized trial with ticagrelor showed disappointing results.

Objectives: To investigate the effect of ticagrelor pretreatment on clinical outcomes of pts undergoing pPCI.

Methods: Retrospective multicentre study of 3,968 STEMI pts who underwent pPCI between January 2013 and December 2018. Patients with prior chronic exposure to oral antithrombotics (except acetylsalicylic acid), not acutely managed with ticagrelor, and those with missing data were excluded. A total of 382 pts were included for analysis, 327 (85.6%) received ticagrelor pretreatment (Group 1) and 55 (14.4%) were treated with ticagrelor only in the catheterization laboratory (Group 2). The primary endpoint of the study was related to reperfusion outcomes and defined as a composite of pPCI failure (post dilation Thrombolysis in Myocardial Infarction flow grade < 3), bailout use of GIIb/IIIa inhibitors or need for aspiration thrombectomy. The secondary safety endpoint was a composite of in-hospital major bleeding, need for red blood cell transfusion or haemoglobin drop ≥ 2 g/dL, and the tertiary endpoint was a composite of in-hospital all-cause death, stroke or re-infarction. Multivariate analysis was performed to determine the correlates of ticagrelor pretreatment and each of the endpoints. One-year follow up was achieved in 47 pts (12.3%).

Results: Overall, mean age was 61 ± 12 years and 23.8% were female. Crude event rates did not differ regarding both primary (31.1 vs 38.5%; p = 0.29) and tertiary (2.8 vs 5.5%; p = 0.39) endpoints, while secondary safety endpoint was more frequent among group 1 (35.2% vs 18.2%; p = 0.03). Multivariate analysis showed no differences regarding both primary and secondary endpoints (Figure 1A). At the Kaplan-Meier analysis, one-year cumulative event-free (all-cause death, stroke or re-infarction) rates did not differ (Figure 1B).

Conclusions: In this cohort of STEMI pts undergoing pPCI, reperfusion related outcomes and safety profile did not differ according to the timing of ticagrelor administration. Regarding these results and until more consistent data is available, ticagrelor pretreatment may be used although benefit remains unclear.

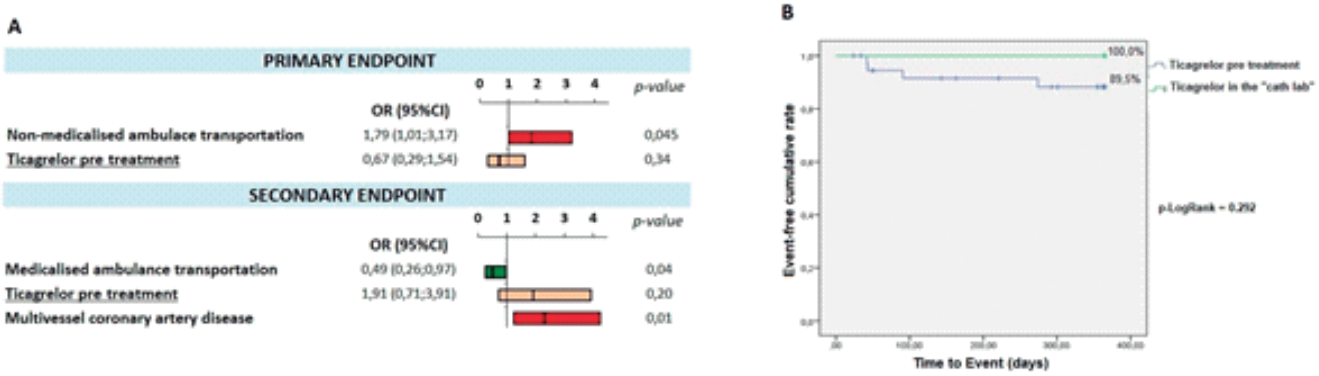


Figure 1. Multivariate analysis for primary and secondary endpoints (A); Kaplan-Meier analysis - freedom from events at one-year follow-up (B)

OR: odds ratio; 95%CI: 95% cofidence interval; "cath lab": catheterization laboratory

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P 42. KASH SCORE BEYOND MYOCARDIAL INFARCTION: A NEW RISK STRATIFICATION TOOL FOR MYOCARDIAL INJURY?

João Adriano Sousa[1], Joel Ponte Monteiro[2], Flávio Mendonça[3], Marina Santos[4], Margarida Temtem[1], Micaela Neto[4], José Alves[4], Graça Andrade[4], Andreia Pereira[2], Sónia Freitas[2], Décio Higino Pereira[4], M.ª Isabel Mendonça[2], A. Drumond Freitas[4]

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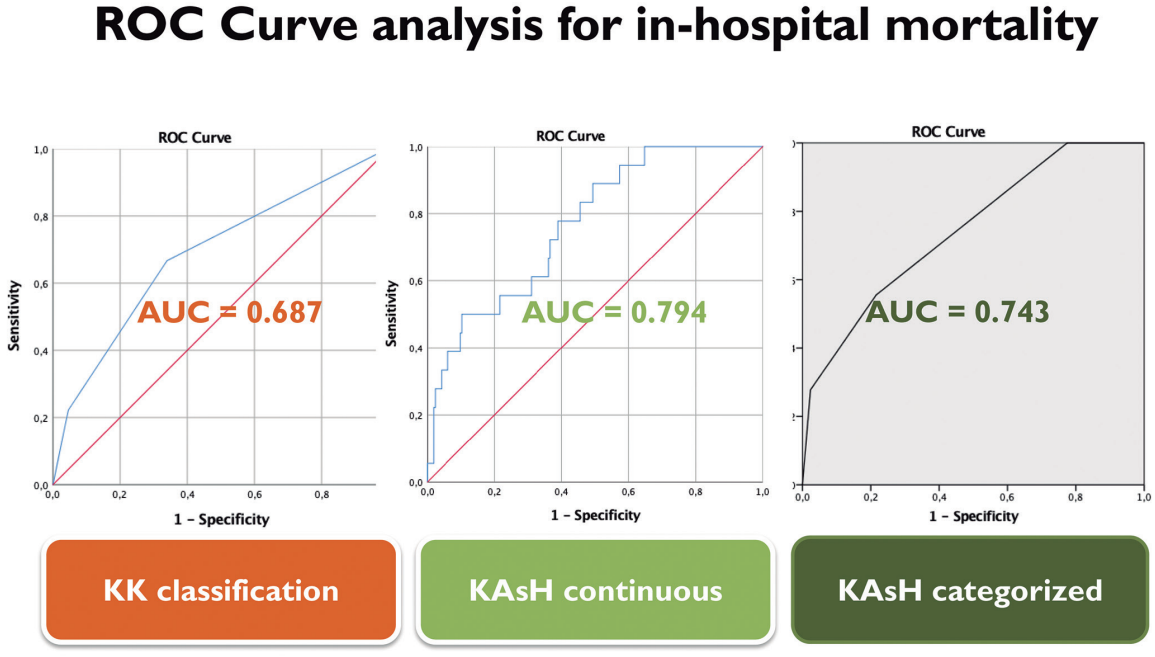
Introduction: Our group has recently validated and published a new score-KAsH score. KAsH consists of a continuous, multiplicative score based on 4 simple clinical variables available at first medical contact, proven to be a robust predictor of in-hospital and all-cause mortality at 1 year follow-up in patients with myocardial infarction, putting it next to other well established risk scores. However, the role of KAsH in patients with myocardial injury (Mi), a largely uncharacterized group in the literature, remains unknown.
Objectives: We aim to assess the predictive power of KAsH in patients with myocardial injury (Mi), regarding in-hospital mortality and at 1 year follow-up.
Methods: Prospective registry of 250 patients admitted consecutively through the emergency department from January 2018 onward, with higher than P99th high-sensitive troponin assay. The kit used was Roche's Elecsys hsSTAT, and the P99th appointed by the manufacturer was 14 ng/L. All patients with chronic kidney disease ClCr < 15 ml/min and myocardial infarction, were excluded from the analysis. We were left with 236 patients diagnosed with Mi. KAsH = (Killip Kimbal × Age × Heart Rate)/Systolic BP We used a simplified Killip classification: without heart failure (1 point), with heart failure (2 points) and in shock (3 points). We assessed the score's association to mortality and its predictive value through uni and multivariate analysis, ROC curves and their respective area under the curve (AUC).
Results: Univariate analysis identified higher Killip classes and KAsH scores among patients registering in-hospital mortality ($p < 0.001$) and mortality on follow-up ($p < 0.001$). In multivariate analysis, after adjustment for baseline traits and other univariate predictors of death, KAsH score as a continuous variable emerged as an independent predictor of in-hospital mortality ($p = 0.002$) but not KK classification ($p = 0.96$). We then categorized KAsH in its 4 different strata (1-4). Multivariate analysis indentified categorized KAsH as the only significant predictor of in-hospital mortality (OR 4.1, CI 2.1-8.1, $p < 0.001$), with the predictive power of KAsH being persistently superior (AUCs: KAsHcont 0.794, KAsHcat 0.743, KK 0.687). However, the same trend was not observed during follow-up, as none of them were significant predictors of mortality (all $p > 0.1$).
Conclusions: KAsH seems to maintain its in-hospital predictive value even in patients with Mi. To our knowledge, this is the first study that tries to apply risk scores and stratification tools to such a heterogeneous group of patients. By comprising hemodynamic variables, KAsH may actually be a better risk stratification tool than just the severity of heart failure on admission. However, unlike previously proven in myocardial infarction (MI), KAsH score and its hemodynamic variables do not seem to justify the high mortality on the long run behind these patients.

P 47. IMPACT OF PREVIOUS NEOPLASIA IN PATIENTS WITH ACUTE MYOCARDIAL INFARCTION

João Pais[1], Bruno Piçarra[1], Mafalda Carrington[1], Ana Rita Santos[1], Rui Guerreiro[1], Diogo Brás[1], Rita Rocha[1], Kisa Congo[1], Jose Aguiar[1], em nome dos investigadores do Registo Nacional de Síndromes Coronárias Agudas[2]

[1]Hospital do Espírito Santo, EPE, Évora. [2]CNCDC-Centro Nacional de Coleção de Dados em Cardiologia.

Introduction: Therapeutic Advances in Medical Oncology have allowed a significant increase in the survival of these patients (P). Coronary artery disease is equally prevalent in this population. However options for medical and interventional therapies are limited and prognosis of this population is different from general population.
Objectives: To characterize P with Acute Myocardial Infarction (AMI) and previous neoplasia and to evaluate the impact of the presence of neoplasia on the therapeutic approach, complications and in-hospital mortality.
Methods: A total of 16328 P with AMI were evaluated. We considered 2 groups: P with AMI and previous history of neoplasia and P with AMI without history of neoplasia. We compared age, personal history, clinical presentation, location and severity of coronary disease, therapeutic approach and ejection fraction (EF). In-hospital mortality (HM) and the following complications were evaluated: heart failure (HF), cardiogenic shock (CC), reinfarction, major haemorrhage, high-grade AV block. Multivariate analysis was performed, adjusting for the variables with a statistically significant difference in the groups' characterization in order to



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assess the relationship between previous neoplasia and HM and any of the complications considered.
Results: Patients with AMI and previous neoplasia constituted 4.9% (799P) of the study population. These patients were older (72 ± 11 vs 66 ± 13, p < 0.001) and had a higher prevalence of arterial hypertension (74.8% vs 68.5%; p = 0.001), previous heart failure (9.6% vs 5.5%, p = 0.001), valvular disease (6.0% vs 3.1%, p < 0.001), chronic renal failure (10.5% vs 5.6%, p < 0.001) and previous haemorrhage (4.4% vs 1.7%, p < 0.001). The P with AMI and previous neoplasia presented more frequently with Killip-Kimbal class > 1 (21.6% vs 15.9%, p < 0.001), however they were submitted to less coronariography (78.0% vs 88.1%, p < 0.001) and angioplasty (58.0% vs 67.9%, p < 0.001). The P with AMI and previous neoplasia presented higher HM (5.9% vs 3.5%, p < 0.001) and developed more complications during hospitalization: HF (24.1% vs 16.4%, p < 0.001, CC (5.8% vs 3.6% p < 0.005), major haemorrhage (3.3% vs 1.6%, p < 0.001), high-grade AV block (4.9% vs 3.2%, p < 0.008). After multivariate analysis, the presence of previous neoplasia in P with STEMI was an independent predictor of major haemorrhage (OR 2.11; p = 0.006) and heart failure (OR 1.36; p = 0.02).
Conclusions: The presence of previous neoplasia seems to influence the therapeutic approach of P with AMI and is associated with increased major haemorrhage and heart failure in this population of P.

Painel 9 - Doença Valvular 1

P 51. DETERMINANTS OF EXERCISE TOLERANCE IN AORTIC STENOSIS

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Introduction: A variation of 20 mmHg in the mean aortic gradient (MAG) in asymptomatic aortic stenosis (AS) was proposed as an indicator of severity during exercise echocardiography.
Objectives: To identify echocardiographic predictors of exercise tolerance in AS and analyze the association of the variation in MAG with exercise tolerance.
Methods: Prospective study of patients (pts) referred for testing with asymptomatic AS. We performed exercise echocardiography (EE) using the modified Bruce Protocol. Baseline, peak and recovery imaging was performed. Exercise tolerance (ExT) was expressed as METS and% of predicted METS for age and sex (PExT). Population: 24 pts, 14 males, age 72 ± 9 years, body mass index (BMI): 28 ± 4 Kg/m^2, etiology: bicuspid 6 pts, tricuspid 18 pts, 20 pts were in sinus rhythm and 4 in atrial fibrillation (AF).
Results: Baseline parameters: indexed aortic valve area (AVAi): 0.51 ± 0.13 cm^2/m^2, MAG 37 ± 12 mmHg, left ventricle ejection fraction (LVEF): 63 ± 9%, cardiac index (CI) 3.2 ± 0.6 L/min/m^2, global longitudinal strain (LVGLS) -16 ± 3%, VTI ratio: 0.26 ± 0.05, valvulo-arterial impedance (Zva): 3.9 ± 0.9 mmHg.ml^{-1}. m^2. Peak parameters: AVAi: 0.54 ± 0.14 cm^2/m^2, MAG 53 ± 17 mmHg, LVEF: 69 (IQR10)%, CI 3.2 ± 0.6, LVGLS -19 ± 5%, VTI ratio: 0.28 ± 0.06, Zva: 4.3 ± 1.4, ExT: METS 6 ± 2, representing 86 ± 26% of the PExT; 10 patients had MAG increments > 20 mmHg with exercise. Pts who had MAG increments > 20 mmHg had higher ExT (METS 7 ± 2.2 vs 5.6 ± 2.4; Cohen's d = 0.66). A higher peak CI correlated with a higher ExT (r = 0.5, p 0.01) and higher MAG variation (r = 0.6 p < 0.01). Age was also associated with ExT (r = -0.43, p < 0.05). We found no association of rest parameters of AS severity such as AVA, AVAi, VTI ratio, LVEF with ExT. In this sample the presence of AF showed no influence in ExT. Pts with bicuspid AS had higher absolute ExT (METS 8 ± 2.5 vs 5.5 ± 2, p < 0.05) but that was explained by the lower age given that the PExT was similar (88% vs 86% p = ns). The strongest predictor was the peak CI (B coefficient 0.5, R = 0.75, R2 0.57): when corrected for age, sex and BMI, for each increase of 0.5 mL/min/m^2 in the peak CI is expected an increase of 1 MET. This model explains 57% of the variation in exercise capacity in these patients.
Conclusions: higher mean aortic gradient variation is associated with higher exercise tolerance and the strongest determinant of exercise tolerance in AS is the peak CI.

P 48. CARDIAC DAMAGE IN A REAL-WORLD SEVERE AORTIC STENOSIS POPULATION

Rita Ventura Gomes[1], João Pais[2], Ana Rita Pereira[3], Daniel Sebaiti[3], Inês Cruz[3], Ana Rita Almeida[3], Isabel João[3], Hélder Pereira[3]

[1]Hospital de Vila Franca de Xira. [2]Hospital do Espírito Santo, EPE, Évora. [3]Hospital Garcia de Orta, EPE.

Introduction: The cardiac consequences of aortic stenosis, besides left ventricular ejection fraction and systolic pulmonary artery pressure, aren't considered in the recommendations for surgical intervention in patients (pts) with severe aortic stenosis (SAS). In 2017 a new staging echo classification was presented to accurately describe them.
Objectives: To evaluate this new echo classification in risk stratification of pts with SAS with or without AVR, in a real--world setting.
Methods: Retrospective cohort study of pts with SAS (mean transvalvular pressure gradient (MG)³40 mmHg or a peak transvalvular velocity (PTV)³4.0 m/s), who were examined in our echo lab between January 2014 and December 2016. Pts were classified according to new staging echo classification (no extravalvular cardiac damage-Stage 0, left ventricular damage-Stage 1, left atrial or mitral valve damage-Stage 2, pulmonary vasculature or tricuspid valve damage-Stage 3, or right ventricular damage-Stage 4). Follow-up (FU) was 2.6 ± 1.0 years. The primary outcome was a composite of cardiovascular death or heart failure hospitalization.
Results: 212 pts with SAS were included (age 76.1 ± 9.1 years, 31.6% men; aortic valve area 0.69 ± 0.21 cm^2; PTV 4.5 ± 0.4 m/s; MG 48.5 ± 11.6 mmHg; LVEF 58.8 ± 12.2%). 19 (9.0%) pts were classified as Stage 0, 29 (13.7%) as Stage 1, 129 (60.8%) as Stage 2, 12 (5.7%) as Stage 3 and 23 (10.8%) as Stage 4. Pts with more advanced stages had more events (stage 0: 5.3%; stage 1: 10.3%; stage 2: 17.1%; stage 3: 50.0%; stage 4: 52.2%; p < 0.0001). In the multivariate analysis, the classification system was also a predictor of the outcome, even when including the AVR in the model (Table). Similar findings in the uni and multivariate analysis were identified when analyzing only the pts with SAS and no aortic intervention (events in stage 0: 16.7%; stage 1: 18.2%; stage 2: 29.3%; stage 3: 75.0%; stage 4: 64.7%, p < 0.005; Figure).
Conclusions: In a real-world experience, the new staging echo classification presented by Généreux et al. showed a significant relationship between the extent of cardiac damage at baseline and the primary outcome in pts with SAS, even after controlling for AVR. This classification was also able to identify the SAS pts who did not perform AVR and had a significant risk of adverse events.

Variables	Adjusted HR (95% CI)	p-value
Sex*		0.047
Female	1	
Male	1.86 (1.01-3.44)	
AVR*		0.0001
Intervention	1	
No intervention	8.97 (3.85-20.90)	
eGFR*	0.99 (0.98-1.01)	0.201
Classification*		0.031
Stage 0	0.19 (0.02-1.537)	0.120
Stage 1	0.28 (0.08-1.01)	0.052
Stage 2	0.36 (0.17-0.74)	0.006
Stage 3	0.81 (0.30-2.19)	0.675
Stage 4	1	-

Table 1 Predictors of cardiovascular death or heart failure hospitalization.

* Variables with p<0.05 in univariate analysis.

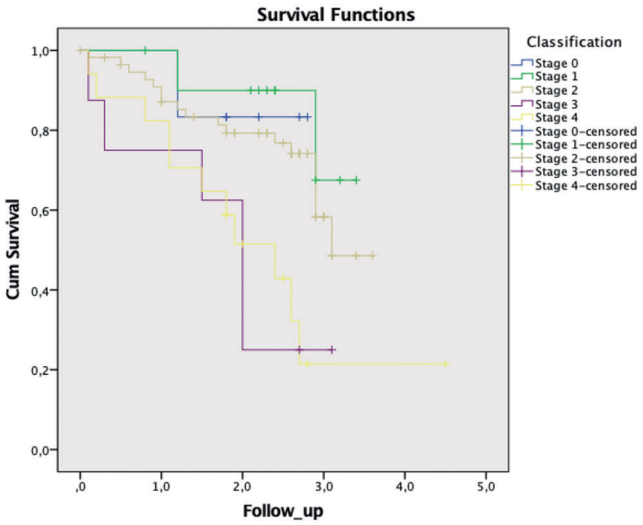


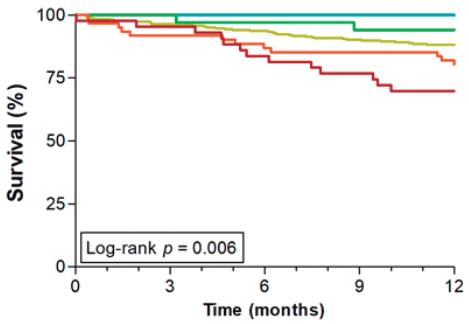
Figure 1 Survival of SAS pts with no intervention, as per the cardiac damage.

P 49. EXTERNAL VALIDATION OF A NEW STAGING SYSTEM FOR SEVERE AORTIC STENOSIS IN A PORTUGUESE COHORT

Cláudia de Jesus Silva[1], Sérgio Maltês[2], Pedro Freitas[1], António Ferreira[3], Rui Campante Teles[1], Maria João Borges Andrade[1], Tiago Nolasco[1], Sara Guerreiro[1], João Abecasis[1], Eduarda Horta[1], Carla Reis[1], Afonso Oliveira[1], Ana Coutinho Santos[1], Carla Saraiva [4], Gustavo Mendes[1], Manuel Canada[1], João Brito[1], Luís Raposo[1], Regina Ribeiras[1], Pedro Gonçalves[1], Henrique Mesquita Gabriel[1], Manuel Almeida[1], José Pedro Neves[1], Miguel Mendes[4]

[1]Centro Hospitalar de Lisboa Ocidental, EPE/Hospital de Santa Cruz. [2]Unidade de Insuficiência Cardíaca, Hospital São Francisco Xavier-Centro Hospitalar Lisboa Ocidental. [3]Unica-Unidade de imagem cardiovascular por TC e RM do Hospital da Luz Lisboa. [4]Hospital Sta Cruz.

Introduction: Recently, a new staging system for severe aortic stenosis (AS) based upon the extent of extra-aortic-valve cardiac damage has been developed (Genereux et al. Eur Heart J 2017). The present study aimed to: 1) determine the prevalence of the different stages of extra-aortic valvular cardiac damage and its impact on prognosis in a real-world Portuguese cohort and; 2) evaluate the distribution of aortic valve calcium score (AV-CaSc) and its prognostic value.
Methods: Consecutive patients evaluated at a single-centre TAVI-programme between Nov/2015 and Nov/2018 were retrospective selected. The extent of extra-aortic valve cardiac damage was defined by echocardiography as stage 0 (no cardiac damage), stage 1 (left ventricular damage), stage 2 (mitral valve or left atrial damage), stage 3 (tricuspid valve or pulmonary artery vasculature damage) or stage 4 (right ventricular damage). AV-CaSc was estimated routinely at CT-angiography as per TAVI-programme protocol. The primary endpoint was 1-year all-cause mortality after CT-angiography. Survival analysis (Cox-regression hazards model and Kaplan-Meier) was performed. To account for the effect of aortic valve replacement (AVR), this variable entered the Cox-regression model as a time-dependent covariate.
Results: A total of 443 patients (mean age 82 ± 7 years, 44% men, median euroSCORE II 4% [IQR 2.4-5.8]) were identified. After Heart Team discussion, 79% (n = 349) underwent AVR (TAVI = 307; surgical valve repair = 42); 9% (n = 42) await intervention; 6% (n = 25) remain under medical treatment; 4% (n = 19) died during the period of evaluation; and 2% (n = 8) underwent palliative aortic balloon valvuloplasty. According to the proposed classification, the distribution of patients from stages 0 through 4 was: 0.2% (n = 1), 7.5% (n = 34), 67.8% (n = 306), 14% (n = 63), and 10.4% (n = 47). Additionally, for each increasing stage of cardiac damage, the burden of AV-CaSc was higher (from stage 1 through 4: 1,776 [IQR 1,217-2,448]; 2,448 [1,796-3,442]; 2,448 [1,832-3,622]; 2,960 [1,936-4,878] units; p for trend = 0.002). All-cause mortality at 1-year was 14% (n = 63). Mortality increased alongside with increasing extent of cardiac damage (from stage 0 through 4: 0% [n = 0], 6% [n = 2], 12% [n = 36], 20% [n = 12], and 30% [n = 13]) (Figure). Multivariable analysis revealed chronic renal disease (HR 1.37 per stage [1.15-1.64], p < 0.001), AV-CaSc (HR 1.02 per 100 units [1.01-1.03], p = 0.007), AVR (HR 0.46 [0.26-0.81], p = 0.007) and stage of cardiac damage (HR 1.54 per stage [1.15-2.05], p = 0.004) as independent predictors of 1-year mortality.



Number at risk					
Stage 0	1	1	1	1	1
Stage 1	34	34	33	32	32
Stage 2	304	294	286	275	268
Stage 3	61	57	54	53	50
Stage 4	43	41	37	33	30

Conclusions: In a real-world Portuguese cohort of severe AS patients, the extent of cardiac damage was associated with 1-year mortality. AV-CaSc grants additional prognostic information to this classification. Incorporation of this staging system into patient evaluation may be useful in the risk assessment of severe AS.

P 50. LEFT VENTRICULAR REMODELLING IN AORTIC STENOSIS: PREDICTION FROM ECG CRITERIA

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Introduction: Left ventricular hypertrophy (LVH) and remodelling in patients with severe aortic stenosis (AS) is mainly characterized by imaging tools. Electrocardiography may provide distinct criteria for LVH, strain and fibrosis from QRS fragmentation (fQRS) but their accuracy has not been well described yet.
Objectives: To describe the accuracy of distinct ECG criteria for LVH and remodelling in patients with severe aortic stenosis.
Methods: We prospectively studied 53 consecutive patients (age: 71 ± 8 years [min. 51, max. 84 years], 54.7% men) with severe symptomatic AS, referred for surgical aortic valve replacement with no previous history of ischemic cardiomyopathy. Mean transaortic pressure gradient was 54.6 mmHg [IQR 46.6-63.2] and aortic valve area was 0.74 cm^2 [IQR 0.61-0.89)]. LVH criteria [Sokolow-Lyon index, Cornell voltage, Romhilt-Estes Score (RE)], strain pattern (downsloping convex ST segment and/or inverted asymmetrical T wave, opposite to main QRS deflection) and fQRS (defined as the presence of various RSR' patterns with different QRS morphologies) were assessed by two independent readers and compared with LVH and indexes of remodelling as assessed by both echocardiography and CMR. Aortic stenosis severity and LV function indexes were also compared in two groups of patients, with and without ECG strain markers.
Results: LVH was present in 93% of men and 88% of women as assessed by echocardiography (median M-mode mass 155 g/m^2 [IQR 127-209]) and 85% of men and 50% of women by CMR (median LV mass 76.5g/m^2 [IQR 57.4-94.8]). CMR geometric remodelling was more prevalent than LVH [92.3% of men and 86.4% of women; median 0.94 g/mL (IQR 0.83-1.04)]. Patients with LHV ECG

		ST downslope		Non-ST down slope	p-value	T-wave inversion		Non-T wave inversion	p-value
TTE	**AVmean** (mmHg)	65.6	vs	54.1	**p= 0.047**	66.3	vs	53.8	**p= 0,005**
	GLS (%)	-12,9	vs	-16,4	**p= 0.056**	-12,4	vs	-16,1	**p= 0,036**
	E/e'	21,8	vs	14,9	**p= 0.010**	19,5	vs	15,0	**p= 0,002**
CMR	**LV ejection fraction** (%)	52.4	vs	64.6	**p= 0.007**	54.9	vs	65.4	**p= 0,011**
	LV indexed mass (g/m2)	95.2	vs	77.5	**p= 0.007**	99.2	vs	72.3	**p= 0,002**
	NT-proBNP (ng/mL)	2124	vs	1028	**p= 0.011**	1929	vs	891	**p= 0,023**

Table 1: ECG strain markers significantly related to Aortic stenosis severity and LV function indexes

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criteria (positive SL, C and RES) had statistically higher LV mass (104.5 vs 76.5 g/m^2, p = 0.015). SL index and Cornell criteria had the best sensitivity for LV mass (55.1% for both) and SL the highest specificity (68.4%). 42% of the patients had one or two ECG strain markers and their presence were both related to higher transvalvular mean gradients, higher E/e' ratio, lower global longitudinal strain, increased LV mass and lower ejection fraction (Table). ECG fragmentation was present in 22% of the patients, 73% of them with no other ECG abnormalities. This pattern was significantly related to the presence of delayed enhancement at CMR (83% vs 27%, p = 0.034) and the percentage of fibrosis (8.1% vs 3.9%, p = 0.049).

Conclusions: ECG criteria for LVH have poor accuracy in identifying LVH by CMR in patients with severe aortic stenosis. However, ECG strain may identify more advanced stages of the disease as assessed by higher LV mass and worse indexes of LV function. As for other clinical contexts, fQRS is related to the presence of myocardial fibrosis in this group of patients.

P 52. THE IMPACT OF OBESITY ON CARDIAC FUNCTION AND MORPHOLOGY IN AORTIC STENOSIS

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Introduction: It is known that obesity can affect cardiac structure and function leading to an entity described as obesity cardiomyopathy. Several pathophysiological mechanisms can be involved in this association, such as hemodynamic changes and endocrine and paracrine effects related with epicardial fat. In this study we aimed to evaluate the effect of adipose tissue parameters on cardiac function and structure in patients with severe aortic stenosis (sAS).

Methods: We evaluated a cohort of patients with sAS referred to cardiac surgery (EPICHEART study). Body weight and height were measured to derive body mass index (BMI) and body composition was determined using bioelectrical impedance analysis. Epicardial fat volume (EFV) was evaluated by thoracic multidetector CT and visceral, subcutaneous and total abdominal fat were evaluated by a single-slice abdominal CT at L4-L5. Echocardiography was performed to analyze cardiac structure (LA volume index; LV volumes; LV mass), systolic (Simpson ejection fraction, S' velocity) and diastolic function (E/A ratio; E' velocities; E/E' ratio). In a subset of patients, LA function was assessed by speckle-tracking using Velocity Vector Imaging software to determine peak LA strain, peak strain before atrial contraction and LA passive emptying strain.

Results: The final analysis included 272 participants (75.5 ± 8.4 years old, 50%males). Patients with higher weight have an enlarged septum and posterior wall and an increased LV mass and volume (ρ = 0.274, p < 0.001 and ρ = 0.208, p < 0.01, ρ = 466, p < 0.01 respectively). We also found a significant correlation between other adipose tissue parameters (BMI, waist circumference (WC), visceral abdominal fat (VAF) and EFV) and LV mass. We did not observe a significant correlation between adipose tissue parameters and systolic function (correlation between BMI and Ejection fraction (EF) ρ = 0.040, p = 0.59; between EFV and EF ρ =-0.003, p = 0.96; between VAF and EF ρ = 0.043, p = 0.58). Regarding the effects on diastolic function, there was no significant association between adipose tissue parameters and diastolic function (correlation between BMI and E/E' ratio ρ = 0.120, p = 0.23; between EFV and E/E' ρ = 0.173, p = 0.10). Although we observed that patients with increased WC and higher EFV have an increased LA area (20.65 to 23.12 cm^2, p < 0.01; 20.88 to 23.78 cm^2, p = 0.04, respectively), adipose tissue parameters did not influence LA reservoir, conduit or pump function assessed by speckle-tracking.

Conclusions: Contrary to what has been observed in other populations, in patients with sAS we did not observe a significant effect of adipose tissue parameters in cardiac structure or function. LA function also did not correlate with adipose tissue. Therefore, it is likely that, in patients with sAS, the impact of increased post-load in cardiac structure and function offsets the effect of adipose tissue in heart remodeling.

P 53. SEVERE AORTIC STENOSIS IN OCTOGENARIANS-IS SURGICAL AORTIC VALVE REPLACEMENT A GOOD OPTION?

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Introduction: Symptomatic severe aortic stenosis entails a high risk of morbidity and mortality without valve replacement, and increasing age is associated with higher surgical risk. This study aims to determine the prognostic impact of advanced age in patients with severe aortic stenosis referred to surgical valve replacement.

Methods: We conducted a retrospective study encompassing patients referred to surgical aortic valve replacement due to severe aortic stenosis, from January 2016 to December 2018. Clinical characteristics, diagnostic studies and follow-up were analysed. Patients were divided in two groups according to the age: < 80 and ≥ 80 years old. Independent predictors of mortality and/or re-hospitalization were identified through a binary logistic regression analysis, considering p = 0.05.

Results: A total of 234 patients were included, with a 65.4% male predominance and a median age of 75.5 years old. 29.9% had concomitant surgical coronary artery disease and 88% waited in an out-patient setting. Median delay until surgery was 93 days and median follow-up after surgical referral was 525 days. 64 patients (27.4%) had ≥ 80 years old. Male gender (70.6% vs 51.6%; p = 0.006), smoking habits (13.6% vs 1.6%; p = 0.007), higher glomerular filtration rate (74.8 vs 61.3 ml/min; p < 0.001) and lower Euroscore II values (2.86% vs 4.57%; p = 0.002) were more common in younger patients. Only 7.8% of the older patients underwent transcatheter aortic valve implantation, after Heart Team discussion. Global mortality rate (26.6% vs 15.3%; p = 0.047) and the composite of mortality or re-hospitalization (53.1% vs 37.6%; p = 0.032) were more frequent in older patients. Despite re-hospitalizations were also more common (39.1% vs 30.6%), it didn't reach statistical significance. After multivariate analysis, advanced age was not an independent predictor of mortality and/or re-hospitalization. In this population, only the presence of extracardiac arteriopathy (p = 0.007) and a longer delay until surgery (p = 0.05) were independent predictors of mortality. High Euroscore II values (p = 0.031) were independent predictors of the composite of mortality or re-hospitalization.

Conclusions: Older patients have higher mortality, but advanced age was not an independent predictor of mortality and/or re-hospitalization. The decision to perform surgical aortic valve replacement in an octogenarian patient with symptomatic severe aortic stenosis should consider patient's comorbidities, and not only the age per se.

Painel 1 - Insuficiência Cardíaca 3

P 77. ADESÃO AO REGIME MEDICAMENTOSO NUMA CLÍNICA DE INSUFICIÊNCIA CARDÍACA

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Introdução: A adesão ao regime terapêutico é fundamental no tratamento de doenças crónicas. Estima-se que o grau de adesão nos países desenvolvidos não ultrapasse os 50%. Na Insuficiência Cardíaca com Fração de Ejeção reduzida existem dois tipos principais de fármacos utilizados: os fármacos modificadores de prognóstico e os fármacos para controlo sintomático. A não adesão ao regime medicamentoso agrava o prognóstico do doente e compromete o adequado controlo da sintomatologia, aumentando significativamente a probabilidade de descompensações e consequente deterioração da qualidade de vida.
Objetivos: Avaliar a adesão ao regime medicamentoso nos doentes seguidos numa clínica de Insuficiência Cardíaca (CIC).
Métodos: Estudo unicêntrico e retrospetivo de doentes seguidos numa CIC entre janeiro e novembro de 2019. Foram incluídos doentes com fração de ejeção < 40%. Foi aplicada a escala Medida de Adesão aos Tratamentos (MAT). É considerado existir adesão ao regime terapêutico quando se obtém um *score* total igual ou superior a 5. Nos doentes com *score* inferior a 5 foi aplicado um protocolo de intervenção.
Resultados: A amostra foi constituída por 85 doentes com idade média de 65 anos, com predominância do género masculino (80%). A etiologia predominante foi a não isquémica 63% e 58,7% dos doentes tinham história de internamento prévio por Insuficiência Cardíaca. 94,2% dos doentes obteve um *score* superior a 5. O *score* médio de adesão ao regime medicamentoso foi de 5,67. A questão que obteve menor *score* (5.2) foi «Alguma vez foi descuidado com as horas da toma dos medicamentos para a sua saúde?», justificando-se maioritariamente com a falta da toma do diurético em dias em que o doente teria de se ausentar de casa. No grupo de doentes em que foi aplicado o protocolo de intervenção 7, (5,8%), constatou-se uma melhoria do *score* na segunda avaliação para um valor médio igual a 5,8.
Conclusões: Nesta amostra, a maioria dos doentes obteve um *score* superior a 5 na escala MAT. Naqueles com *score* inferior a 5, o protocolo de intervenção foi eficaz na melhoria do cumprimento terapêutico. Estes dados reforçam a importância do acompanhamento dos doentes em programas estruturados de forma a otimizar a adesão dos mesmos ao regime terapêutico.

P 72. RISK STRATIFICATION IN HF WITH MID-RANGE LVEF: THE ROLE OF CARDIOPULMONARY EXERCISE TESTING

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Introduction: Cardiopulmonary exercise testing (CPET) is recommended in the evaluation of selected patients with Heart Failure (HF). Notwithstanding, its prognostic significance has mainly been ascertained in those with left

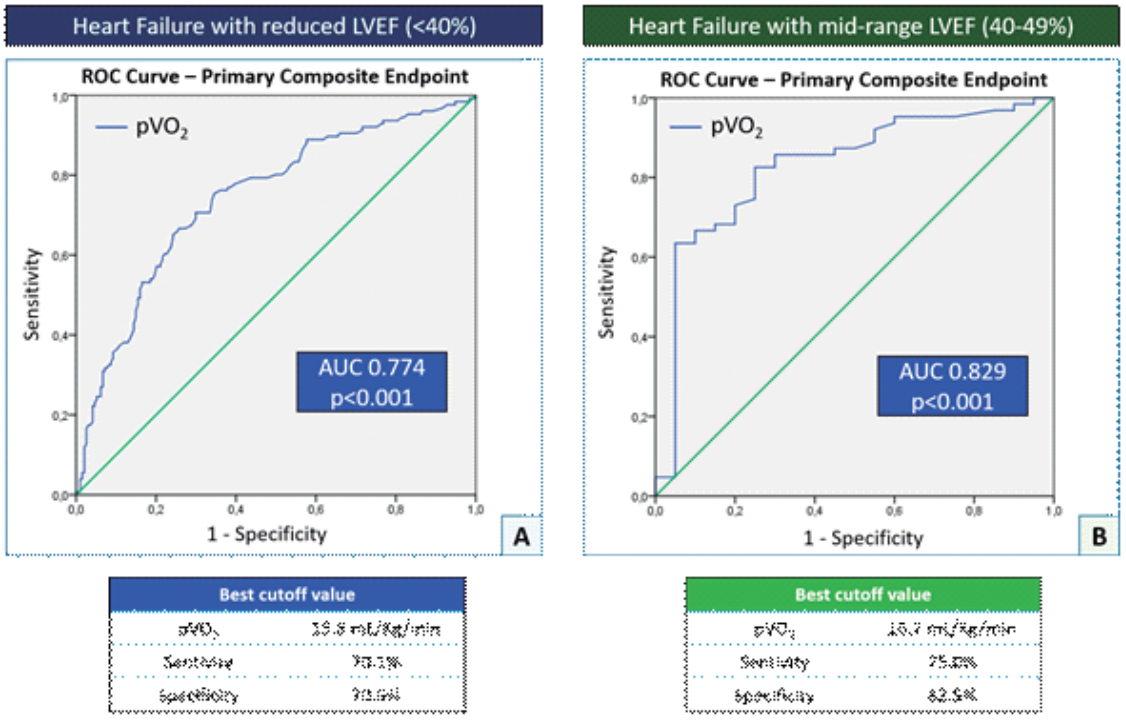

Figure 1 – ROC curves to determine the best cutoff value of pVO2 that predicts the primary composite endpoint in patients with HFrEF **(A)** and HFmrEF **(B)**.

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ventricular ejection fraction (LVEF) < 40% (i.e., HFrEF). The main goal of our study was to assess the role of CPET in risk stratification of HF with mid-range (40-49%) LVEF (i.e., HFmrEF) compared to HFrEF.
Methods: We conducted a single-center retrospective study of consecutive patients with HF and LVEF < 50% who underwent CPET from 2003-2018. The primary composite endpoint of death, heart transplant or HF hospitalization was assessed.
Results: Overall, 404 HF patients (mean age 57 ± 11 years, 78.2% male, 55.4% ischemic HF) were included, of whom 321 (79.5%) had HFrEF and 83 (20.5%) HFmrEF. Compared to the former, those with HFmrEF had a significantly higher mean peak oxygen uptake (pVO_2) (20.2 ± 6.1 vs 16.1 ± 5.0 mL/Kg/min; p < 0.001), lower median minute ventilation/carbon dioxide production (VE/VCO_2) [35.0 (IQR: 29.1-41.2) vs 39.0 (IQR: 32.0-47.0); p = 0.002) and fewer patients with exercise oscillatory ventilation (EOV) (22.0 vs 46.3%; p < 0.001). Over a median follow-up of 28.7 (IQR: 13.0-92.3) months, 117 (28.9%) patients died, 53 (13.1%) underwent heart transplantation, and 134 (33.2%) had at least one HF hospitalization. In both HFmrEF and HFrEF, pVO_2 < 12 mL/Kg/min, VE/VCO2 > 35 and EOV identified patients at higher risk for events (all p < 0.05). In Cox regression multivariate analysis, pVO_2 was predictive of the primary endpoint in both HFmrEF and HFrEF (HR per +1 mL/Kg/min: 0.81; CI: 0.72-0.92; p = 0.001; and HR per +1 mL/Kg/min: 0.92; CI: 0.87-0.97; p = 0.004), as was EOV (HR: 4.79; CI: 1.41-16.39; p = 0.012; and HR: 2.15; CI: 1.51-3.07; p < 0.001). VE/VCO_2, on the other hand, was predictive of events in HFrEF but not in HFmrEF (HR per unit: 1.03; CI: 1.02-1.05; p < 0.001; and HR per unit: 0.99; CI: 0.95-1.03; p = 0.512, respectively). ROC curve analysis demonstrated that a pVO2 > 16.7 and > 15.8 mL/Kg/min more accurately identified patients at lower risk for the primary endpoint (NPV: 91.2 and 60.5% for HFmrEF and HFrEF, respectively; both p < 0.001).
Conclusions: CPET is a useful tool in HFmrEF. Both pVO_2 and EOV independently predicted the primary endpoint in HFmrEF and HFrEF, contrasting with VE/VCO_2, which remained predictive only in latter group. Our findings strengthen the prognostic role of CPET in HF with either reduced or mid-range LVEF.

P 73. CARDIOPULMONARY EXERCISE TESTING IN FEMALE HEART FAILURE PATIENTS: IS THERE A GENDER DIFFERENCE?

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Introduction: Cardiopulmonary exercise testing (CPET) is often performed to predict major cardiac events in heart failure (HF) patients, however there is no recent evidence regarding the prognostic power of CPET parameters in female HF patients. The International Society for Heart and Lung Transplantation (ISHLT) guidelines recommend that, in female patients, percent of predicted peak VO_2 (pVO_2) or V_E/V_{CO2} slope be considered in conjunction with peak VO_2 but their prognostic power is unclear in this group of patients. The aim of this study was to compare the prognostic ability of CPET parameters between female and male HF patients.
Methods: Retrospective evaluation of patients with CHF submitted to CPET in a tertiary center. Patients were followed up for 36 months for the combined endpoint of cardiac death, urgent heart transplantation or need for mechanical circulatory support. Several CPET parameters were analysed as potential predictors of the combined endpoint and their predictive power was compared (area under the curve (AUC) analysis, Hanley & McNeil test for comparison of AUCs) between two groups: female patients (group A) and male patients (group B).

Parameters	All		A) Female		B) Male		Comparison of A-B AUCs (p-value)
	HR; 95% CI	AUC	HR; 95% CI	AUC	HR; 95% CI	AUC	
pVO_2	0.861; 0.822-0.901	0.749	0.766; 0.669-0.877	0.884	0.878; 0.836-0.922	0.725	**0.044**
Percent of predicted pVO_2	0.954; 0.941-0.967	0.760	0.912; 0.877-0.948	0.922	0.961; 0.948-0.975	0.724	**0.004**
V_E/V_{CO2} slope	1.062; 1.046-1.077	0.777	1.106; 1.064-1.150	0.941	1.053; 1.035-1.071	0.741	**0.003**
OUES	0.931; 0.751-1.154	0.749	0.027; 0.005-0.146	0.948	0.977; 0.827-1.156	0.718	**0.001**
Ventilatory Power	0.547; 0.460-0.651	0.767	0.363; 0.214-0.618	0.818	0.590; 0.492-0.706	0.751	0.470
HRR	0.935; 0.911-0.960	0.706	0.859; 0.778-0.949	0.824	0.945; 0.920-0.971	0.680	0.110
PET_{CO2} AT	0.864; 0.829-0.901	0.746	0.803; 0.706-0.913	0.808	0.875; 0.836-0.915	0.733	0.430
PET_{CO2} Max	0.882; 0.846-0.920	0.725	0.832; 0.738-0.938	0.759	0.892; 0.852-0.933	0.713	0.630

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Results: 359 patients were evaluated, mean age 55 ± 13 years, 22% female gender, with a mean New York Heart Association class of 2.18 ± 0.54 and 157 (44%) patients with an ischemic cause for HF. Female patients had a higher mean Heart Failure Survival Score (8.9 ± 0.8 vs 8.6 ± 1.1; p = 0.009) and there were no significant differences between groups regarding age (54.35 ± 13.82 vs 55.87 ± 12.17; p = 0.346), left ventricular ejection fraction (30 ± 7 vs 29 ± 8; p = 0.285) or mean CPET respiratory exchange ratio (RER) (1.06 ± 0.1 vs 1.07 ± 0.1, p = 0.722) There were 69 major cardiac events (58 deaths and 11 urgent heart transplantations) during the 3-year period, with no significant difference between groups (14.3% vs 20.6%, p = 0.215). pVO_2, percent of predicted pVO_2, V_E/VCO_2 slope and oxygen uptake efficiency slope (OUES) had statistically superior predictive power in female HF patients. The discriminative power of each parameter analysed by gender is presented in Table 1. A pVO_2 value of ≤ 14 mL/Kg/min had a positive predictive power of 50% in group A and 41% in group B. Group A: Sensitivity of 82% and specificity of 83%, Group B: Sensitivity of 54% and specificity of 84%. A V_E/V_{CO2} slope value of > 35 had a positive predictive power of 45% in group A and 37% in group B. Group A: Sensitivity of 90% and specificity of 83%. Group B: Sensitivity of 56% and specificity of 74%. Ventilatory power, heart rate recovery 1 minute after exercise (HRR), end-tidal CO_2 pressure ($PETCO_2$) at anaerobic threshold (AT) and maximum exercise (Max) did not show significant difference in prognostic power between groups.
Conclusions: pVO_2, percent of predicted peak VO_2 and V_E/V_{CO2} slope have a significantly higher predictive power of major cardiac events in female HF patients in comparison to male patients.

P 74. CARDIOPULMONARY EXERCISE TESTING IN THE AGE OF NEW HEART FAILURE THERAPIES: STILL A POWERFUL TOOL?

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Introduction: Cardiopulmonary exercise testing (CPET) is an important exam for risk stratification in chronic heart failure (CHF) patients, including the decision for heart transplantation. With the introduction of new therapies with prognostic benefit such as SLGT2 inhibitors, IV iron, Mitraclip or sacubitril-valsartan and the improvement of the HF care, there is no recent evidence on the prognostic power of CPET parameters in this new subset of patients. The aim of this study was to evaluate the prognostic difference of CPET parameters in patients submitted to CPET before and after 2014.
Methods: Retrospective evaluation of patients with CHF submitted to CPET in a tertiary center. Patients were followed up for 12, 24 and 36 months for the composite endpoint of cardiac death, urgent heart transplantation or LVAD. Peak oxygen consumption (pVO2) and VE/VCO2 slope were analysed and their predictive power was compared (area under the curve (AUC)) between 2 groups: patients submitted to CPET before (group A) or after (group B) 2014 (group A). HF events were stratified according to cut-off values defined by the International Society for Heart and Lung Transplantation (ISHLT) guidelines: pVO2 of ≤ 12 mL/Kg/min and VE/VCO2 slope of > 35.
Results: CPET was performed in 487 patients (283 patients in group A, 204 patients in group B). Group B patients were older (54 ± 12 vs 59 ± 13, p = 0.002) and had a higher left ventricular ejection fraction (28 ± 8 vs 33 ± 8, p < 0.001), with no significant differences in gender (76% vs 86% male) and Heart Failure Survival Score (HFSS 8.7 ± 1.0 vs 8.6 ± 1.3, p = 0.494) In patients with pVO_2 ≤ 12, Group A had a significant higher number of the composite endpoint at 12 months (47% vs 2%, p < 0.001) and 24 months (53% vs 18%, p = 0.02) At 24 months, pVO_2 value of ≤ 12 mL/Kg/min had a positive predictive power of 53% in group A and 18% in group B. Regarding V_E/V_{CO2} slope > 35, the group A had also a significant higher number of the composite endpoint at 12 months (29% vs 2%, p < 0.001), 24 months (39% vs 13%, p = 0.001) and 36 months (46% vs 24%, p = 0.037). At 24 months, V_E/V_{CO2} slope value of > 35 had a positive predictive power of 39% in group A and 13% in group B.
Conclusions: In patients with recent HF therapies there was a significant reduction in the occurrence of major cardiac events. ISHLT guideline established cut-off values for pVO_2 and V_E/V_{CO2} slope had significantly less prognostic power in this group of patients, which suggests that a revision of cut-off values may be needed.

P 75. VALIDATION OF A HEART FAILURE RISK SCORE IN A REMOTE MONITORING COHORT

Isabel Cardoso, Madalena Coutinho Cruz, Guilherme Portugal, António Valentim Gonçalves, Ana Sofia Delgado, André Grazina, Pedro Silva Cunha, Bruno Valente, Ana Lousinha, Mário Martins Oliveira, Rui Cruz Ferreira

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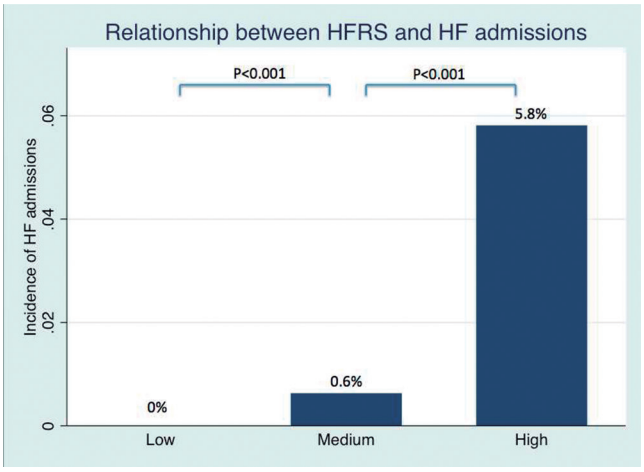
Introduction: Patients (P) submitted to cardiac ressynchronization therapy (CRT) are at high risk of heart failure (HF) events during follow-up. Continuous analysis of various physiological parameters, as reported by remote monitoring (RM), can contribute to point out incident HF admissions. Tailored evaluation, including multi-parameter modelling, may further increase the accuracy of such algorithms.
Objectives: Independent external validation of a commercially available algorithm ("Heart Failure Risk Status" HFRS, Medtronic, MN, USA) in a cohort submitted to CRT implantation in a tertiary center.
Methods: Consecutive P submitted to CRT implantation between January 2013 and September 2019 who had regular RM transmissions were included. The HFRS algorithm includes OptiVol (Medtronic Plc., MN, USA), patient activity, night heart rate (NHR), heart rate variability (HRV), percentage of CRT pacing, atrial tachycardia/atrial fibrillation (AT/AF) burden, ventricular rate during AT/AF (VRAF), and detected arrhythmia episodes/therapy delivered. P were classified as low, medium or high risk. Hospital admissions were systematically assessed by use of a national database ("Plataforma de Dados de Saúde"). Accuracy of the HFRS algorithm was evaluated by random effects logistic regression for the outcome of unplanned hospital admission for HF in the 30 days following each transmission episode.
Results: 1,108 transmissions of 35 CRT P, corresponding to 94 patient-years were assessed. Mean follow-up was 2.7 yrs. At implant, age was 67.6 ± 9.8 yrs, left ventricular ejection fraction 28 ± 7.8%, BNP 156.6 ± 292.8 and NYHA class > II in 46% of the P. Hospital admissions for HF were observed within 30 days in 9 transmissions. Stepwise increase in HFRS was significantly associated with higher risk of HF admission (odds ratio 12.7, CI 3.2-51.5; Figure). HFRS had good discrimination for HF events with receiving-operator curve AUC 0.812.



Conclusions: HFRS was significantly associated with incident HF admissions in a high-risk cohort. Prospective use of this algorithm may help guide HF therapy in CRT recipients.

P 76. PREDICTORS OF ALL-CAUSE MORTALITY IN PATIENTS WITH IMPLANTABLE CARDIAC DEVICES

Mafalda Carrington[1], Afonso Nunes-Ferreira[2], Pedro António[2], Inês Aguiar-Ricardo[2], Tiago Rodrigues[3], Joana Rigueira[4], Nelson Cunha [4], Rafael Santos[2], Pedro Morais[2], Igor Santos[2], Ana Bernardes[2], Fausto J. Pinto[2], João de Sousa[2], Pedro Marques[2]

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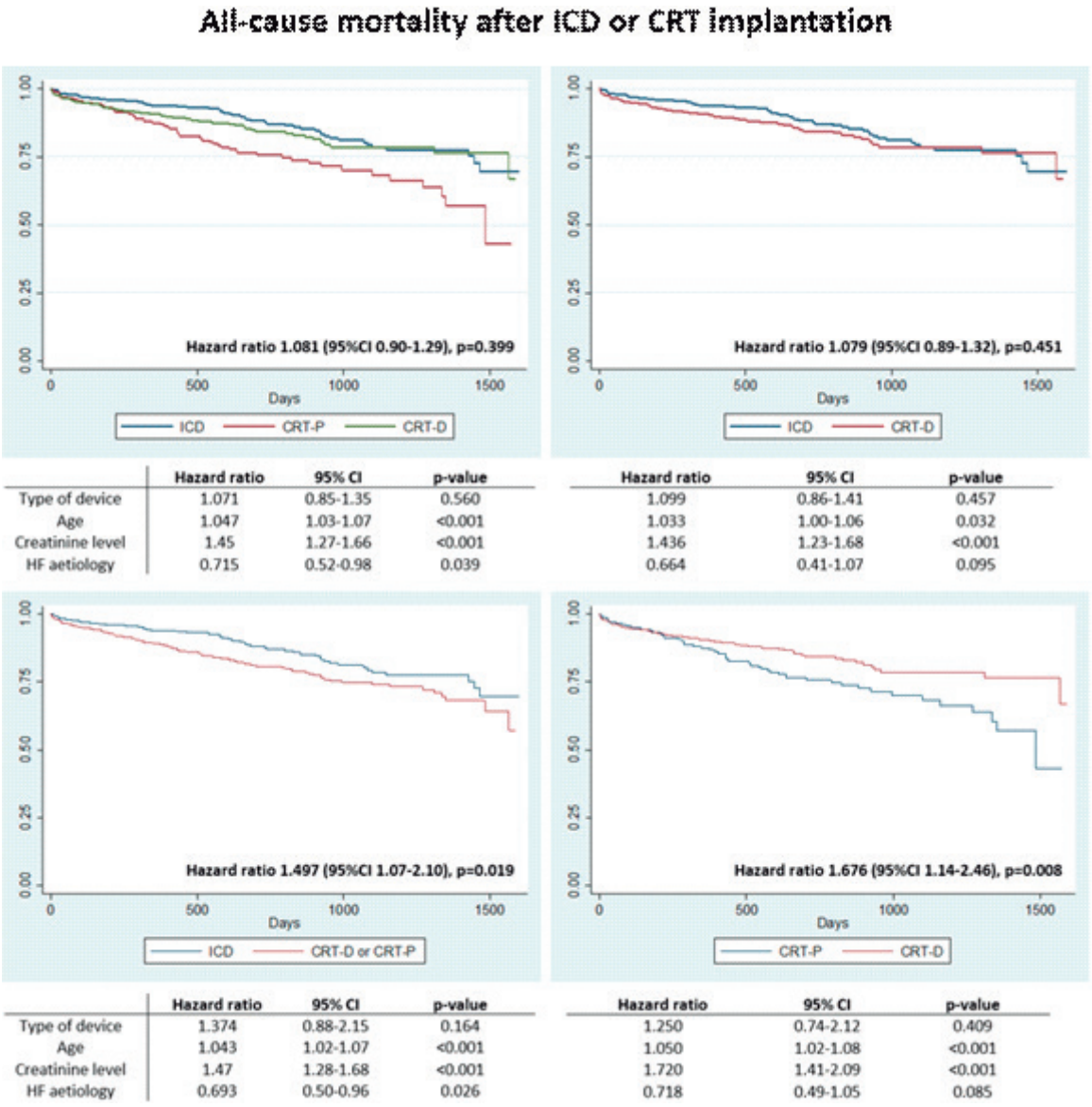
Introduction: Implantable Cardioverter Defibrillators (ICD), cardiac resynchronization therapy pacemakers (CRT-P) and the combination therapy (CRT-D) is recommended in patients (pts) with heart failure (HF) with reduced ejection fraction (EF), based on evidence that has shown a reduction in overall mortality compared with optimized medical therapy alone.

Objectives: To compare the overall mortality effects of ICDs, CRT-Ds and CRT-Ps and how they vary according to baseline clinical characteristics.
Methods: Prospective single-center study of pts who implanted ICD between 2015 and 2019. Clinical characteristics were evaluated at baseline and mortality was assessed using the national registry of citizens. We performed uni and multivariate analysis using logistic and Cox regression methods to compare baseline clinical characteristics between device groups and to identify independent predictors of mortality in both ICD and CRT categories. We also used Kaplan-Meier methods to compare (un)adjusted mortality between the 3 types of devices.
Results: From 2015-2019, 414 ICDs, 316 CRT-Ds and 241 CRT-P were implanted and 161 (17%) of these pts died during a median follow-up of 22 [12-34] months. Pts who received an ICD were younger comparing to pts with a CRT-D or CRT-P (77 ± 8, 68 ± 9, 61 ± 12 years-old (yo), respectively, p < 0.001) and they were more men (81%, 78% and 67%, respectively, p = 0.010). The majority of pts with an ICD had ischaemic cardiomyopathy (CMP) (59%) and only 41% were in NYHA class ≥ 2 (versus 97% in CRT group, p < 0.001), while most with a CRT-D (52%) or CRT-P (69%) had dilated CMP and a more EF ≤ 40% (76%, 88% and 99%, respectively, p < 0.001). There were no significant differences between groups regarding risk factors and the remaining comorbidities. In pts with an ICD, the independent predictors of all-cause mortality were age (HR 1.033; 95%CI 1.00-1.06, p = 0.041) and serum creatinine ≥ 1.2 mg/dl (HR



	Hazard ratio	95% CI	p-value
Type of device	1.071	0.85-1.35	0.560
Age	1.047	1.03-1.07	<0.001
Creatinine level	1.45	1.27-1.66	<0.001
HF aetiology	0.715	0.52-0.98	0.039

	Hazard ratio	95% CI	p-value
	1.099	0.86-1.41	0.457
	1.033	1.00-1.06	0.032
	1.436	1.23-1.68	<0.001
	0.664	0.41-1.07	0.095

	Hazard ratio	95% CI	p-value
Type of device	1.374	0.88-2.15	0.164
Age	1.043	1.02-1.07	<0.001
Creatinine level	1.47	1.28-1.68	<0.001
HF aetiology	0.693	0.50-0.96	0.026

	Hazard ratio	95% CI	p-value
	1.250	0.74-2.12	0.409
	1.050	1.02-1.08	<0.001
	1.720	1.41-2.09	<0.001
	0.718	0.49-1.05	0.085

P 76 Figure

2.134; 95%CI 1.09-4.19, p = 0.028), while in pts who had a CRT, besides age (HR 1.048; 95%CI 1.02-1.08, p = 0.002) and creatinine (HR 1.756; 95%CI 1.45-2.13, p < 0.001), HF aetiology (HR 0.650; 95%CI 0.44-0.96, p = 0.031) was also a prognostic predictor. The unadjusted survival comparison between groups of devices showed that CRT pts had higher mortality comparing to ICD pts (HR 1.497; 95%CI 1.07-2.10, p = 0.019) and that CRT-P pts died more than CRT-D pts (HR 1.676; 95%CI 1.14-2.46, p = 0.008). After adjusting for age, creatinine and HF aetiology, all 3 devices exhibited comparable overall mortality rates.
Conclusions: In our cohort of pts with an ICD or CRT implantation, overall mortality during a median follow-up period of 2 years was 17%. After adjusting for age, creatinine and HF aetiology, there were no differences in overall mortality between the 3 types of devices. Guidelines on device implantation should consider the value of age, creatinine and HF aetiology as predictors of all-cause mortality.

Painel 10 - Doença Valvular 4

P 128. PRIMARY AND SECONDARY MALIGNANT CARDIAC TUMORS-A 22 YEAR CASE REVIEW

Pedro Garcia Brás[1], Luísa Moura Branco[1], Alexandra Castelo[1], Vera Vaz Ferreira[1], José Miguel Viegas[1], Tânia Branco Mano[1], Ana Galrinho[1], Ana Teresa Timóteo[1], João Abreu[1], Eugénia Pinto[1], Pedro Coelho[1], Ivan Bravio[2], Rui Cruz Ferreira[1]

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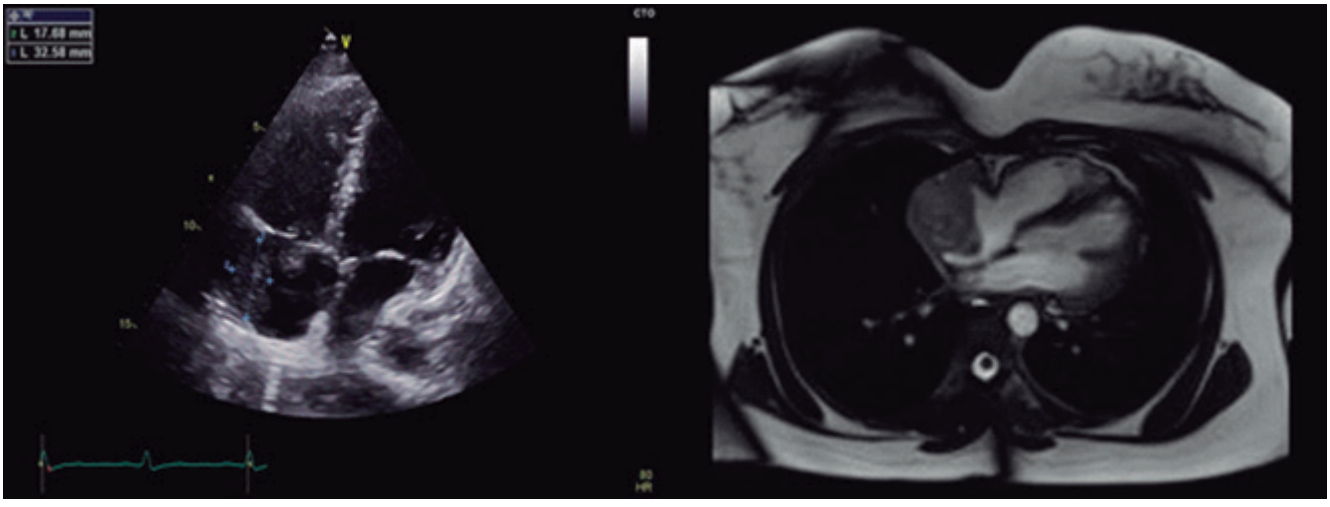
Introduction: Primary cardiac tumors are extremely rare and are usually diagnosed late due to the non-specific symptomatology. Surgery is the main treatment option, and despite chemotherapy, the prognosis remains poor. Cardiac invasion by metastatic tumors, while more common, also entails an unsatisfactory outcome.
Objectives: To review patients (P) with malignant cardiac tumors that were diagnosed by transthoracic echocardiogram (TTE) or transesophageal echocardiogram (TEE) in a tertiary center between 1997 and 2019.
Methods: Retrospective analysis of clinical data from the digital files, echocardiographic assessment of tumor location and morphology, histology results and survival outcomes.
Results: A total of 33 malignant cardiac tumors were diagnosed: 12 primary tumors (A) and 21 metastatic tumors (B). A: Regarding primary cardiac tumors, the most common types were angiosarcomas (6 cases), 2 undifferentiated pleomorphic sarcomas, 2 fibrosarcomas, 1 myxofibrosarcoma and 1 primary cardiac lymphoma. The mean age of P at time of diagnosis was 43 ± 15 years, 50% female gender. The most frequent presentation was heart failure symptoms (50% of P) followed by arrhythmias (20%). One patient had a rare presentation with pruritus and polyarthralgias. On TTE, the most prevalent tumor location was in the right-heart chambers (70%)-mostly the right atrium (50%), with mean dimensions of 40 ± 18 × 27 ± 11 mm. 85% of patients had preserved systolic left ventricular function and there was moderate or severe pericardial effusion in 38%. The most frequent metastatic involvement of primary tumors at diagnosis was pulmonary (33%) and hepatic (33%). 50% of P were submitted to tumor resection and 40% were submitted to chemotherapy. In the case of angiosarcomas, the most common immunohistochemical markers were vimentin, CD31 and CD34. The authors found a mortality rate of 81% in P with primary cardiac tumors, with a median time of follow-up of 6 months (minimum of 20 days and maximum of 18 years). In the latter case, the P was submitted to heart transplantation after diagnosis of a fibrosarcoma and is still alive and well. B: Regarding secondary cardiac invasion, there was a diagnosis of the following primary tumor sites: 6 thymomas, 4 cases of lymphoma, 3 lung carcinomas, 3 hepatocellular carcinomas, 2 bladder carcinomas, 1 parathyroid carcinoma, 1 soft tissue sarcoma and 1 melanoma. The mean age of P with metastatic involvement of the heart was 57 ± 22 years, 65% male. On TTE/TEE the authors also found a right-sided chambers predominance (60%), with pericardial metastasis in 35%. As expected, the mortality rate was also extremely high (90%), with a median time of follow-up of 1.5 months (minimum of 1 week, maximum of 44 months).
Conclusions: Cardiac malignant tumors generally present in a late stage with a dismal prognosis. When possible, heart transplantation can be an option with a good outcome.

P 129. INFECTIVE ENDOCARDITIS IN A COHORT OF ADULT CONGENITAL HEART DISEASE PATIENTS

Tânia Branco Mano[1], Ana Agapito[1], Lídia de Sousa[1], André Monteiro[1], Tiago Rito[1], José Viegas[1], Isabel Cardoso[1], André Grazina[1], António Valentim Gonçalves[1], Tiago Mendonça[1], Alexandra Castelo[1], Vera Vaz Ferreira[1], Pedro Garcia Brás[1], Luísa Moura Branco[1], Joana Feliciano[2], Fátima F. Pinto[1], José Fragata[1], Rui Cruz Ferreira[1]

[1]Centro Hospitalar de Lisboa Central, EPE/Hospital de Santa Marta. [2]Hospital da Cruz Vermelha.

Introduction: Congenital heart disease (CHD) increases the risk of infective endocarditis (IE) due to the substrate of prosthetic materials and residual lesions. However, the evidence base in these pts is limited, and the lesion-specific risk and mortality are poorly defined.
Objectives: Analyse clinical course, predisposing factors and long-term follow-up of IE in the adult population with CHD followed in our tertiary centre.



P 128 Figure

Methods: We retrospectively reviewed all cases of proven and probable IE (Duke's criteria) in our adult CHD database between 1970 and November 2019. Epidemiological, clinical and imaging data were analysed. Predictors of complications, surgical treatment and mortality were assessed using regression analysis.
Results: 95 pts were included (57% males, mean age 43.7 ± 14.8 years, mean follow-up of 13.8 ± 10 years). A minority had EI at pediatric age (18%). Prior corrective or palliative surgery was performed in 32% and 10%, respectively. The most frequent diagnoses were: ventricular septal defect -VSDs (N = 21; 22%), bicuspid aortic valve-BAV (N = 19; 20%) and Tetralogy of Fallot (N = 10; 10.5%). An echocardiographic demonstration of vegetation was possible in 68% (N = 65): aortic valve (N = 24), tricuspid valve (N = 11), mitral valve (N = 11), aortic prosthesis (N = 6), pulmonary valve (N = 5), VSD (N = 3), mitral prosthesis (N = 2), pacemaker lead (N = 2), aortic coarctation (N = 2), pulmonary prosthesis (N = 1) and aortic conduct (N = 1). A pathogen was isolated in 59% of cases, being streptococci (N = 29) and staphylococci (N = 10) the predominant pathogens. Nineteen pts had systemic embolization and seven recurrent episodes. Surgical management was necessary in 40% of cases in acute phase, 34% of this pts with prior surgery. We did not find significant relation between acute and prior surgery. The mortality rate (< 1 year) due to EI was 10.5% (N = 10). Mortality were associated with congestive heart failure at presentation (p = 0.002, OR 8.5-95%CI 2.06-35.8) and with conservative management (p = 0.002, OR 8.9).
Conclusions: In an adult CHD cohort, IE was more frequent in pts with non-corrected native-valve, particularly with VSDs and BAV. This finding contradicts the current guidelines that excludes them from prophylaxis. Surgical treatment is often necessary and mortality remains substantial, however lower than described in general population. Congestive heart failure at presentation and non-surgical management were risk factors for mortality in this cohort.

P 130. CONSTRICTIVE PERICARDITIS: STILL A DIFFICULT DIAGNOSIS

Isabel Cardoso, Luísa Moura Branco, Ana Galrinho, Pedro Coelho, Nuno Banazol, Duarte Cacela, Tânia Branco Mano, João Pedro Reis, Vera Vaz Ferreira, Alexandra Castelo, André Grazina, José Miguel Viegas, Pedro Garcia Brás, Fernanda Gameiro, José Fragata, Rui Cruz Ferreira

Centro Hospitalar de Lisboa Central, EPE/Hospital de Santa Marta

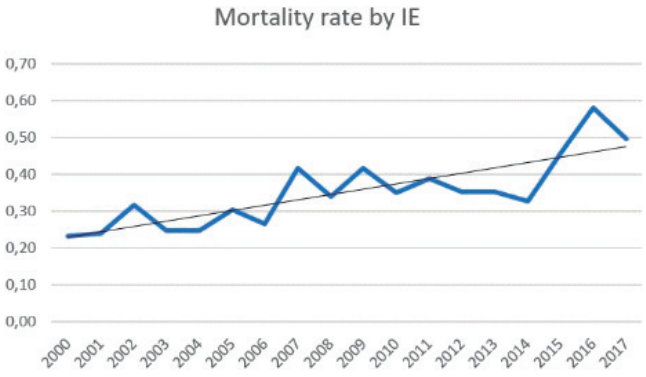
Introduction: Constrictive pericarditis (CP) is a rare disorder. Its diagnosis relies on a high clinical suspicion, echocardiographic evaluation and hemodynamic catheterization.
Objectives: To characterize the population diagnosed with CP between January 2008 and March 2019 in a tertiary hospital and evaluate the acuity of different imaging techniques.
Methods: Retrospective analysis of 32 patients (P) diagnosed with CP between January 2008 and March 2019.
Results: 32P, 25 (78.1%) male, mean age 53 ± 17.8 years. The most frequent etiology was idiopathic (20P, 62.5%), followed by previous idiopathic acute pericarditis (4P, 12.5%), tuberculosis (TB) (4P, 12.5%), radiotherapy (2P, 6.2%), neoplastic (1P, 3.1%) and traumatic (1P, 3.19%); 4P (12.5%) were diagnosed as effusive-constrictive pericarditis. Congestive heart failure was present in 26P (81.3%), with preserved left ventricular (LV) ejection fraction in 27P (84.4%): NYHA 3 (18P, 50%), NYHA 2 (13P, 40.6%). Duration of symptoms before diagnosis was in average 19.5 ± 19.57 months. Hypertension was present in 13P (40.6%), chronic kidney disease in 7P (21.9%), chronic obstructive pulmonary disease (5P, 15.6%), valvular heart disease (5P, 15.6%). Many P had supraventricular arrhythmias: atrial fibrillation (12P, 37.5%) and atrial flutter (4P, 12.5%). Echocardiographic evaluation showed pericardial thickening (21P, 80.8%), septal bounce in 18P (62.1%), respiratory variation of the mitral peak E velocity > 25% in 14P (43.8%), restrictive filling pattern of LV in 15P (51.7%), left atrium dilation in 16P (55.2%), right atrium dilatation in 12P (41.4%), significant mitral insufficiency in 5P (15.6%) and significant tricuspid insufficiency in 7P (21.9%). Hemodynamic catheterization revealed right ventricular and left ventricular diastolic pressure equalization in 17P (53.1%) and square root sign in 9P (28.1%). Magnetic resonance was performed in 9P, 5P (55.6%) had signs of constriction, computed tomography (performed in 17P), showed calcifications in 9P (45.0%). Pericardiectomy was performed in 25P (78.1%): Most of the calcified/thickened pericardium was tried to be explanted. In one the diagnosis was made only in the operating room. Total mortality up to present is 28.0% (9P). Perioperative mortality 12.5% (4P), reduced ejection fraction (rEF) was significantly associated with higher mortality rate (p = 0.019, odds ratio 17.6, CI 1.602-193.391).
Conclusions: Most cases of CP in our series are idiopathic or TB. The most frequent diagnostic aspects were pericardial thickening in echocardiography, septal bounce, LV restrictive filling pattern and biatrial dilation. In more than half there was diastolic pressure equalization. The majority of patients was submitted to pericardiectomy, with a perioperative mortality of 12.5% and total mortality of 28.0%, rEF was the only risk factor significantly associated with mortality.

P 131. MORTALITY RATE FROM INFECTIVE ENDOCARDITIS IN THE LAST 20 YEARS IN PORTUGAL

Catarina Sousa, Fausto Pinto

CCUL, Lisbon School of Medicine.

Objectives: Despite progressive improvements in the diagnosis and surgical treatment, infective endocarditis (IE) remains connected to a high rate of complications and mortality. We studied temporal trends in the mortality by infective endocarditis in Portugal.
Methods: Retrospective temporal trend population based study, using data obtained from the Portuguese National Institute of Statistics (INE) from 2000 to 2017. We collected the mortality rate in Portugal at each year for the ICD 9 code 421 (2000-01) and ICD10 I33 (2002-17). A univariate linear regression analysis was performed.
Results: The mortality rate per 100,000 inhabitants by infective endocarditis in Portugal varied between 0.23 and 0.58, considerably lower than for other cardiovascular diseases. Nevertheless, an overall upper trend was noted in the last 20 years, which is in opposite direction with the trends identified regarding other cardiovascular diseases.



Conclusions: Despite considerable advances in the diagnosis and treatment of IE patients, these data reinforce the need to caracterize the epidemiology of IE in Portugal, as they may provide crucial data to support new measures in the prevention and control of this disease.

P 126. USEFULNESS OF CARDIAC CT SCAN IN PATIENTS WITH UNDETERMINED AORTIC PROSTHESIS DYSFUNCTION

Maria Luísa Gonçalves[1], Hugo Antunes[1], Inês Pires[1], João Santos[1], Joana Correia[1], Wilson Ferreira[2], Mónica Teixeira[2], Nuno Ferreira[2], Ricardo Ladeiras Lopes[2], Rita Faria[2]

[1]Centro Hospitalar Tondela-Viseu, EPE/Hospital de São Teotónio, EPE.
[2]Centro Hospitalar de Vila Nova de Gaia/Espinho.

Introduction: Prosthetic aortic valve dysfunction (PAVD) by obstruction (O) is a serious complication. Echocardiography (E) and fluoroscopy (F)

are common diagnostic methods, but sometimes the cause of O is unclear. Cardiac CT emerges as an alternative diagnostic method, that can identify the etiology of O that is missed at E and F with consequent alteration of the therapeutic strategy.
Objectives: Evaluate the diagnostic profitability of cardiac CT in the etiological research of (PAVD) by O and its impact on therapeutic strategy and major clinical events.
Methods: Selected all patients that underwent a cardiac CT between 01/2017 and 11/2019 on suspicion of obstruction by high transprosthetic gradients in E and without previously defined cause. Excluded all patients with actual or previous history of infective endocarditis. CT multidetector *Siemens Somaton Force Dual Source*-192 cuts, and *Siemens Somaton*-64 cuts, were used, with retrospective ECG acquisition. Clinically significant events during follow-up: heart failure (HF) admission, reoperation or death. Division in 2 groups: with etiological cause identified with cardiac CT (group A) vs without (group B).
Results: 17 patients were selected accordingly with the study criteria. 52.9% (n = 9) female. Mean age 65.5 ± 13.9 years. 70.6% mechanical (33.3% tilting disk and 66.6% bidisc), 11.8% bioprosthetic and 17.6% transcutaneous aortic valve implantation. Median time from valve surgery to dysfunction suspicion of 7.4 [0.25-39.2] years (mechanical 12.75 [5.42-39.32] years and bioprosthetic 3.83 [6.5-0.25] years). Technical aspects: median kilovoltage 100 mV [80-120], contrast 65 mL [50-120], miliamperage de 263 mAs [206-648], heart rate 71 bpm [45-101], all in sinus rhythm, and equivalent dose radiation 7.4 mSv [3.5-17.1]. Group B in 41.2% (n = 7) and group A in 58.8% (n = 10): with 29.4% (n = 5) patients with pannus and 17.4% (n = 3) with thrombus and 11.8% (n = 2) with degenerative valve alterations. No differences in technical aspects, clinical presentation, transprosthesis gradients or orifice prosthesis area by E. Group B was composed with smaller patients (138.14 vs 163.60 cm, p = 0.046), but no difference in body surface area (1.53 vs 1.78, p > 0.05). There was a good correlation (r = 0.76, p = 0.018) between evidence of alteration in opening and closing angles in F and CT, in mechanical prosthesis. No patient died in the follow-up. There was a statistically association between the Group A and the occurrence of the composed endpoint (70% vs 14.3%, χ^2 = 5.1, p = 0.024), with a median time to event of 3 [0-9] months. Group A had an odds ratio in favor of a clinical event about 2.63 times greater than group B [95%CI: 1.01-6.86, p = 0.039].
Conclusions: Cardiac CT identified the cause of PAVD in 60% of the patients, that correlated with clinical events. Although a small population, this study confirms the additional valor of cardiac CT in PAVD with unknown cause.

P 127. PREGNANCY OUTCOMES IN WOMEN WITH MECHANICAL HEART VALVES: TWENTY-YEARÂ´S EXPERIENCE OF A TERTIARY CENTRE

Vera Ferreira[1], André Viveiros Monteiro[1], Marta Plancha Santos[2], Alexandra Castelo[1], Pedro Brás[3], Tânia Branco Mano[1], João Reis[1], Ana Isabel Machado[2], Augusta Borges[2], Maria José Alves[2], Lídia Sousa[1], Lino Patrício[1], Rui Cruz Ferreira[1]

[1]*Centro Hospitalar de Lisboa Central, EPE/Hospital de Santa Marta.*
[2]*Centro Hospitalar de Lisboa Central/Maternidade Alfredo da Costa.*

Introduction: Mechanical heart valves (MHV) and their absolute need for adequate anticoagulation poses a challenge for pregnancy, either due to warfarin fetotoxicity or an increased risk of maternal thromboembolism. This represents a unique patient (P) group where data is scarce and maternal and fetal risks and benefits must be carefully weighed.
Objectives: To assess maternal and perinatal outcomes in women with MHV on different anticoagulant regimens and compare them with patients with other types of valvular heart disease (VHD).
Methods: A retrospective analysis of 131 pregnancies in 83 women with VHD (mean age 26.5 ± 5.6 years) was carried out in a tertiary referral centre from 2000 to 2019. 92 pregnancies with VHD, including 11 with biological prosthetic valves, and 39 pregnancies in 22 P with MHV were identified. The main outcome measures were major maternal complications and perinatal outcome.
Results: MHV implanted were in mitral position (89.7%), aortic (2.6%), or both (7.7%). History of rheumatic heart disease was identified in 16 P (72.7%) and a congenital etiology was present in 2 P (9.1%). 9 P (40.9%) were on warfarine and 13 P (59.1%) on acenocumarol. Regarding anticoagulation strategy, 21 P (65.6%) remained on oral anticoagulation and 10 P (31.3%) had been switched to some form of heparin during part or the entire pregnancy. Mechanical valve thrombosis complicated pregnancy in 4 P (10.2%), all cases on heparin, and resulted in maternal death in 1 P. MHV P had more hemorrhagic complications (15.4 vs 2.2%, p = 0.004) requiring transfusion or surgical revision. MHV P tended to experience more NHYA class worsening demanding initiation or intensification of cardiac medication (17.9 vs 5.4%, p = 0.023). Also in the MHV group there was a higher incidence of miscarriage (46.2 vs 12.0%, p < 0.0005), comprising spontaneous abortion (31.6 vs 7.6%, p < 0.0005) and fetal malformations (18.4 vs 5.4%, p = 0.028), including warfarin embryopathy (10.3 vs 1.1%, p = 0.012). The live birth rate was higher in women on heparin compared with those on vitamin K antagonists (85.9 vs 79.2%, p = 0.002). The presence of multivalve disease (p = 0.04), mechanical protheses (p < 0.001), ACO (p < 0.001) and previous impaired LVEF (p = 0.02) were related to miscarriage. In multivariate analysis, ACO was the unique independent predictor of unsuccessful pregnancy (p = 0.01). Only 29% of the patients with an MHV had a pregnancy free of serious adverse events compared with other types of VHD (81.5%, p < 0.0005).

	MHV N=39	VHD N=92	p-value
Baseline characteristics			
Age	**26.0±5.7**	26.8± 5.6	0.467
Ethnicity			0.003
Caucasian	**1 (2.6%)**	45 (48.9%)	
African	**38 (97.4%)**	43 (46.7%)	
Others	**0**	4 (4.4%)	
Multiparous	**16 (41.0%)**	41 (44.6%)	0.709
Hypertension	**1 (2.6%)**	5 (5.4%)	0.488
Cardiac valve involved			
Mitral	**38 (97.4%)**	60 (65.2%)	<0.0005
Aortic	**4 (10.3%)**	24 (26.1%)	0.043
Tricuspid	**7 (17.9%)**	0	<0.0005
Pulmonary	**0**	10 (10.9%)	0.032
Valvular prosthesis			
Mitral	**35 (89.7%)**	5 (5.4%)	< 0.0005
Aortic	**1 (2.6%)**	6 (6.5%)	0.357
Both	**3 (7.7%)**	0	<0.0005
Previous cardiovascular medication	**20 (51.3%)**	29 (31.5%)	0.033
Impaired LVEF	**5 (13.2%)**	5 (6.2%)	0.200
NHYA class > II	**4 (10.3%)**	17 (18.5%)	0.241
Previous arrhythmic event	**7 (17.9%)**	7 (7.6%)	0.08
Previous stroke	**6 (15.8%)**	1 (1.1%)	0.001
Previous infectious endocarditis	**4 (10.5%)**	1 (1.1%)	0.011
Anticoagulation	**39 (100%)**	12 (13.0%)	<0.0005
Maternal outcomes			
NHYA class worsening	**14 (36.8%)**	23 (25.0%)	0.174
Need to initiate/intensify cardiac medication	**7 (17.9%)**	5 (5.4%)	0.023
Hemorrhagic complications	**6 (15.4%)**	2 (2.2%)	0.004
Thrombotic complications	**4 (10.5%)**	0	0.002
Obstetric and fetal outcomes			
Alive newborn	**20 (51.3%)**	81 (88.0%)	0.002
Miscarriages	**18 (46.2%)**	11 (12.0%)	< 0.0005
Spontaneous abortion	**12 (31.6%)**	7 (7.6%)	< 0.0005
Fetal malformations	**7 (18.4%)**	5 (5.4%)	0.020
Gestational age at delivery	**35.0±5.6**	37.2±5.9	0.111
Weight (g)	**2970±341**	3110±473	0.224
Apgar index > 7 (5th minute)	**19 (95.0%)**	77 (97.5%)	0.675
Labor type			0.329
Vaginal	**15 (62.5%)**	59 (72.8%)	
Cesarean	**9 (37.5%)**	22 (27.2%)	
Labor indication			0.740
Obstretic	**22 (95.7%)**	76 (93.8%)	
Cardiac	**1 (4.3%)**	5 (6.2%)	

Conclusions: MHV remains a challenging condition for pregnancy with only 29% chance of experiencing an uncomplicated pregnancy with a live birth. The increased morbimortality warrant extensive prepregnancy counseling with prosthesis type discussion, centralization of care and further larger studies to come up with evidence-based recommendations.

Painel 11 - Cardiologia Intervenção 2

P 132. SNOPI SCORE (SCORE OF NO-REFLOW IN PRIMARY ANGIOPLASTY) AS A PREDICTOR OF NO-REFLOW PHENOMENA AFTER PRIMARY ANGIOPLASTY

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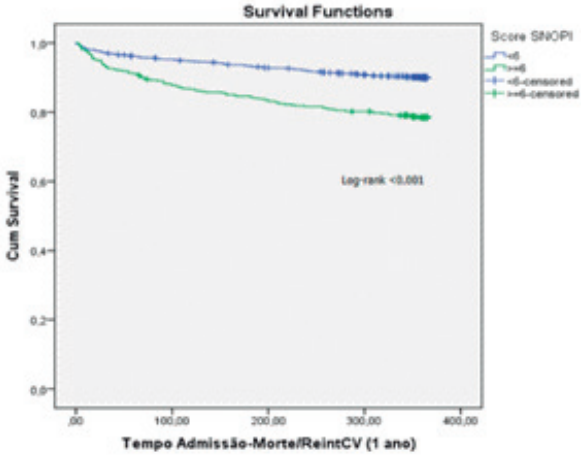
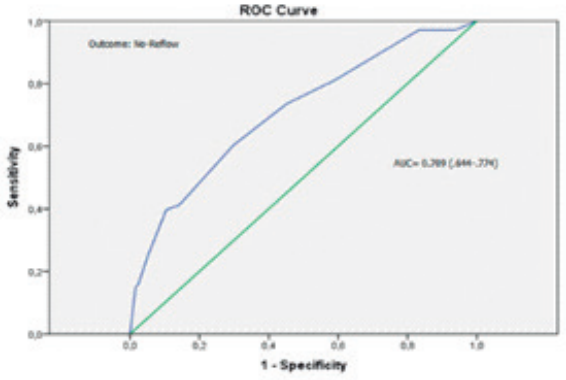
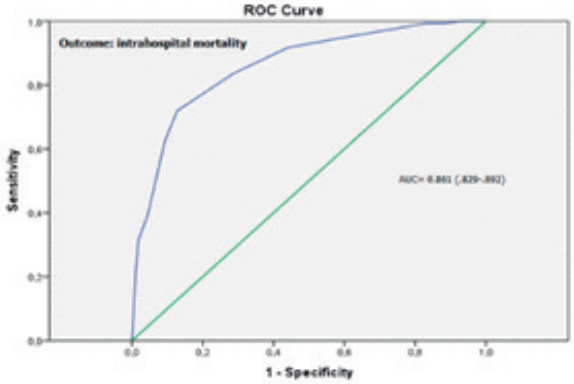
Introduction: No-reflow phenomenon is defined as a complex condition associated with inadequate myocardial reperfusion without angiographic evidence of epicardial vessel obstruction, spasm or dissection. Due to its consequences, it would be ideal to predict its occurrence. But, to date, the predictors of the no-reflow phenomenon remain poorly established.
Objectives: We sought to study the SNOPI score as a predictor of NR, intra-hospital mortality (IHM), reinfarction, complications and 1-year mortality, in patients that underwent primary angioplasty.
Methods: This retrospective study is composed of a sample of 5764 patients, derived from a national multicentre registry. We have included patients with ST-segment elevation myocardial infarction (STEMI) that underwent PPCI. NR is defined by a TIMI flow < 3 after PCI. Regarding the creation of the score, first we tested 13 plausible variables with univariate analysis. Then we selected the statistical significant ones, performed a multivariate analysis reporting odds ratio (OR) and built the score. The SNOPI score is defined as follows: Left ventricle ejection fraction (LVEF) < 40%: 2 points (p); Killip class ≥ 2: 3p; Age ≥ 65 years: 2p; Occluded infarct-related artery: 3p; Multivessel disease: 1p. The outcome complications is composed endpoint of heart failure, sustained ventricular tachycardia, mechanical complication or cardiac arrest, during hospitalization. We assessed the prediction quality through ROC curve and optimal cut-off point. We also studied the 1-year mortality and rehospitalisation between patients with SNOPI score higher and lower than the optimal cut-off point, using Kaplan-Meier and Log-rank analysis.
Results: The sample mean age is 63 ± 14 and it is composed by 77% of males. The mean SNOPI score was. The composing variables are described in the table 1.
The c-statistic for the outcome NR performed fairly: 0.709 (0.644-0.774), as for complications: 0.758 (0.740-0.775). It performed good for IHM: 0.861 (0.829-0.892). It performed poorly for reinfarction: 0.622 (0.538-0.707). The optimal cut-off point for NR was 6 (sens 60%, spec 70%, negative predictive value 99%, PPV 3%). The survival analysis showed a significant Log-rank analysis for the composed endpoint of rehospitalisation/1-year mortality for patients with SNOPI < 6 versus ≥ 6 (10% vs 21%, p < 0.001).
Conclusions: We conclude that SNOPI score is a very good test to acknowledge which patients will not suffer NR, as it is shown by its very high NPV (99%). It is a good test to predict IHM in patients that undergo PPCI. The SNOPI score also predicts rehospitalisation/1-year mortality, as it is shown by the survival analysis of the populations with scores higher and lower than the optimal cut-off point. This score may contribute to estimate

VARIABLES	NO NR (5678)	NR (86)	P VALUE
Age (years)	63±14	69±15	<0,001
Males, n(%)	4395 (77)	58 (67)	0,029
Hypertension, n(%)	3313 (60)	55 (64)	0,407
Diabetes, n(%)	1276 (23)	22 (26)	0,519
Dislipidemia, n(%)	2813 (53)	37 (44)	0,125
Smoking, n(%)	2224 (39)	20 (24)	0,004
Family history of CHD, n(%)	414 (8)	3 (4)	0,17
Past history of ACS, n(%)	580 (10)	6 (7)	0,024
Killip-Kimbal			
Killip I	4941 (87)	52 (62)	<0,001
Killip II	429 (8)	13 (16)	0,007
Killip III	106 (3)	0	0,4
Killip IV	178 (3)	19 (23)	<0,001
Anterior MI, n(%)	2780 (49)	50 (58)	0,094
Occluded IRA, n(%)	4160 (73)	77 (90)	<0,001
Glicaemia, mg/dL	135 (112;176)	148 (119;201)	0,054
Creatinine, mg/dL	0,9 (0,8;1,1)	1 (0,8;1,3)	0,036
Multivessel disease, n(%)	2418 (47)	51 (62)	0,007
Normal systolic function, n(%)	50±12	45±14	0,007
Ischaemia time, min	254 (171;403)	310 (210;541)	0,003
Aspirin before admission, n(%)	872 (16)	22 (26)	0,011
Clopidogrel before admission, n(%)	289 (5)	5 (6)	0,803
Ticagrelor before admission, n(%)	40 (1)	1 (1)	0,455
VKA before admission, n(%)	67 (1)	0	0,627
NOAC before admission, n(%)	54 (1)	4 (5)	0,011







the development of no-reflow in the pre-PCI period, risk stratification, complications and cardiovascular outcomes.

P 133. RISK STRATIFICATION IN UNPROTECTED LEFT MAIN CORONARY DISEASE: DO WE HAVE THE TOOLS?

Rita Ventura Gomes[1], Mariana Gonçalves[2], Sérgio Madeira[2], Nelson Vale[2], João Brito[2], Sílvio Leal[3], Luís Raposo[2], Pedro de Araújo Gonçalves[2], Henrique Mesquita Gabriel[2], Rui Campanante Teles[2], Manuel de Sousa Almeida[2]

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Introduction: The evolution of percutaneous coronary intervention (PCI) and coronary artery bypass grafting (CABG) techniques made the choice of the optimal revascularization strategy of unprotected left main coronary disease (ULMD) challenging. Scoring systems are useful tools for the decision-making process and for risk stratification.
Objectives: To evaluate the performance of the SYNTAX score I (SSI) and II (SSII) and Euroscore II (EII) in risk stratification and the outcome predictors of patients (pts) with ULMD, according to the treatment strategy chosen.
Methods: Retrospective single centre cohort study of 99 consecutive pts (age 72 ± 12 years; 67.7% male) with significant ULMD (defined as left main coronary artery [LMCA] stenosis > 50%, with no patent arterial or venous bypass graft to left anterior descending artery), who were submitted to PCI (n = 77) or CABG (n = 22), between January 2010 and December 2018. Mean follow-up (FU) was 2.2 ± 2.6 years. The primary outcome was a composite of cardiovascular death, non-fatal myocardial infarction (MI) and target lesion revascularization (TLR).

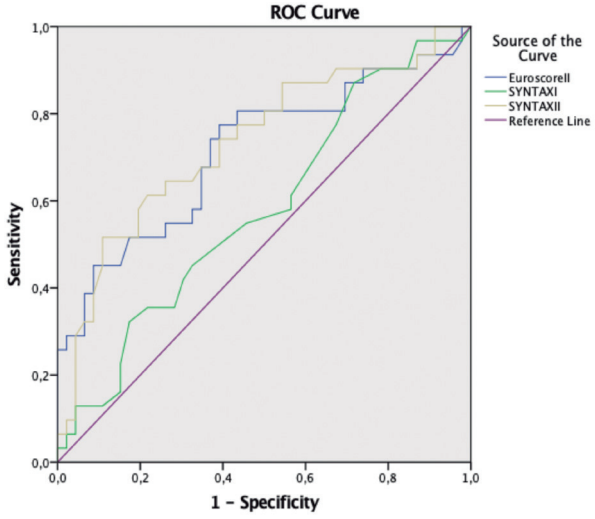

Figure 1 SSI, SS2 and EII ROC curves for cardiovascular death, non-fatal myocardial infarction and target lesion revascularization.

Results: During the FU period, there were 39 (28.1%) cardiovascular deaths, 10 (7.2%) non-fatal MI and 10 (7.2%) TLR. Pts submitted to PCI who had at least one adverse event (AE) had more severe coronary artery disease (higher SSII 45.9 vs 36.1, p = 0.001; stenosis of LMCA > 70% 74.2% vs 48.9%, p = 0.04), higher EII (4.53% vs 2.35%, p < 0.002), bare metal stents were a more frequent choice (29% vs 6.5%, p = 0.011), had less complete revascularization (29% vs 54.3%, p = 0.028), lower left ventricle ejection fraction (35% vs 48%, p = 0.001), lower estimated glomerular filtration rate (47 vs 65 mL/min/1.73 m^2, p = 0.004) and the coronarography was performed more frequently in the context of acute coronary syndrome (71% vs 45.7%, p = 0.023). By multivariate analysis only the SSII remained an independent predictor of the outcome (HR 1.046, CI 1.007-1.085, p = 0.019). Pts who were submitted to CABG and had at leats one AE during FU had the same trends, however with no statistically significant differences. The ROC curve analysis for all cohort presented a weak discriminative capacity for SSI (AUC 0.580, CI 0.450-0.710, p = 0.236) and an acceptable for SSII (AUC 0.733, CI 0.615-0.851, p = 0.001) and EII (AUC 0.714, CI 0.591-0.837, p = 0.002; Figure). The difference was not statistically significant (DeLong test p = 0.784). The 39 pts who had a SSII favoring CABG had numerically more events (43.6% vs 36.8%, p = 0.546).
Conclusions: In a real-world ULMD population, risk scores presented a modest role in the risk stratification, both in chronic and acute coronary syndromes.

P 134. BIFURCATION PCI-EXPERIENCE FROM A SINGLE CENTER

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Hospital de Braga.

Introduction: Percutaneous coronary intervention (PCI) of bifurcation lesions is a challenging procedure and is associated with lower success rates vs non-bifurcation lesions PCI.
Methods: Single-center descriptive analysis of individuals that underwent coronary bifurcation PCI between January 2015-December/2018. Patients that presented with cardiogenic shock were excluded from the analysis.
Results: A total of 402 patients were included, 79.6% male (n = 320) and 20.4% female (n = 82). Mean age was 64 yo (min 23, max 91). Sixty-two percent had hypertension, 54% hypercholesterolemia, 35% diabetes mellitus and 22% were smokers. Regarding presentation, 36% presented as NSTEMI (n = 144), 32% as stable CAD (n = 130), 27.6% as STEMI (n = 110) and 4.4% as unstable angina (n = 18). Coronary angiography identified 1-vessel disease in 39.5% of patients (n = 159, 9 with 1-vessel plus left main (LM) disease), 2-vessel disease in 34% (n = 136, 16 with 2-vessel plus LM disease) and 3-vessel disease in 26.5% (n = 106, 27 with 3-vessel plus LMA disease). The most frequently diseased main branch was the left anterior descending (LAD) artery (63.7%, 23.1 proximal, 39.6% middle and 1% distal), followed by circumflex artery (14.7%, 9.2% proximal, 5.5% distal), LM (8.5%) and right coronary artery (6.9%, 0.2% proximal, 1.5% middle and 5.2% distal). Angioplasty was performed using drug-eluting stents only. In terms of technique, provisional stenting with 1 stent was used in 93% of cases, while 2 stents were used in 7% of cases (n = 26, 11 provisional stenting with 2 stents, 7 with cullote technique, 7 with crushing stent and 1 with DK Crush technique). Median radiation dose was 95 $mGycm^2$ (IQR = 90) and median contrast volume was 150 mL (IQR = 100). At a mean follow-up of 22 months, mortality rate was 7.7% (n = 31), with about half of patients dying from cardiovascular causes. Twenty patients needed a second PCI, 4 of which due to target-lesion failure -TLF- (3 of them presenting as acute coronary syndromes [ACS]). All patients with TLF were successfully revascularized.
Conclusions: Patients with coronary bifurcation lesions presented mostly as ACS, with > 50% angiographies revealing > 1-vessel disease. The most frequently affected vessel was the LAD. Supporting the gold-standard approach for bifurcation PCI, provisional stenting with 1 stent was the preferred procedure. TLF rate was about 1% at 22 months; however, as no follow-up angiography was performed, we only identified the TLF associated with symptoms.

P 135. CORONARY BIFURCATION LESIONS: A BIRD IN THE HAND VERSIS TWO IN THE BUSH

José Pedro Sousa[1], Joana Ribeiro[2], Luís Puga[1], João Gameiro Lopes[2], Carolina Saleiro[1], Rita Gomes[2], Diana de Campos[2], Marco Costa[1], Lino Gonçalves[2]

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Introduction: Among all subsets of coronary artery lesions, bifurcations stand out due to high incidence, demanding percutaneous interventions

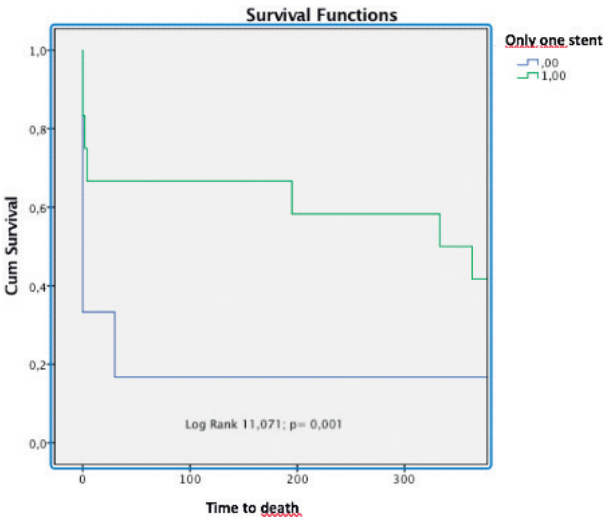
(PCIs) and poor outcomes. Amid the different PCI strategies, the provisional (PS) approach is generally recommended over 2-stent (TS) techniques, but this paradigm has been challenged.
Objectives: To compare PS with TS for PCI of coronary bifurcation lesions, concerning procedural aspects and both immediate and long-term patient outcomes.
Methods: Retrospective study encompassing patients consecutively referred to a tertiary interventional cardiology unit for coronary angiography, who were found to have at least 1 native bifurcation lesion. According to operator experience and angiographic features, patients were managed with PS or (/and) TS. Procedural aspects regarding radiological variables, angiographic success and immediate complications were reviewed, as were in-hospital outcomes. Besides, clinical follow-up, by clinic appointment or telephone calling, was performed targeting stent failure, target vessel revascularization (TVR), acute coronary syndromes (ACS), heart failure and mortality.
Results: From January 2010 to June 2017, 404 patients with 433 bifurcation lesions were included. Median age was 70 (62-77) years and 25.3% were female. Median follow-up was 2 (1-3) years. Chronic angina was the dominant PCI context (61.3%) with 9.7% presenting with ST-segment elevation myocardial infarction (MI). Medina class 1,1,1 was documented in 54.1% and 64.9% of lesions were hailed as true bifurcations. 303 patients underwent PS, whereas 67 were managed with TS, with TAP (43.3%) and mini-crush (34.3%) as the leading techniques. True bifurcations were more frequently approached with TS ($p < 0.001$), whereas PCI context did not influence procedure selection. Fluoroscopy time ($p < 0.001$), radiation dose ($p = 0.003$) and contrast volume ($p = 0.009$) were higher in the TS subgroup. OCT guidance ($p = 0.039$) was also more common with TS. Angiographic success was uniformly high (95.1% for PS and 97% for TS), while procedural complications, including iatrogenic coronary dissections (7.4%, mostly minor) and slow-reflow (3.5%), were homogenously low. Acute kidney injury and type 4a MI occurred in 14.5% and 32.3%, respectively, also with no difference between groups. As for long-term outcomes, stent failure, encompassing both stent thrombosis (1 event) and restenosis (4.2%), occurred more often with TS ($p = 0.046$), with ACS events (9.5%) following the same trend ($p = 0.08$). In turn, rates of TVR (12.5%), heart failure hospitalization (6.2%) and mortality, regardless of its cardiovascular nature, were similar.
Conclusions: PS outperforms TS during follow-up, particularly due to lower stent failure odds. Thus, this study further supports the concept of PS as the standard approach for coronary bifurcation lesions.

P 136. ONE STENT VERSUS TWO STENTS FOR DISTAL LM PCI: INSIGHTS FROM THE EXPERIENCE OF A HIGH VOLUME CENTER

Rafael Santos[1], Miguel Nobre Menezes[2], Pedro Carrilho-Ferreira[2], Eduardo Infante de Oliveira[3], Cláudia Jorge[2], José Duarte[2], Pedro Cardoso[2], José Marques da Costa[2], Diogo Torres[2], João Silva Marques[2], Ana Rita Francisco[2], Tiago Rodrigues[3], Pedro Silvério António[4], Fausto J. Pinto[2], Pedro Canas da Silva[3]

[1]Cardiology Department, Santa Maria University Hospital (CHULN), CAML, CCUL, Lisbon School of Medicine, Universidade de Lisboa. [2]Serviço de Cardiologia, Departamento de Coração e Vasos, Centro Hospitalar Universitário Lisboa Norte, Centro Cardiovascular da Universidade de Lisboa, Faculdade de Medicina, Universidade de Lisboa. [3]Centro Hospitalar de Lisboa Norte, EPE/Hospital de Santa Maria. [4]Hospital Santa Maria.

Introduction: Distal left main (LM) PCI remains a challenge. One of the most debated issues is whether to use a single vs 2 stent provisional strategy. While most studies and guidelines favour a single stent strategy, the recent DK-CRUSH V trial has shown better results with a 2 stent strategy.
Objectives: To evaluate the performance of a single vs dual stent strategy for LM PCI in a real-world population setting.
Methods: Single-center procedural prospective registry of patients (pts) submitted to LM PCI from 2015-2018, with retrospective event analysis. Demographic, clinical data and procedure characteristics were analysed. Results were obtained with χ^2 test, t student test, Kaplan-Meier survival analysis, logistic and Cox regression.
Results: 100 pts (73 men; 69 ± 11 years) were included. Co-morbidities were very frequent (85 had hypertension, 54 had diabetes, 71 had dyslipidemia and 39 were past smokers). 32 had reduced LVEF (< 40%) and 45 previous CABG. The decision to proceed to PCI vs surgery was undertaken individually by the local HeartTeam. Most of the procedures (57) were in an acute coronary syndrome setting (11 in STEMI, 7 with cardiogenic shock). The anatomical distribution of the lesions was: distal in 69 pts (61 involved the LAD and or Cx ostium), mid shaft in 7 pts, ostial in 18 pts and diffuse in 6 pts. Protected left main PCI encompassed 41% of the procedures. The complication rate was 7%. During a mean follow-up of 866 ± 400 days, there were 4 peri-procedural deaths, 1-year mortality rate of 10% and 22 pts died overall. In pts submitted to distal LM PCI, a single stent was used in 49 pts (66%) versus a 2 stent approach in 23 pts (31%). The only significant difference between these groups were diabetes (66% in the single stent vs 32% in the 2 stent group $p = 0.006$) and protected LM (51% in the single stent vs 26.1% in the two stent group $p = 0.046$). While a 2 stent strategy was associated with higher mortality by Kaplan Meyer analysis (log rank = 11.07, $p = 0.001$), it was not an independent predictor of mortality in Cox regression. Cox univariate analysis identified LVEF < 40% (OR 2.2 CI 1.01-4.9 $p = 0.047$) and complications (OR 3.1 CI 1.4-6.9 $p = 0.004$) as the only predictors of death. In multivariate analysis, only the latter was an independent predictor of mortality (OR 2.6 IC 1.1-5.9 $p = 0.028$). The use of a 2 stent strategy was significantly associated with complications ($\chi^2 = 5.1$ $p = 0.024$)) and was the only independent predictor of it (OR 3.8 IC 1.1-12.8 $p = 0.03$). This was true even in the subgroup of protected LM PCI.



Conclusions: in a real-world setting of challenging LM PCI cases, a single stent strategy for distal LM PCI performed better. The use of 2 stents was an independent predictor of complications, strongly associated with increased risk of death. While a LM PCI must be undertaken on an individual basis, a single stent provisional strategy, whenever feasible, seems to be the best option.

P 137. DEDICATED STENTS FOR CORONARY BIFURCATION LESIONS: PRECISION MEDICINE VS. PRECISION ENGINEERING

José Pedro Sousa[1], Joana Ribeiro[2], Luís Puga[1], João Gameiro Lopes[2], Carolina Saleiro[1], Rita Gomes[2], Diana de Campos[2], Marco Costa[1], Lino Gonçalves[2]

[1]Centro Hospitalar e Universitário de Coimbra. [2]Centro Hospitalar e Universitário de Coimbra, EPE/Hospital Geral.

Introduction: Coronary bifurcation plaques are associated with lower procedural success and more cardiac events. Particular stents (BS), such as Tryton (TS), have been developed specifically for their treatment. However, the TRYTON trial, which compared TS with a provisional technique (PS), did not meet its primary endpoint. In turn, real-world evidence in this setting is scant.

Objectives: To ascertain the differential impact of BS in percutaneous coronary intervention (PCI) of bifurcation lesions, concerning procedural aspects and both immediate and long-term outcomes.
Methods: Retrospective study encompassing patients consecutively referred to a tertiary interventional cardiology unit, for coronary angiography, who were found to have at least 1 true native bifurcation lesion, defined as Medina classes 1,1,1, 1,0,1 or 0,1,1. According to operator experience and angiographic features, patients were managed either with a BS or with regular stents (non-BS), in a single- or two-platform strategy. Procedural aspects regarding radiological variables, angiographic success and immediate complications were reviewed, as were in-hospital outcomes. Clinical follow-up, by clinic appointment or telephone calling, was performed targeting stent failure, target vessel revascularization (TVR), acute coronary syndromes (ACS), heart failure and mortality.
Results: From January 2010 to June 2017, 252 patients with 277 lesions were included. Median age was 68 (62-74) years and 21.2% were female. Median follow-up was 2 (1-4) years. Chronic angina was the dominant PCI context (51.5%), while 9.9% of patients presented with ST-segment elevation myocardial infarction (MI). 40 patients underwent BS implantation, namely TS (30), Axxess (9) and BiOSS LIM (1), whereas 158 were managed with PS and 24 with a two-stent technique. A BS was preferentially applied to Medina class 1,1,1 lesions [adjusted standardized residual 2.5], whereas ACS presentation displayed a trend towards a non-BS strategy (p = 0.087). Although fluoroscopy time, radiation dose and contrast volume did not differ, OCT guidance was further utilized in the BS group (p = 0.011). Angiographic success was uniformly high (over 93.5%) and procedural complications, even though quite frequent (12.3%, mostly iatrogenic dissections), also seemed homogeneous. Likewise, type 4a MI was fairly common (35.1%), irrespective of stent nature. However, stent failure, particularly via restenosis (7.1%), occurred more often with BS (p = 0.047), with TVR (14.2%) following the same trend (p = 0.063). In turn, rates of ACS (12.3%), heart failure hospitalization (5.8%) and mortality were similar.
Conclusions: BS may increase the odds of stent restenosis and TVR. These findings might have been driven by the bare-metal nature of TS, the study's most represented BS.

Painel 12 - Prevenção/Reabilitação Cardíaca 2

P 138. POLYMORPHISMS OF ACE GENE ARE ASSOCIATED WITH THE ONSET OF METABOLIC SYNDROME IN A PORTUGUESE POPULATION

Ana Célia Sousa[1], Sara Gouveia[2], Teresa Góis[2], António Silva[2], Catarina Nóbrega[2], Andreia Pereira[1], Eva Henriques[2], Sónia Freitas[2], Mariana Rodrigues[2], Sofia Borges[2], Graça Guerra[2], Ilídio Ornelas[2], Roberto Palma dos Reis[3], Maria Isabel Mendonça[2]

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Introduction: Metabolic syndrome (MS) is an increasingly prevalent condition in developed societies and carries an increased cardiovascular risk. Although it is known that several behavioral and genetic factors are in its genesis, genetic influence on the onset of this pathology remains unknown. The obesity and MS activate the renin-angiotensin-aldosterone system (RAAS), which is why it led us to study two important ACE variants, ACE I/D and ACE A2350G described as potentially linked to arterial hypertension or obesity.
Objectives: Investigate whether there is an association between the polymorphisms ACE I/D and ACE A2350G and the MS onset.
Methods: Case-control study with 1,711 individuals, 748 diagnosed with MS and 963 without MS. MS was defined according to the International Diabetes Federation (IDF) guidelines. Polymorphic variants of the ACE gene, ACE I/D and ACE A2350G were blindly evaluated in both groups and Odds Ratio (OR) under hereditary, dominant, recessive, additive and multiplicative models were calculated. Data was analyzed by SPSS and a $p < 0.05$ was defined as significance threshold.
Results: ACE DD appeared more frequently in the group of individuals with MS compared to controls with an OR of 1.334 (p = 0.004) in the recessive model, OR of 1.218 (p = 0.005) in the additive model and OR of 1.228 (p = 0.004) in the multiplicative model. Likewise, ACE 2350 GG was more prevalent in the group with MS with an OR of 1.266 (p = 0.024) in the recessive model, OR of 1.173 (p = 0.024) in the additive model and OR of 1.169 (p = 0.025) in the multiplicative model.
Conclusions: The genetic variants ACE DD and ACE 2350 GG were associated with the MS onset. This result points to the presence of polymorphic genetic alterations that favor the appearance of MS. Patients with these variants belonging to RAAS are more likely to develop MS, therefore they should control their behavioral factors in order to counteract the genetic tendency to develop MS, and its cardiovascular risk.

P 139. SHAPING THE FUTURE OF METABOLIC SYNDROME: GENETICS, PROGNOSIS AND INDIVIDUAL TAILORING

João Adriano Sousa[1], Maria Isabel Mendonça[2], Andreia Pereira[2], Joel Ponte Monteiro[2], Margarida Temtem[1], Marina Santos[1], Flávio Mendonça[3], Ana Célia Sousa[2], Mariana Rodrigues[2], Eva Henriques[2], Ilídio Ornelas[2], Ana Isabel Freitas[2], António Drumond Freitas[4], Roberto Palma dos Reis[5]

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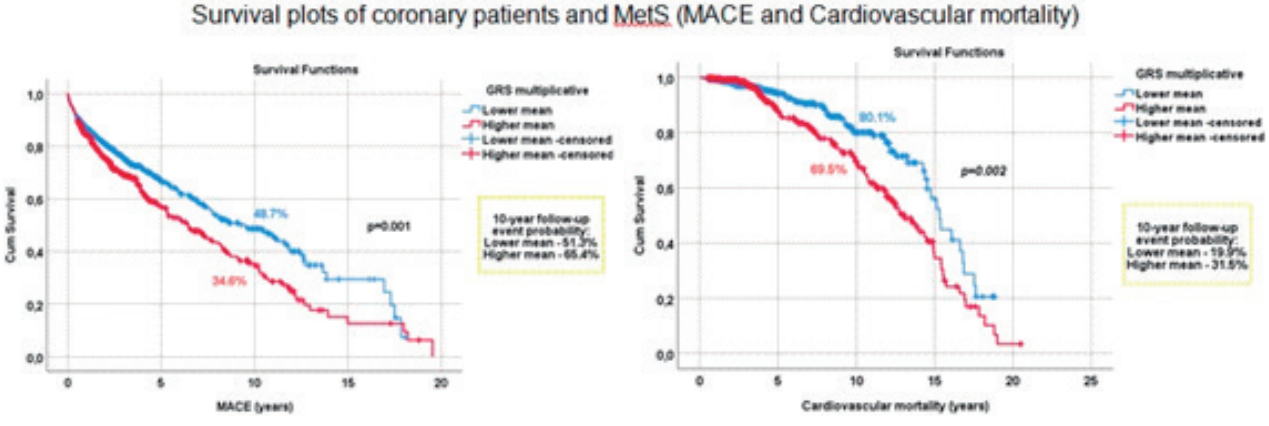
Introduction: Metabolic Syndrome (MetS), characterized by a cluster of cardiovascular risk factors, is considered to be the major health hazard of modern world and a 21st century epidemic. Recent GWAS have identified several susceptibility regions involved in lipid metabolism and oxidation, also associated with MetS. Genetic risk score (GRS) is an emerging method that attempts to establish correlation between SNPs and clinical phenotypes.



P 139 Figure

Objectives: Evaluate the value of a GRS encompassing SNPs involved in lipidic metabolism and oxidation pathways, in predicting CAD outcome (MACEs and long-term cardiovascular Mortality) in a coronary population with Metabolic Syndrome (MetS).
Methods: 1,101 coronary patients with MetS, were selected from the GENEMACOR study. Genotyping was performed by TaqMan allelic discrimination assay. A multiplicative score (mGRS) was built according to the multiplicative model with variants belonging to the lipid and oxidative axes (PSRC1, PCSK9, KIF6, ZNF259, LPA, APO E, PON192, PON108, PON55, MTHFR677, MTHFR1298, MTHFD1L). This GRS was categorized using the mean (higher vs lower than mean). Cumulative Mortality Hazards Model (Cox regression) adjusted for-age, gender, smoking, hypertension, dyslipidaemia, diabetes, hsCRP, eGFR, Ejection fraction (EF), and multivessel disease- was used to find independent predictors of cardiovascular outcome. We performed Kaplan-Meier Survival curves for both groups (higher vs lower than mean GRS) and used log-rank test to compare survival distributions in both groups.
Results: The following variables have emerged as independently associated with time to MACE occurrence: mGRS (HR = 1.31, 95%CI (1.07;1.59); p = 0.008), male gender, EF and multivessel disease. Concerning cardiovascular mortality, mGRS also remained an independent predictor (HR = 1.44, 95%CI (1.04-1.99); p = 0.028) alongside age, smoking, diabetes and EF. The Log-Rank test showed significant differences between the two curves related to MACE occurrence and cardiovascular mortality (p = 0.001 and 0.002, respectively). The Kaplan-Meier survival showed that as mGRS increases, patient survival decreases.
Conclusions: In patients with Metabolic Syndrome, a GRS comprising variants in lipidic and oxidative pathways, proved to be a useful stratification tool, identifying patients likely to have a worst prognosis over time. Our data further underlines the additive potential and clinical utility of genetic information in shaping secondary prevention.

P 141. DEGREES OF SCD40L PATHWAY ACTIVATION IN CORONARY AND MULTITERRITORIAL ATHEROSCLEROSIS

Tiago Pereira da Silva[1], Patrícia Napoleão[2], Teresa Pinheiro [3], Mafalda Selas[1], Felipa Silva[1], António Valentim Gonçalves[1], Vera Ferreira[1], Rui Cruz Ferreira[1], Miguel Mota Carmo[4]

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Introduction: The mechanisms underlying atherogenesis in different arterial beds and multiterritorial disease are poorly understood. Inflammation plays a central role in atherothrombosis, and soluble CD40 ligand (sCD40L) activates different cell types involved in innate immunity, including macrophages and platelets. We hypothesized that sCD40L pathway activation could be associated with different phenotypes of atherosclerosis. We aimed to evaluate if sCD40L expression is associated with the presence of stable coronary artery disease (SCAD) and with multiterritorial disease.
Methods: We prospectively recruited five groups of age- and sex-matched participants, with: 1) no coronary, carotid or inferior limbs atherosclerosis (controls); 2) isolated coronary artery disease (CAD); 3) coronary and inferior limbs atherosclerosis; 4) coronary and carotid atherosclerosis; 5) atherosclerosis of the three territories. All patients were assessed for atherosclerotic disease in the three territories. Coronary atherosclerosis was excluded by angioCT scan (calcium score = 0 and no soft plaques) in controls, or confirmed in case of obstructive CAD on invasive coronary angiography (≥ 50% for the left main, ≥ 70% for other epicardial vessels). Obstructive carotid and inferior limbs atherosclerosis (≥ 50% stenosis) was assessed by Doppler or angioCT imaging. Acute atherosclerotic events or coronary revascularization within 12 months, heart failure, concomitant inflammatory diseases (such as infections or malignancy) and severe renal dysfunction were exclusion criteria. Clinical and laboratorial data were prospectively collected. Serum was stored at -80°C and sCD40L measurements were performed in a blinded fashion, by ELISA (sCD40L Human Quantikine®).
Results: Sixty-three participants were recruited (Figure 1A). Classical cardiovascular risk factors were globally more prevalent in patients with atherosclerosis comparing to controls. Regarding inflammation, the levels of sCD40L differed across groups (Figure 1A), while the leucocytes and neutrophils counts, and c-reactive protein levels did not. sCD40L levels were significantly higher in patients with CAD without inferior limbs atherosclerosis comparing with controls; there was a trend for even higher sCD40L levels in patients with concomitant coronary and inferior limbs atherosclerosis (irrespectively of carotid territory) (Figure 1B). On the contrary, there was no further increase in sCD40L levels in patients with concomitant carotid atherosclerosis and CAD comparing to patients with isolated CAD (Figure 1C).
Conclusions: The absence of atherosclerotic disease, isolated CAD and multiterritorial disease were associated with a stepwise increase in sCD40L expression, respectively. A differential activation pattern of sCD40L was observed in inferior limbs and carotid atherosclerosis, in patients with CAD.

P 140. TCF21 VARIANT IS A RISK FACTOR FOR CORONARY ARTERY DISEASE AND WILL IT BE A PROGNOSTIC MARKER?

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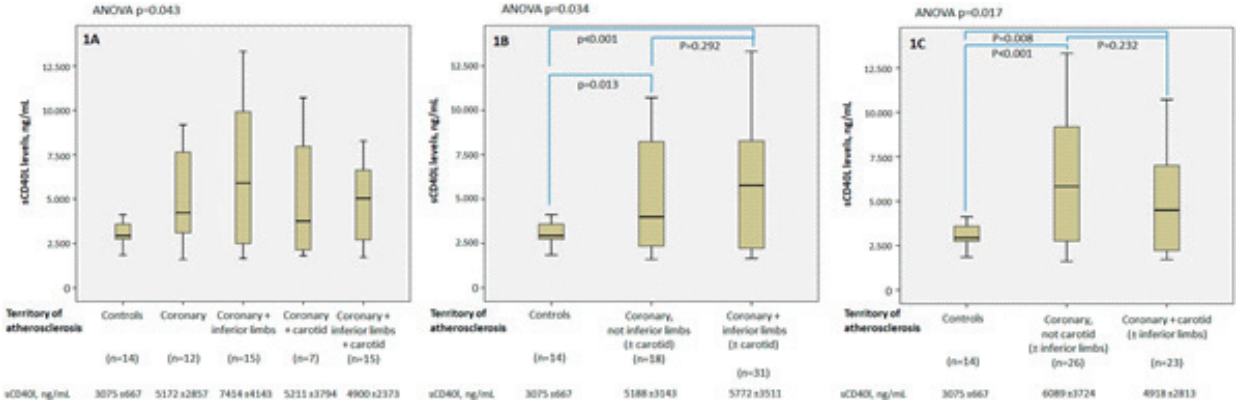
Introduction: TCF21 gene, encodes a basic-helix- loop- helix transcription factor, playing a critical action in the development of epicardial progenitor cells that give rise to coronary artery smooth muscle cells (SMC) and cardiac fibroblasts. Recent data suggest that TCF21 may play a role in the state of differentiation of SMC precursor cells that migrate to vascular lesions and contribute to fibrous cap.



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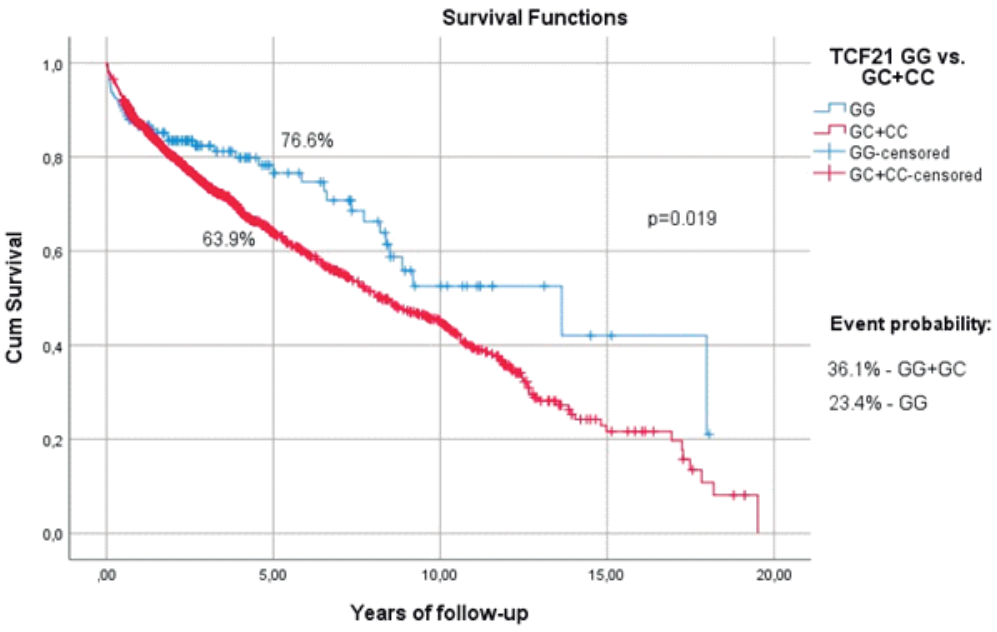

P 140 Figure

Objectives: Investigate the association of TCF21 rs12190287G > C variant with coronary artery disease (CAD) in a Portuguese population and its role on the prognosis.
Methods: Case-control study with 3,120 participants, 1,687 coronary patients with at least 75% obstruction of a major coronary artery and 1,433 controls. Genotyping used the TaqMan technique (Applied Biosystems) and then a univariate and multivariate logistic regression analysis were performed. After a mean follow-up of 5.01 ± 4.2 years (interquartile range 1.96-7.57), the occurrence of the combined Major Adverse Cardiovascular Events (MACE) (Cardiovascular Mortality, non-fatal Myocardial Infarction, new Revascularization, Cerebrovascular Disease and Peripheric Vascular Disease) were registered and analysed by Cox regression. Finally, Kaplan-Meier survival estimate was performed.
Results: In the total population, GC+CC genotype was found to be associated with CAD with an OR of 1.285; CI: 1.022-1.614; p = 0.031. After multivariate logistic regression, adjusted to traditional risk factors, the association with CAD remained significant for this genotype (OR = 1.340; CI: 1.042-1.723; p = 0.022). After Cox regression adjusted for confounding variables (age and sex, hypertension, diabetes, smoking, dyslipidemia, eGFR, Ejection fraction < 55) the mutated genotype remained a significant predictor of MACE (HR = 1.420; CI: 1.032-1.953; p = 0.031). The individuals carrying the mutated allele (GC+CC) at the mean follow-up showed an event probability of 36.1%, whereas the wild population (GG) presented only 23.4%. The Log-Rank test showed significant differences between the two curves (p = 0.019).
Conclusions: The mutated TCF21 variant can provide a new marker to identify patients at high cardiovascular risk and may represent a potential target for gene therapy in future.

P 142. ACUTE MYOCARDIAL INFARCTION AT = 50 YEARS OLD- INADEQUATE CORONARY RISK PREDICTION AND RISK FACTORS CONTROL

João Presume[1], Francisco Albuquerque[1], Sérgio Maltês[2], Gonçalo Cunha[1], Marisa Trabulo[1], Carlos Aguiar[1], António Ferreira[3], Jorge Santos Ferreira[1], Miguel Mendes[1]

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Introduction: The ability to predict the risk of cardiovascular (CV) events is paramount, so that primary prevention efforts can be implemented. However, predicting risk in young patients is challenging. The purpose of this study was to evaluate the performance of the main risk stratification methods available and assess the rates of primary prevention use.
Methods: This was a retrospective cohort of patients with ≤ 50 years old from several centers admitted consecutively at our hospital for acute myocardial infarction (AMI) with obstructive coronary artery disease in angiography, from 2016 to 2018. CV risk scores were calculated based on data available prior to AMI or at the time of presentation.

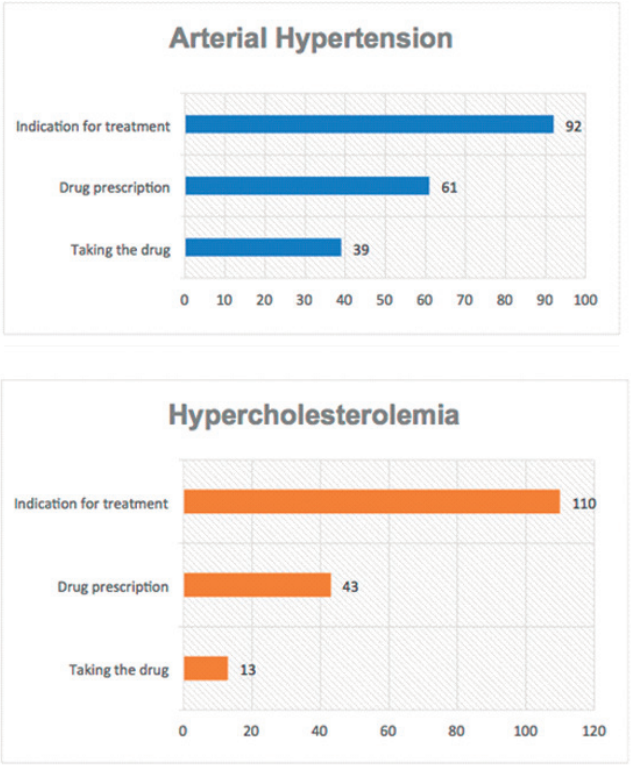

Figure - Analysis of treatment indication, primary prevention prescription and adherence to therapy in arterial hypertension and hypercholesterolemia

Results: A total of 151 patients were included-126 (83%) were men, 111 (74%) smokers, 21 (14%) had diabetes, and 44 (29%) were obese. Overall, 92 (61%) patients had hypertension, 61 of them (66%) had previously been prescribed an antihypertensive drug, but 22 discontinued it. Also, 110 (72.8%) had hypercholesterolemia based on the indication of statin recommendation (class I and IIa), 43 (39%) had previous prescription of a statin, but 30 had discontinued it. At least 1 CV risk factor was present in 148 (98%) of the patients. The median ESC-SCORE risk was 2% (10-year risk of CV death). The median ACC/AHA atherosclerotic cardiovascular disease (ASCVD) risk was 5.85% (10-year risk of ASCVD event). When comparing the distribution across risk categories by both risk stratification guidelines, we found a statistically significant difference between both of them ($p < 0.001$), with ASCVD score classifying 59 (39.1%) patients as high/very high risk, whereas ESC-risk stratification only identified 33 (21.9%) patients as high/very high risk. Score stratification agreement was poor (K-Cohen 0.121).
Conclusions: ESC-SCORE and ACC/AHA ASCVD risk scores inadequately predict coronary risk in young patients with first AMI and show pronouced differences in terms of stratification of this population. However, ASCVD seems to have better capacity to identify high risk patients. Moreover, primary prevention was not being thoroughly carried out, which may be related to the misperception of low risk.

P 143. PREDICTORS OF NEW ONSET ATRIAL FIBRILLATION AFTER 10 YEARS OF FOLLOW UP IN CARDIOEMBOLIC STROKE

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Introduction: Cardioembolic stroke due to atrial fibrillation (AF) is responsible for up to 33% of all ischemic strokes. The identification of paroxysmal atrial fibrillation (PAF) may have crucial prognostic impact. 24-hour Holter monitoring has been increasingly used in stroke and transient ischemic attack (TIA) patients as a routine investigation to search for occult PAF. The purpose of this study was to observe the incidence AF at a long-term follow-up and to evaluate the clinical and imagological predictors of new onset AF.
Methods: We selected patients in sinus rhythm who performed Holter between October 2009 and October 2011 in the setting of post stroke or TIA. These patients were followed for 8 to 10 years. Clinical and echocardiographic data were collected. Patients with AF were compared to those without AF.
Results: 104 patients were included, 54% were males, with a mean age of 63.8 ± 14.7 years at the time of the event. Concerning to cardiovascular risk factors, 59% had hypertension, 47% had dyslipidemia, 14% had diabetes, 44% were smokers or previous smokers and 67% were high consumers of alcohol. 79.8% of patients had a stroke (41.1% PACI) and 21.2% a TIA. PAF was detected in 1.9% of patients, all with previous stroke and older than 55. Patients with PAF were compared to the sinus rhythm ones and no statistically significant differences were found, either concerning to clinical or to imaging data (including left atrium size). At a follow-up of 8 to 10 years, AF was detected in more 11.5% of the patients. There is no association between the presence of cardiovascular risk factors and the development of AF, however patients presented with left atrium enlargement showed a higher incidence of AF at follow-up (14.7% vs 7.9%), but this difference wasn't statistically significant. Patient's age and the presence of mitral regurgitation were not related with new onset of AF during follow-up. Patients who developed AF during follow-up had similar mortality as those in sustained sinus rhythm (21.2% vs 16.7%, $p = 0.724$).
Conclusions: Atrial fibrillation is considered the main cause of stroke. In patients post stroke or TIA in sinus rhythm, left atrial enlargement (in contrast to mitral regurgitation and age) is a good predictor of development of AF. Diagnostic of new AF during long-term follow up was not correlated with higher mortality.

Painel 2 - Insuficiência Cardíaca 4

P 78. GET WITH THE GUIDELINES-HEART FAILURE RISK SCORE: SHORT AND LONG TERM PREDITIVE VALUE

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Introduction: The Get With The Guidelines-Heart Failure (GWTG-HF) risk score predicts in-hospital mortality of patients admitted with acute HF. However the applicability of this score after discharge has not been studied. The main objective of this paper was to analyze the predictive value for the combined endpoint of mortality and readmission at 6, 12 and 24 months after discharge.
Methods: A retrospective study of patients admitted in the cardiology service with acute HF was performed and GWTG-HF risk score were determined for all patients. All subjects were divided into two groups: higher (≥ 40 points) and lower (< 40 points) score. The patients who were discharge were followed for 2 years and, for each group (higher and lower score), Kaplan-Meier survival curves were determined to ascertain the predictive capacity for our endpoint at 6, 12 and 24 months after discharge.
Results: 1001 patients were included in the study, 50.6% were male and the mean age was 77 ± 10 years old; mean Ejection Fraction (EF) was 49.2 ± 16.3%; mean EF on the group with higher and lower score was, respectively, 48 ± 16.4% and 52 ± 15.6%. The percentage of patients with an EF < 40% on the group with higher and lower score was, respectively, 25% and 31%. There was 69 (6.9%) in-hospital deaths. A ROC curve was determined to ascertain the predictive capacity for in-hospital mortality of the GWTG-HF risk score: c-statistic of 0.705 ($p < 0.001$). Then, the 932 patients discharged were followed for two years. At 6, 12 and 24 months the percentage of patients achieving the combinated endpoint was, respectively, 33.2%, 45.4% and 57%. The following Kaplan-Meier survival curves were determined: 6 months-χ^2 4.309 ($p = 0.038$); 12 months-χ^2 7.767 ($p = 0.005$); 24 months-χ^2 10.770 ($p = 0.001$). GWTG score demonstrated to be an independent variable in predicting the 24-month combinated endpoint (HR: 3.067, $p = 0.011$) after adjusting for other prognostic variables such as age, DM and chronic kidney disease.
Conclusions: As expected the GWTG-HF risk score is able to predict the in-hospital mortality in patients admitted with acute HF, as it was presented by an acceptable predictive power in this group of patients. In this population, GWTG-HF risk score proved to be an useful multivariable score model for the combined endpoint at 6, 12 and 24 months after discharge. In the future, the aforementioned risk score might be a useful tool in stratifying patients and thereby optimizing treatment and long-term surveillance.

P 79. VIRTUE LIES IN THE MIDDLE? OUTCOMES OF MID-RANGE EJECTION FRACTION AFTER ACUTE CORONARY SYNDROME

Diana Decampos[1], Carolina Saleiro[2], Rogério Teixeira[1], Ana Rita M. Gomes[2], João Lopes[2], Joana M Ribeiro[2], Luís Puga[2], José Pedro Sousa[2], Ana Botelho[2], Lino Gonçalves[2]

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Introduction: Prognosis of ischemic heart failure with mid-range ejection fraction (left ventricular ejection fraction, LVEF, 40 to 49%) is unknown. We aimed to assess the long-term outcomes of patients with mid-range LVEF after percutaneous coronary intervention (PCI) compared with reduced LVEF and normal LVEF.
Methods: We retrospectively assessed patients admitted to our coronary unit with an acute coronary syndrome (ACS) and available information on LVEF. Patients were classified into three groups: normal (LVEF ≥ 50%), mid-range (40-49%) and reduced (< 40%). Long-term risk of all-cause mortality

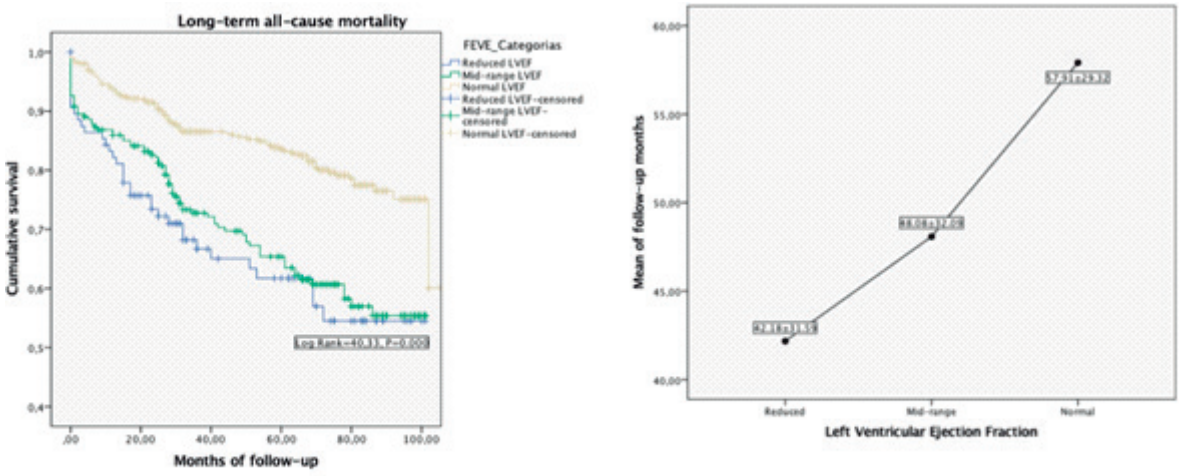

Figure 1. Kaplan-Meier survival curves (left) and mean of follow-up (right) according to LVEF categories.

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adjusted for prognostic clinical variables (sex, age, type of ACS, diabetes, chronic kidney disease, heart failure history, Killip-Kimbal class, potassium and LDL levels) was assessed. Kaplan-Meier survival curves and log-rank tests were used to compare the unadjusted survival curves of the three groups.

Results: Of 1,544 patients, 928 patients had information on LVEF and were submitted to PCI (66.27 ± 13.23yo, 73.6% male, median follow-up of 63 months). Mid-range LVEF represented 27.7% of all population. Mid-range and normal LVEF patients were younger. Mid-range LVEF's mean levels of LDL cholesterol and HbA1c were intermediate between reduced and normal LVEF. Mid-range LVEF patients had the same higher tendency to have previous history of atrial fibrillation as patients with reduced LVEF; but previous history of coronary artery disease was more similar to those with normal LVEF. Previous history of heart failure had a significant inverse relationship with LVEF. Medication use (ACEIs/ARBs, beta-blocker and aspirin) was not different. Unadjusted risk of death of mid-range patients was lower when compared to reduced LVEF (HR = 0.70 95%CI 0.54-0.92, p = 0.011). Adjusted risk of death of mid-range LVEF was similar to reduced LVEF (HR = 1.2, 95%CI 0.79-1.82) but rose when compared to normal LVEF (HR = 0.57 95%CI 0.42-0.79, p = 0.001). Kaplan-Meier curves show that the risk of all-cause mortality was significantly different among the three groups.

Conclusions: Patients with mid-range LVEF after an ACS resembled those with reduced LVEF in terms of survival. Patients with mid-range LVEF present a 43% increased risk of long-term all-cause death compared to those with normal LVEF.

P 80. 6-HOURS LEVOSIMENDAN OUTPATIENT ADMINISTRATION IN ADVANCED HEART FAILURE: 93 SESSIONS EXPERIENCE

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Centro Hospitalar de Lisboa Central, EPE/Hospital de Santa Marta.

Introduction: Advanced Heart Failure (HF) is defined by the presence of objective evidence of cardiac dysfunction and poor functional capacity leading to recurrent episodes of hospitalisations. The safety and benefit of intermittent 6-hours administration of Levosimendan to ambulatory patients was first studied in the LevoRep and LION-HEART trials but clinical experience with outpatient Levosimendan treatment is lacking.

Objectives: Present our 1-year experience performing 6-hours Levosimendan in an outpatient care for advanced HF patients.

Methods: Patients with advanced HF despite optimal medical management and device therapy were selected to start 6-hours Levosimendan in an outpatient care. Advanced HF was defined by persistent ambulatory NYHA functional class III or IV, left ventricular ejection fraction (LVEF) inferior to 40% and hospitalizations for pulmonary and/or systemic congestion requiring intravenous administration of diuretics or low-output state requiring inotropic support in the previous 12 months. Levosimendan was performed as a 6-hour intravenous infusion (0.2 μg/kg/min, without bolus) every two weeks in an outpatient setting that allowed non-invasive monitoring of vital signs.

Table 1 - Baseline characteristics of the study population (n=13)

CHARACTERISTICS	n (%)
Total number of sessions	93
Mean age (years)	60 ± 15
Male gender	11 (85%)
Ischemic etiology	7 (54%)
Previous 24-hours Levosimendan administration	9 (69%)
Number of HF hospitalizations in the last 3-months	21
Waiting for Heart Transplant or LVAD	4 (31%)
NHYA IV class	11 (85%)
Mean systolic blood pressure (mmHg)	101 ± 13
Previous implantable cardioverter defibrillator (ICD)	12 (92%)
Mean glomerular filtration rate (ml/min)	55 ± 23
Mean BNP (pg/ml)	1596 ± 491
Mean NTproBNP (pg/ml)	11135 ± 6801
Mean Furosemide dose (mg)	88 ± 46
Mean left ventricular ejection fraction (%)	26 ± 7
Mean peak oxygen consumption (ml/kg/min)	11.7 ± 3.8
Mean VE/VCO_2 slope	49 ± 19

Results: Levosimendan 6-hours treatment was started in 13 patients for a total of 93 sessions. Baseline characteristics are presented in the table 1. Mean age was 60 ± 15 years, with a mean LVEF of 26 ± 7.All the patients had at least 1 HF hospitalization in the previous year and there were a total of 21 HF hospitalization in the 3 months previous to start Levosimendan outpatient treatment, showing a high-risk population despite optimal medical management. There are no adverse events to report in the 93 sessions. One patient performed only 1 session, since he presented with

symptoms of diarrhea after a long hospitalization with previous need for antibiotic treatment. This patient was hospitalized with the diagnosis of C. difficile infection with an evolution in cardiac shock and death during this hospitalization. This is the only death in this group of patients. During a mean follow-up time of 149 ± 144 days only one additional patient, who was already waiting for a LVAD implantation prior to Levosimendan treatment, required one HF hospitalization for persisting systemic congestion treated with the onset of peritoneal dialysis. In the group of three patients in the waiting list for heart transplantation, two were successfully performed during the follow-up and one was withdrawn because of pVO_2 improvement (12.1-23.7 ml/kg/min).
Conclusions: Larger studies are needed to confirm the safety and efficacy of this therapeutic strategy and its effect on clinical and patient-reported outcomes. However, our results show that Levosimendan 6-hours outpatient administration is safe and related to a reduction in HF hospitalizations, encouraging us to extend this outpatient treatment strategy.

P 81. SACUBITRIL/VALSARTAN: WHAT DOES THE REAL-LIFE EXPERIENCE TELL US?

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Introduction: The PARADIGM-HF trial showed that sacubitril-valsartan, an angiotensin receptor-neprilysin inhibitor (ARNI), is more effective than enalapril for patients with heart failure (HF) and reduced ejection fraction (rEF). However, the eligibility to ARNI and the outcomes in the real-world are not well established.
Objectives: Characterize the population of patients with HFrEF under ARNI therapy, and assess the impact of this therapy.
Methods: Observational retrospective unicentric study, including all patients followed in the HF clinic of a tertiary hospital, medicated with ARNI. Cox regression analyses were used to determine predictors of mortality and the combined endpoint of mortality, heart transplantation or LVAD implantation.

	PARADIGM-HF patients on S/V	Our Population
Age (years)	63.8 ± 11.5	63.6 ± 12.0
Women (%)	21.0	17.4
Ischemic cardiomyopathy (%)	59.9	49.3
LV ejection fraction (%)	29.6 ± 6.1	28.1 ± 7.3
NYHA functional class II/III/IV (%)	71.6 / 23.1 / 0.8	39.7 / 47.1 / 4.4
Systolic blood pressure (mmHg)	122 ± 15	110 ± 20
Heart rate (beats/min)	72 ± 12	69 ± 13
N-terminal pro-BNP (pg/ml)	1631 (885-3154)	1716 (812-2762)
Serum creatinine (mg/dl)	1.13 ± 0.3	1.18 ± 0.3
History of diabetes (%)	34.7	34.8
History of atrial fibrillation (%)	36.2	33.3
Beta-adrenergic blockers (%)	93.1	92.8
Mineralocorticoid antagonists (%)	54.2	58.2
ICD / CRT (%)	14.9 / 7.0	42.0 / 20.3

Results: 69 patients were identified (median age 66 years; 83% male; 49% with ischemic etiology; median follow-up 266 days). On the evaluation before starting ARNI, 52% were in class III-IV; 93% were on ACEI/ARB, 93% on beta-blocker and 58% on MRA; 42% had an ICD and 20% CRT; 12% had required perfusion of inotropes in the previous 12 months. The median NT-proBNP was 1716 pg/ml, the mean LVEF was 28 ± 7%, and the mean peak VO_2 was 17 ± 5 ml/Kg/min. Only 30% fulfilled the inclusion criteria for the PARADIGM-HF trial (Table) and 42% had an off-label indication, namely due to low systolic BP (SBP) (mean SBP 110 ± 20 mmHg; 32% < 100 mmHg). The median ARNI starting dose was 24/26 mg. After 3 months of follow-up, the median dose was 49/51 mg and 28% were on the maximum dose; there were no significant adverse events, and the following differences were found: improvement in functional class (class III-IV: 52 vs 35%), and reduction in NT-proBNP (1,716 vs 805 pg/ml) and furosemide daily dose (20 vs 0 mg) ($p < 0.03$ for all). In the 12 patients that performed serial cardiopulmonary exercise test (CPET) there was no significant improvement. Regarding LVEF, there was an improvement (28 vs 37%; $p = 0.005$), although the baseline echo was not routinely performed close to starting ARNI. The mortality rate was 5.8%, and the combined endpoint occurred in 8.7%. The predictors of the combined end-point were inotrope use in the previous 12 months (HR 5.0) and baseline NT-proBNP > 3,000 pg/ml (HR 17.3), while the predictors of mortality were baseline LVEF < 20% (HR 8.0) and NT-proBNP > 3,000 pg/ml (HR 10.2); an increase in the maximum HR in the baseline CPET was a predictor of a better outcome, for both endpoints (HR 0.92 and 0.93) ($p < 0.05$ for all).
Conclusions: In this study of a real-world population, although the majority of patients would have been excluded from the PARADIGM-HF trial and a significant proportion were prescribed off-label, the use of ARNI was safe, even in patients with low SBP, and was associated with improvements in functional class and NT-proBNP, although there was no improvement in CPET parameters. In our study, the predictors of the outcomes were the NT-proBNP, LVEF and the maximum HR in the CPET.

P 83. HEART FAILURE WITH MID RANGE EJECTION FRACTION IN REAL LIFE HEART FAILURE POPULATION: A TRUE DIFFERENT CLASS?

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Introduction: In 2016, European Society of Cardiology introduced a new category of heart failure (HF), with mid-range ejection fraction (EF) between 40% and 49% (HFmrEF), to stimulate investigation on this poorly defined type of HF. Data is still nonconsensual. We aim to describe HFmrEF patients (pts), as well as its comparison to other types of HF, in what regards its clinical characteristics, comorbidities and prognosis.
Methods: We retrospectively analyzed clinical characteristics, comorbidities and mortality of 359 patients consecutively admitted in an acute HF Unit and compared HFmrEF to HFrEF and HFpEF.
Results: Of the 359 pts, m = 76.5 ± 11.6 years, 46 had HFmrEF (12.8%; m = 74.5 ± 14.6y), 106 HFrEF (29.5%; m = 71.1 ± 12.3y) and 207 HFpEF (57.7%; m = 79.8 ± 9.2y). Regarding gender, the HFrEF pts were predominantly male (67%) and the HFpEF predominantly female (59%), with no gender predominance in HFmrEF or in the global population. Regarding HFmrEF, hypertensive heart disease was the main etiology of HF (n = 20; 44% vs 59% HFpEF vs 10% HFrEF), followed by ischemic heart disease (IHD) (n = 13; 28% vs 18% HFpEF vs 62% HFrEF). Regarding comorbidities of HFmrEF pts, 83% had hypertension (vs HFpEF 88% vs HFrEF 65%), 65% atrial fibrillation (AF) (vs HFpEF 65% vs HFrEF 50%), 59% hypercholesterolemia (vs HFpEF 50% vs HFrEF 54%), 48% were obese/excessive weight (vs HFpEF 70% vs HFrEF 55%), 35% diabetes (vs HFpEF 41% vs HFrEF 41%), 33% chronic kidney disease (vs HFpEF 44% vs HFrEF 41%) and 17% chronic obstructive pulmonary disease (vs HFpEF 26% vs HFrEF 20%). The average number of comorbidities were 4 (including all the above, cerebrovascular, thyroid, hepatic or concomitant malignant diseases, obstructive sleep apnea, alcohol or cigarrete consumption) in all three types of HF. Concerning medication at admission, there was increasingly higher usage of beta blockers, angiotensin-converting enzyme inhibitors (ACEi)/angiotensin II receptor blockers (ARb)/angiotensin receptor-neprilysin inhibitor (ARNi) and mineralocorticoid receptor antagonists (MRA) from HFpEF, to HFmrEF and HFrEF-beta blockers 53, 61, 72%; ACEi/ARb/ARNi 62, 70, 75%; MRA 15, 28, 45%. Diuretics were used in above 70% in all groups, slightly higher in HFrEF. Regarding mortality, 10 pts with HFmrEF died within the first two years (22%), 70% from HF. Mortality rates of HFrEF

and HFpEF was 25% (n = 26; 65% from HF) and 34% (n = 70; 55% from HF), respectively.
Conclusions: Regarding age and etiology of HF, HFmrEF had intermediate characteristics in between the other two groups, which have a clear predominant causing factor-hypertension for HFpEF and IHD for HFrEF. HFmrEF is much closer to HFpEF in regard to incidence of hypertension and AF. Number and incidence of comorbidities were similar within all groups. Disease modifying therapy for HFrEF is increasingly used as EF lowers. HFmrEF had a lower mortality than HFpEF within the first two years, similar to HFrEF.

P 82. IMPACT OF A HEART FAILURE CLINIC IN MORBIDITY, MORTALITY AND QUALITY OF LIFE.

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Introduction: Chronic heart failure (CHF) is a syndrome with high morbidity and mortality rates, having a tremendous impact in patient's quality of life (QoL) and in the entire health system. HF Clinics intend to cope with the complexity of the clinical management of these patients (pts), aiming to improve outcomes due to a proximity model with a systematic and multidisciplinary approach.
Methods: Analysis of the pts prospectively followed at a HF Clinic (N = 152), including the QoL indicators (Kansas City Cardiomyopathy Questionnaire-KCCQ and European HF Self-care Behavior Scale-EHFScBS), emergency department (ER) visits, HF hospitalizations and all-cause mortality and comparing the last indicator with the previous rate before the creation of the Clinic.
Results: After 6 months of follow-up (FU), 10% of pts improved the KCCQ score and 90% remained at the highest scores and 78% improved in the EHFScBS. Comparing the first trimester with the last one (in a period of 9 months), there was a reduction of ER visits due to HF decompensation from 23.5% to 8.7% and of HF hospitalization rate from 53% to 12.5%. After 9 months of FU, the all-cause mortality rate dropped from 18.1% to 7%.
Conclusions: The implementation of a HF Clinic have a significant impact regarding both the QoL of the pts and the ER visits/hospitalizations and mortality rates, due to a proximity model with a systematic and multidisciplinary approach.

Painel 3 - Imagiologia Cardiovascular 2

P 88. DIAGNOSTIC YIELD OF CORONARY COMPUTED TOMOGRAPHY ANGIOGRAPHY IN SYMPTOMATIC ELDERLY PATIENTS

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Introduction: Coronary computed tomography angiography (cCTA) is widely considered the optimal non-invasive test to rule out coronary artery disease (CAD) and the gatekeeper for invasive coronary angiography (ICA). However, its diagnostic utility in elderly patients (pts) is less well established due to concerns regarding high coronary calcium scores (CaS), irregular/high heart rates, and breath-holding difficulties.
Aim: To investigate the diagnostic yield of cCTA in elderly pts with suspected CAD.
Methods: Single-centre retrospective study of symptomatic elderly pts (≥ 70 years) referred for cCTA to rule out CAD, between October 2017 and November 2019. Patients with known history of CAD and suspected acute coronary syndrome were excluded. Baseline demographic and clinical characteristic were collected as well as scan features and findings. A 192x2 dual-source CT equipment was used. Studies were designated as either diagnostic or non-diagnostic (≥ 1 non-interpretable coronary segment). Moreover, diagnostic studies were classified as normal (no plaque), non-obstructive (stenosis < 50%) or obstructive CAD (≥ 1 stenosis ≥ 50%); and non-diagnostic studies were stratified according to the motive jeopardizing optimal coronary evaluation. Individuals who underwent ICA were followed in order to assess per patient cCTA accuracy (PPA) for obstructive CAD identification.

A

	Diagnostic test (n=143; 69.1%)	Non-diagnostic test (n=64; 31.9%)	p-value
CLINICAL AND DEMOGRAPHIC CHARACTERISTICS			
Age (mean±SD, years)	73.3±3.0	73.2±3.0	0.92
Male	68/143 (47.6%)	38/64 (59.4%)	0.12
BMI (mean±SD, Kg/m2)	27.8±4.5	27.7±3.6	0.89
Hypertension	109/143 (76.2%)	53/64 (82.8%)	0.29
Diabetes	23/143 (16.1%)	22/64 (34.4%)	<0.01
Hyperlipidaemia	97/143 (67.8%)	46/64 (71.9%)	0.56
Smoker (current)	5/143 (3.5%)	2/64 (3.1%)	0.89
Family history of CAD	11/143 (7.7%)	5/64 (7.8%)	0.98
Valvular heart disease	17/143 (11.9%)	18/64 (28.1%)	<0.01
Rhythm disorder	19/143 (13.3%)	11/64 (17.2%)	0.46
Pulmonary disease	17/143 (11.9%)	11/64 (15.6%)	0.46
Previous stroke	9/143 (6.3%)	5/64 (7.8%)	0.69
Previous non-invasive stress test	50/143 (35.0%)	23/64 (35.9%)	0.89
High pre-test CAD probability (Morise score)	22/143 (15.4%)	13/64 (20.3%)	0.38
STUDY CHARACTERISTICS			
Baseline heart rate (mean±2SD, beats per minute)	58.8±7.4	62.8±8.7	<0.01
Oral betablocker	60/143 (42.0%)	25/64 (39.1%)	0.70
Intravenous betablocker	20/143 (13.9%)	3/64 (4.7%)	0.05
Oral nitrates	112/143 (78.3%)	39/64 (60.9%)	<0.01
Prospective study protocol	136/143 (95.1%)	32/36 (88.9%)	0.18
Voltage (mean±2SD, kV)	89.9±14.2	100.0±19.0	<0.01
Radiation exposure (mean±2SD, mSV)	3.6±4.3	4.2±10.4	0.66
Contrast volume (mean±2SD, mL)	77.4±20.7	71.1±14.8	0.09
STUDY FINDINGS			
Coronary calcium score (total)	140.1±305.8	924.9±880.6	<0.01
Total number of calcified lesions	5.1±6.0	15.9±8.8	<0.01
Obstructive CAD (CAD RADS > 2)	35/143 (24.5%)	12/36 (33.3%)	0.28
Multivessel CAD (≥1 major artery with CAD-RADS > 2)	18/141 (27.0%)	5/27 (18.5%)	0.43

BMI: body mass index; CAD: coronary artery disease; CAD-RADS: CAD-reporting data system

B

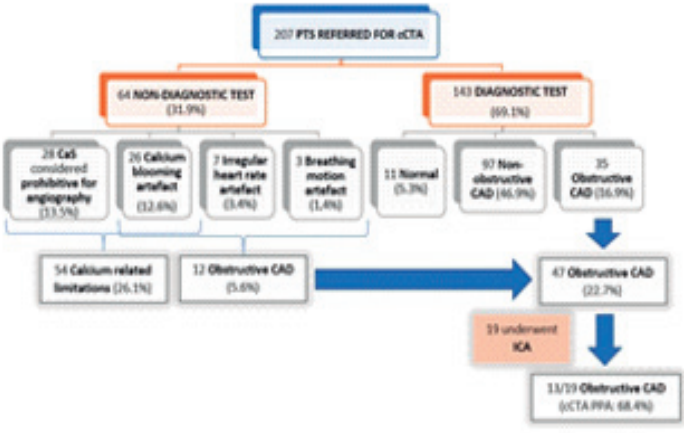

Figure 1. Baseline patient and study information (**A**); Coronary computed tomography angiography (cCTA) findings and comparison with invasive coronary angiography (ICA) for patients with identified obstructive coronary artery disease (CAD).
PTS: patients; CaS: coronary calcium score; PPA: per patient accuracy.

P 88 Figure

Results: A total of 207 pts were enrolled. Overall, mean age was 73 ± 3 years and 51% were male. Baseline patient and study information is depicted in Figure 1A. A diagnostic study was obtained in 143 pts (69.1%), 35 showing obstructive CAD. Sixty-four pts (31.9%) had a non-diagnostic study, 54 of them (84.4%) due to either prohibitive CaS to undergo angiography (CaS = 924.9 ± 880.6) or calcium blooming artefacts on angiography. Still, at least one stenosis ≥ 50% was diagnosed in 12 pts of this group (Figure 1B). Overall, 19 pts presenting ≥ 1 obstructive lesion, regardless of whether the global study was conclusive, underwent ICA which confirmed obstructive CAD in 13 cases (PPA: 68.4%).
Conclusions: In this contemporary cohort of symptomatic elderly pts undergoing cCTA for suspected CAD, a high proportion of diagnostic tests was obtained and cCTA showed good accuracy for obstructive CAD recognition. Calcification was responsible for most non-diagnostic tests, but it also provides additional information regarding cardiovascular risk. According to our results, cCTA seems to be of great value in older populations.

P 84. DOES CORONARY CALCIUM SCORING ADDS VALUE TO CARDIOVASCULAR RISK PREDICTION IN ASYMPTOMATIC PEOPLE?

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Introduction: Despite being a controversial subject, multiple guidelines mention the use of Coronary Artery Calcification (CAC) scoring in the cardiovascular risk prediction, in asymptomatic population. The inclusion of CAC scoring in traditional risk models may help in decision-make providing better cardiovascular risk stratification.
Objectives: The aim of our study is to estimate the impact of CAC scoring in cardiovascular events risk prediction in a model based on traditional risk factors (TRFs).
Methods and results: The study consisted of 1,052 asymptomatic individuals free of known coronary heart disease, enrolled from GENEMACOR study and referred for computed tomography for the CAC scoring assessment. A cohort of 952 was followed for a mean of 5.2 ± 3.2 years for the primary endpoint of all-cause of cardiovascular events. The following traditional risk factors were considered: (1) current cigarette smoking, (2) dyslipidemia, (3) diabetes mellitus, (4) hypertension and (5) family history of coronary heart disease. Among this population, the extent of CAC differs significantly between men and women in the same age group. Therefore, the distribution of CAC score by age and gender was done by using the Hoff's nomogram (a). According to this nomogram, 3 categories were created: low CAC (0≤ CAC < 100 and P < 50); moderate CAC (100 ≤ CAC < 400 or P50-75) and high CAC (CAC ≥ 400 or P > 75). Two Cox regression models were created, the first only with TRFs and the second adding the CAC severity categories. When including CAC categories to the TRFs, the higher severity level presented a significant risk of MACE occurrence with an HR of 4.39 (95%CI 1.83-10.52; p = 0.001).
Conclusions: Our results point to the importance of the inclusion of CAC in both primary and secondary prevention to an improved risk stratification. Larger prospective multicentre cohorts with longer follow-up should reproduce and validate these findings.

P 85. UNVEILING CORONARY INFLAMMATION BY PERIVASCULAR FAT ANGIO-CT: A PROPENSITY-MATCHED SCORE ANALYSIS

Gonçalo Cunha[1], Bruno Rocha[1], Pedro Freitas[1], Pedro Lopes[1], Carolina Padrão[1], Telma Lima[1], Ricardo Lopes[1], Afonso Grego[1], Fernando Marques[1], Patrícia Santim[1], Ana Coutinho Santos[1], Sara Guerreiro[1], João Abecasis[1], Carlos Aguiar[1], Maria João Borges Andrade[1], Carla Saraiva[1], Miguel Mendes[2], António Ferreira[3]

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Introduction: Inflammation plays a pivotal role in the atherogenic process and recently has been the target of successful clinical trials. A new CT angiography method allows the identification of inflammatory pericoronary fat, which is associated with cardiovascular events. We aimed to determine whether patients with obstructive coronary artery disease (CAD) have a higher pericoronary inflammatory milieu when compared to those without CAD.
Methods: From a prospective CT angiography registry of patients with suspected obstructive CAD, those with a luminal stenosis > 70% confirmed by invasive coronary angiography were screened (previous coronary artery bypass grafting was an exclusion criteria). Subsequently, we applied a 1:1 propensity score (PS) without replacement protocol to match obstructive CAD patients with those without CAD (non-CAD), using age, gender, BMI, hypertension, dyslipidemia, diabetes and smoking status as covariates. Similar to previous reports, pericoronary fat characterization by CT angiography was performed by analyzing the fat attenuation index (FAI) at the -30 to -190 HU range. Inflammatory fat was defined by a FAI > -70 HU. The proximal 50 mm of the right coronary artery (RCA) was used to perform fat quantification and characterization. The perivascular fat was defined as the adipose tissue within a radial distance from the outer vessel wall equal to the diameter of the vessel.
Results: A matched cohort of 48 patients was identified (mean age 63 years; 77% males)-24 obstructive CAD and 24 non-CAD patients. Mean FAI was numerically higher in obstructive CAD compared to the non-CAD cohort (-74 ± 7 vs -78 ± 7; p = 0.083). Although not statistically significant, those with obstructive CAD had an increased proportion of inflammatory fat (51 ± 10 vs 46 ± 10%; p = 0.107). After adjustment for body surface area (BSA), differences in the inflammatory fat proportion became apparent between obstructive CAD and non-CAD patients (28 ± 6 vs 24 ± 5%/m^2; p = 0.024). Furthermore, we observed a significant correlation between the inflammatory fat proportion (both absolute value and BSA adjusted) and the total number of RCA plaques (r = 0.458; p = 0.003; and r = 0.451; p = 0.003, respectively). Finally, there was 1 additional plaque observed in the RCA for each increase in 10% of proportion of inflammatory fat (p = 0.018).
Conclusions: Perivascular coronary inflammation, as measured by FAI, seems significantly heightened in patients with obstructive CAD compared to a matched cohort of non-CAD patients. Further studies are needed to ascertain the mechanisms and possible implications of this association.

Cox regression analysis for MACE occurrence

Variables	B	S.E.	Wald	df	HR (95% CI)	P value
Age	0.097	0.028	12.192	1	1.102 (1.044 – 1.164)	<0.0001
CAC severity	----	----	14.059	2	----	0.001
Moderate	0.178	0.553	0.103	1	1.194 (0.404 – 3.528)	0.748
High	1.479	0.446	11.002	1	4.391 (1.832 – 10.524)	0.001

P 84 Figure

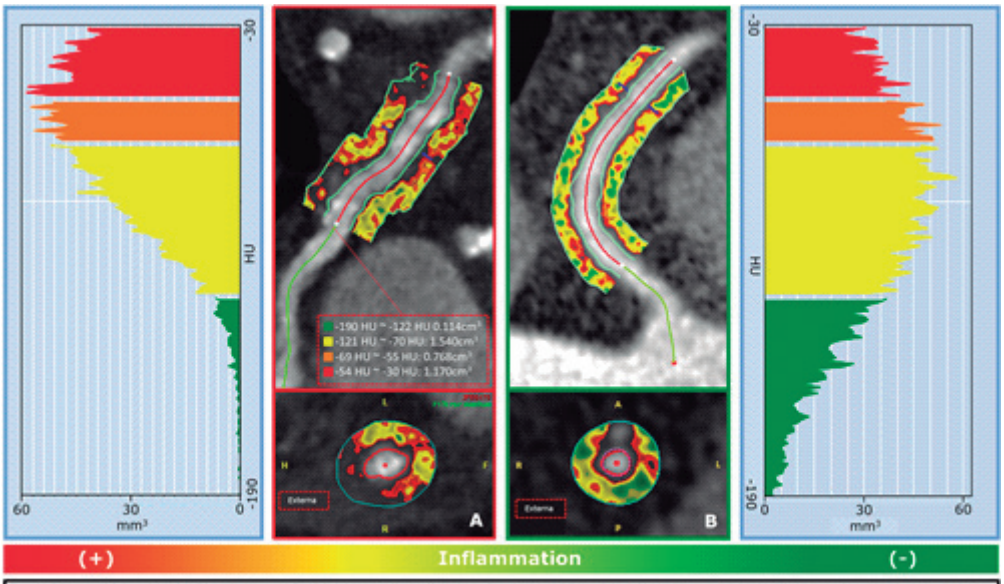

Figure 1 – Pericoronary FAI quantification around the RCA in a patient with obstructive CAD **(A)** and another with normal coronary arteries **(B)**.

P 85 Figure

P 86. PREVALENCE OF LAA THROMBUS IN PATIENTS UNDERGOING PERCUTANEOUS ABLATION OF ATRIAL FIBRILLATION

Cláudia de Jesus Silva[1], Pedro Freitas[1], António Ferreira[2], Francisco Albuquerque[1], Sara Guerreiro[1], João Abecasis[1], Catarina Brízido[1], Mariana Gonçalves[1], Gustavo Rodrigues[1], Ana Coutinho Santos[1], João Carmo[1], Maria Salomé Carvalho[1], Anai Durazzo[1], Francisco Moscoso Costa[1], Pedro Carmo[1], Carla Saraiva[3], Diogo Cavaco[1], Francisco Morgado[1], Pedro Adragão[1], Miguel Mendes[3]

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Introduction: Computed tomography (CT) is often performed before atrial fibrillation (AF) ablation to assess the anatomy of the pulmonary veins and exclude left atrial (LA) and left atrial appendage (LAA) thrombus. With the growing use of new oral anticoagulants (NOACs), a reassessment of the need for systematic thrombus exclusion in this context seems warranted.
Objectives: To evaluate the prevalence of thrombus in LA/LAA in pre-ablation CT in a contemporary cohort of patients predominantly anticoagulated with NOACs.
Methods: We evaluated 789 consecutive patients (mean age 61 ± 12 years; 38% female; 84% with paroxysmal AF) who underwent pre-ablation CT between Oct/2015 and Oct/2019. ECG-gated CT-angiography was performed using a dual-source 64-slice CT after iodinated contrast injection. Whenever necessary, a second dedicated acquisition was made 60 seconds after the first set of images. Presence of thrombus was defined as a persistent opacification defect. For each patient, thromboembolic risk was assessed with the CHA_2DS_2-VASc score.
Results: The median interval between CT and AF ablation was 1 day (IQR 1-2 days). The median CHA_2DS_2-VASc was 2 points (IQR 0-3 points), with 590 patients (75%) having CHA_2DS_2-VASc ≥ 1. Among the 199 patients (25%) with CHA_2DS_2-VASc = 0, 118 (59.3%) were anticoagulated with a NOAC and 14 (7%) with a vitamin K antagonist; 67 (34%) were not anticoagulated. Conversely, amongst the 590 patients with CHA_2DS_2-VASc ≥ 1, 84% were anticoagulated with a NOAC (n = 494), 11% used vitamin K antagonists (n = 62), and 34 patients were not anticoagulated (23 with CHA_2DS_2-VASc = 1). On cardiac CT, 521 (66%) patients were in sinus rhythm. Overall, only one LAA thrombus was found (0.12% [1/789]; 95%CI: 0.0-0.7%)-in a patient with CHA_2DS_2-VASc = 0, anticoagulated with a NOAC. The median effective radiation dose was 3.2 mSv (IQR 2.1-4.8 mSv). There were 5 minor allergic reactions to iodinated contrast. No strokes were documented within the first 24 hours after ablation.
Conclusions: In this contemporary cohort of patients with predominantly paroxysmal AF and anticoagulated with NOAC, the prevalence of intracavitary thrombus was extremely low (0.12%). While these findings do not compromise the multipurpose role of pre-ablation CT, they should nevertheless inform future discussions on the risk/benefit and cost/benefit of performing systematic exclusion of LA/LAA thrombi prior to AF ablation.

P 87. EPICARDIAL ADIPOSE TISSUE AND CALCIFIC AORTIC STENOSIS-UNVEILING A LONG-DISTANCE RELATIONSHIP

Catarina Brízido, António Miguel Ferreira, Pedro Freitas, Daniel Matos, Sara Guerreiro, João Abecasis, Ana Coutinho Santos, Carla Saraiva, Regina Ribeiras, Maria João Andrade, Rui Campante Teles, Manuel Almeida, Miguel Mendes

Centro Hospitalar de Lisboa Ocidental, EPE/Hospital de Santa Cruz.

Introduction: Calcific aortic stenosis (AS) and coronary artery disease share common risk factors, but efforts to retard the progression of AS with anti-atherosclerotic therapies have been unsuccessful, suggesting the existence of unknown links in its pathophysiology. Epicardial adipose tissue (EAT) is also correlated with multiple cardiovascular risk factors and has recently been shown to be an active promoter of vascular inflammation and calcification. We raised the hypothesis that patients with severe AS would have a greater amount of EAT, independently of their atherosclerotic burden.
Methods: Within a single-centre cardiac CT registry, we identified 624 patients undergoing cardiac CT for symptomatic severe calcific AS and 1110 patients undergoing cardiac CT for other reasons. After applying exclusion criteria (age < 60 years, known coronary disease, left ventricle dysfunction or bicuspid valve), 241 AS patients and 260 non-AS patients were available for analysis. AS patients were paired in a 1:1 ratio with patients from the control group using a propensity score (matched by age, sex, body mass index [BMI], serum creatinine, tobacco use, dyslipidaemia, hypertension, diabetes and coronary calcium Agatston score). Epicardial fat was quantified in a single 3mm slice of non-contrast CT, using a simplified semi-automated method.

Results: A total of 122 patients (67% women, mean age 76 ± 6 years) were matched (61 AS patients and 61 controls). Patients with AS had a mean gradient of 53 ± 12 mmHg and a median aortic valve calcium score of 2219 AU (IQR 1607-3114). Coronary atherosclerotic burden, as measured by coronary calcium Agatston score, was similar in both groups (108 AU [IQR 2-532] vs 172 AU [IQR 26-626]; p = 0.414). There were no statistically significant differences between AS patients and controls regarding age, sex, BMI, serum creatinine, and prevalence of classic cardiovascular risk factors. Overall, the median epicardial fat volume was 4.23cm^3/m^2 (IQR 3.46-5.33) and similar between genders (4.23 cm^3/m^2 [IQR 3.48-6.40] in males vs 4.22 cm^3/m^2 [IQR 3.31-5.15] in females; p = 0.332). Even though AS patients had more epicardial fat volume (4.30 cm^3/m^2 [IQR 3.25-5.62]) when compared to their matched controls (4.11 cm^3/m^2, [IQR 3.51-4.99]; p for comparison = 0.65), this finding was not statistically significant. Larger studies are necessary to conclude about meaningful differences between AS patients and matched controls.
Conclusions: In this cohort, epicardial fat volume was slightly higher (but not statistically significant) in patients with calcific aortic stenosis when compared to a matched control group. It remains to elucidate if inflammatory epicardial fat (vs noninflammatory fat) could be associated with calcific aortic stenosis.

P 89. DOSE ATUAL DE RADIAÇÃO EM TC CORONÁRIA-FATORES CONTRIBUTIVOS E RELAÇÃO COM QUALIDADE DE IMAGEM

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Introdução: Com o aumento das indicações apropriadas para a utilização de Angio-TC Coronária, a sua dose de radiação reveste-se de maior relevância populacional. Uma utilização otimizada da técnica e o desenvolvimento tecnológico têm contribuído para uma redução efetiva da mesma. Neste trabalho tivemos por objetivo avaliar a dose de radiação atual de Angio-TC Coronária efetuada num centro de grande volume com acesso a tecnologia de ponta e determinar os principais fatores que contribuem para a sua redução e o seu impacto na qualidade de imagem.
Métodos: Realizámos um estudo prospetivo de doentes consecutivos submetidos a Angio-TC com *gating* cardíaco durante um mês em aparelho de última geração dupla-ampola 192 × 2 detetores. Foram registados dados demográficos e biométricos, sintomas e fatores de risco, indicação do exame, modulação farmacológica da frequência cardíaca (FC), ritmo cardíaco e FC média durante a aquisição, protocolo (incluindo técnica, modulação e condições de aquisição, e dose de contraste), utilização de reconstrução iterativa, dose de radiação da Angio-TC e a total, qualidade diagnóstica e necessidade de repetição do exame. A amostra obtida foi dividida em quartis segundo as doses de radiação utilizadas.
Resultados: De 207 doentes que realizaram Angio-TC com *gating* cardíaco, foram selecionados os 153 que a fizeram apenas para avaliação coronária. A mediana de dose total de radiação foi de 1,7 mSv (1,1-3,2). Foi necessário repetir a aquisição angiográfica em apenas 3,3% dos doentes. Em 78% dos doentes obteve-se uma excelente qualidade diagnóstica para todos os vasos estudados e em 98,7% foi possível avaliar todos os segmentos coronários. Menores doses de radiação total associaram-se significativamente a menor peso e índice de massa corporal (IMC), menor FC média, ritmo sinusal, menor voltagem e à utilização de uma técnica de aquisição helicoidal com *high pitch*. Os preditores independentes para a dose total de radiação foram o IMC (p < 0,001) e a técnica de aquisição (p < 0,001). A qualidade diagnóstica da imagem foi significativamente superior no quartil com menor dose de radiação para todos os vasos estudados.
Conclusões: Num centro de grande volume com acesso a tecnologia de ponta, a dose de radiação atual de Angio-TC coronária é de 1,7 mSv (1,1-3,2), contribuindo independentemente para este valor o IMC e a escolha da técnica de aquisição. A utilização de doses menores de radiação não teve impacto negativo na qualidade de diagnóstico da imagem.

Painel 4 - Arritmologia 3

P 90. THE AGE FACTOR-DIFFERENCES IN SYNCOPE RECURRENCE AND MORTALITY AFTER THE 40'S

Teresa Faria de Mota[1], Raquel Fernandes[2], Hugo Costa[1], João Bispo[1], Pedro Azevedo[1], Nuno Marques[2], Jorge Mimoso[1], Ilídio de Jesus[3]

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Introduction: Age is currently regarded as having vital influence in syncope patients' symptoms, diagnosis and evolution, inclusively determining the paths of investigation and follow-up of these individuals to a certain level.
Objectives: To compare patients under and over 40 years old regarding, outcomes of mortality and recurrence of syncope.
Methods: The authors present a retrospective, observational and analytical study, which included all patients with a first appointment at a Syncope Unit, between January 1st 2015 and December 11th 2019. Data were collected through clinical file analysis. Patients were split in two groups depending on their age (< 40 and > 40 years old). Statistical analysis was performed using SPSS 24.0 software. For analytical inferences, a significance level of 0.05 was used.
Results: The study included 694 patients (48.1% female, with a mean age of 63.6 ± 21.4 years, min: 5, max: 96). Patients < 40 were mainly female (61.5%) and > 40 mostly male (54.6%), p = 0.001. Regarding medical history, patients < 40 had less CV risk factors (apart from active smoking), were less medicated, and were more commonly diagnosed with epilepsy. Family history of syncope, Acute Myocardial Infarction and stroke was also more common in this group. Considering final diagnosis, syncope in < 40's was more frequently attributed to a Vasovagal reflex (52.4% vs 28%, p < 0.001), while in > 40's medication, hypotension and bradycardia were the main culprits (11.6% vs 1.2%, p = 0.004; 10.6% vs 0%, p = 0.002; 7% vs 0%, p = 0.013). Regarding outcomes, syncope recurrence was not significantly different in both groups (19.8% vs 16.2%, p = 0.388). In patients < 40, multivariate analysis only identified the "absence of prodromes" as an independent predictor of recurrence in the follow-up. On the other side, in patients > 40, only previous medication with Calcium Chanel Blockers and presence of 1st degree AV block performed as an independent predictor of recurrence in the follow-up. Mortality on the other hand was significantly different between groups, as it only affected patients > 40; a multivariate analysis showed dementia and systolic disfunction alone to be independent predictors of mortality on follow-up.
Conclusions: In the present study, < 40 and > 40 patients showed to be very heterogenous groups; even though age didn't seem to have an impact on recurrence of syncope, it did influence mortality, which only affected older patients.

P 91. IATROGENIC BRADYARRHYTHMIA: PREVIOUS CONDUCTION DISTURBANCES PREDICTED NEED FOR PERMANENT PACING

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Introduction: In bradyarrhythmia due to negative chronotropic medication, the need for permanent pacing after drug discontinuation is not always straightforward.
Objectives: Evaluate prevalence and predictors of the need of permanent pacing in patients with symptomatic bradyarrhythmia under negative chronotropic drugs.
Methods: We retrospectively studied patients admitted to the emergency room between January 2012 and December 2018 with symptomatic bradyarrhythmia who were under negative chronotropic drugs. We

Previous medical history	
Previous coronary heart disease, n (%)	20 (24)
Atrial fibrillation, n (%)	31 (37)
Left ventricular dysfunction, n (%)	8 (9)
Chronic kidney disease, n (%)	24 (28)
Previous conduction abnormalities	
Left or right bundle branch block, n (%)	46 (54)
First-degree AV block, n (%)	18 (21)
Negative chronotropic drugs	
Beta-blockers, n (%)	59 (69)
Amiodarone, n (%)	12 (14)
Digoxin, n (%)	10 (12)
Calcium channel blockers, n (%)	8 (9)
Sotalol, n (%)	6 (7)
Propafenone, n (%)	3 (4)
Other drugs	
Antipsychotics and/or antidepressants, n (%)	17 (20)
Diuretics, n (%)	40 (47)
Rhythm on admission	
Complete AV block, n (%)	62 (73)
Second-degree AV block, n (%)	17 (20)
Sinus bradycardia, n (%)	7 (8)
Slow ventricular response atrial fibrillation, n (%)	5 (6)
Metabolic disturbances	
Acute kidney failure, n (%)	31 (37)
Hypo/hyperkalaemia, n (%)	17 (20)

Table 1: Patient characteristics

	Univariate analysis HR (95% CI), p-value	Multivariate analysis HR (95% CI), p-value
Age in years, median (IQR)	0.987 (0.959-1.016), 0.333	0.988 (0.955-1.024), 0.514
Previous bundle branch block, n (%)	2.197 (1.137-4.246), **0.019**	2.081 (1.042-4.156), **0.038**
Previous atrial fibrillation, n (%)	0.559 (0.321-0.974), **0.040**	0.903 (0.491-1.662), 0.743
Use of antipsychotic/antidepressant drugs, n (%)	0.429 (0.202-0.908), **0.027**	0.717, (0.276-1860), 0.494
Acute kidney failure, n (%)	0.500 (0.281-0.889), **0.018**	0.950, (0.455-1.984), 0.891
Hypo/hyperkalaemia, n (%)	0.359 (0.163-0.792), **0.011**	0.470, (0.172-1.288), 0.142

Table 2: Predictors of permanent pacemaker need

P 91 Figure

analysed patient demographic factors, previous medical history or electrocardiographic abnormalities and concomitant drugs. We evaluated the laboratory results, electrocardiographic and echocardiographic parameters at admission. During follow-up we analysed mortality, re-hospitalizations and device implantation. We used cox regression to assess the predictors of device implantation.

Results: 85 patients, were admitted to the emergency room, 47% male, median age 81 (76-87) years. Patient characteristics are described in Table 1. The majority of patients (39, 46%) were admitted with syncope/presyncope and presented with complete AV block (62 patients, 73%). 17 (20%) patients needed temporary pacing and 60 (71%) patients needed permanent pacing, which was implanted during index-hospitalization in 78 (92%) patients. Intra-hospital mortality was 5% (4 patients). During a median follow-up of 66 months, 31 (36%) patients were re-hospitalized and 7 (8%) needed device implantation. Global mortality was 26%. In univariate analysis, previous bundle branch block predicted the need for permanent pacing, while presence of atrial fibrillation, antipsychotic/antidepressant use, acute kidney failure and hypo/hyperkalaemia precluded its requirement. In multivariate analysis, previous bundle branch block was the only independent predictor of the need for permanent pacing (Table 2).

Conclusions: In this group of patients with iatrogenic symptomatic bradyarrhythmia, the need for permanent pacing was independently associated with the presence of previous conduction disturbances.

P 92. CAN WE RULE-OUT CARDIOGENIC SYNCOPE AT A FIRST GLANCE?

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Introduction: Cardiogenic syncope is a worrisome diagnostic hypotesis in syncope patients, specially in an outpatient setting, considering that it may be associated with a worst prognosis.

Objectives: To create a new practical predictive score that allows forecasting of a diagnosis of cardiogenic syncope (CSy), in out-patients.

Methods: The authors present an observational, retrospective, descriptive and correlational study including all patients referred to a first appointment at a Syncope Unit between January 1st 2015 and November 13th 2019. Patients were divided according to final diagnosis (CSy vs remaining) and demographic/clinical information available at the 1st appointment clinical records were compared using Chi-square/Fisher test for categorical variables and t-Student test for continuous variables. Independent predictors of CSy were determined using a binary logistic regression model, with a predefined significance level of 0.05. Applying a discriminatory function and the Wilks lambda test, the authors determined a discriminant score for the studied groups.

Results: A total of 694 patients were included in the analysis, of which 51.9% were male, with a mean age of 63.6 ± 21 years. Considering the total syncope population, 9.3% had a final diagnosis of Cardiogenic Syncope. After univariate analysis of the collected variables, the following showed a statistically significant relation with the diagnosis: age ($p > 0.001$), arteria hypertension ($p > 0.001$), ex-smoking ($p = 0.028$), beta-blockers ($p = 0.010$), ACEi ($p = 0.013$), CCB ($p < 0.001$), diuretics ($p = 0.005$), nitrates ($p = 0.037$), amiodarone ($p = 0.041$), previous atrial fibrillation ($p < 0.001$) or SV tachycardia ($p < 0.001$), present bradycardia ($p = 0.015$), peripheral oedema ($p = 0.031$) and an EKG showing AF ($p < 0.001$), 1st degree AV block ($p = 0.027$) or 2nd degree AVb Mobitz II ($p = 0.048$). However, after multivariate analysis, independent predictors were restricted to: CCB ($p = 0.017$), previous SVt ($p = 0.03$), peripheral oedemas ($p = 0.046$) and the presence of Mobitz II on the first appointment EKG ($p = 0.015$). Using these variables, the authors built a Predictive Score in order to evaluate the risk of having a final diagnosis of CSy with the following formula:-0.512 + (1.465 × CCB) + (4.771 × TSV) + (1.591 × peripheral oedema) + (6.010 × Mobitz II). In order to apply this function, variables should be substituted by 1 or 0, depending on whether the condition they specify is present or not. In this score, the optimal discrimination cut-off was 0.38, with a 98.7% specificity, and a discriminant power of 90.4%.

Conclusions: Using simple and easily evaluated variables, the authors were able to develop a tool that might help to safely discharge the diagnostic hypothesis of Cardiogenic Syncope, at a first appointment. Further validation is required in a different population, in order to apply the presented function in a real-world context.

P 94. LONG-TERM RESULTS OF TILT TRAINING IN PATIENTS WITH RECURRENT REFLEX SYNCOPE: FOCUS ON QUALITY OF LIFE AND AUTONOMIC MODULATION

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Introduction: Reflex syncope (rS) is a common clinical entity resulting from an excessive reflex autonomic (ANS) response, particularly during orthostatism. Treatment options are scarce, controversial and of limited effectiveness. Tilt training (TT) has been used in patients (P) with recurrent rS.

Objectives: To assess the success rate of TT and characterize hemodynamic and autonomic responses during a TT program in P with repetitive rS.

Methods: Between 2005 and May 2018 we enrolled 102P (57.8% female, 46.1 ± 18.3 years). All had orthostatic induced rS, refractory to conventional measures and documented by head-up tilt (HUT) test. The TT program included 9 sessions, under continuous ECG and blood pressure (BP) monitoring, combined with home orthostatic self-training. Stroke volume (SV), cardiac output (CO), total peripheral resistance (TPR), baroreflex sensitivity (BEI) and heart-rate variability were computed. P were examined at 1 month and every 6 months thereafter. Treatment effects were assessed using a telephone survey. Quality of life ("Impact of Syncope on Quality of Life" questionnaire) was evaluated before beginning the TT program and at 6 months follow-up.
Results: During a follow-up of 66.8 ± 41.3 months after TT, most of the P were free of syncope (n = 89; 86.3%) or pre-syncope (n = 82, 80%). In the remaining P (14%), there was a significant decrease in the number of syncopes (5.1 ± 2.7/P/year 12 months before vs 1.4 ± 0.8/P post-TT; p = 0.005) and pre-syncope (11.4 ± 6.2/P/year 12 months before TT vs 4.5 ± 2.6/P post-TT, p = 0.017). The TT was associated with a QoL improvement in the ISQL items (related to worry, fear and frustration with the difficulties experienced; ρ < 0.05). Over the course of the TT program there was a significant increase in mean systolic BP, SV, TPR and CO. Simultaneously, a shift in ANS response pattern was seen, with an increase of the BEI. P who achieved an increased BEI value were "responders" to the TT programme, showing a significant reduction in symptoms and QoL improvement. A BEI cut off value > 57.5 at the first 5 minutes of HUT on the ninth TT session had an AUC of 0.9023 (p < 0.0001), with a sensitivity of 89.9% and specificity of 84.6% in predicting response to TT programme.
Conclusions: In refractory rS, TT may be an effective therapeutic option with long-term benefits and a significant impact in QOL. These results are associated with a significant modulation of ANS, with improvement of baroreflex function.

P 95. RECURRENT SYNCOPE-WHICH PATIENT SHOULD WE FOLLOW MORE CLOSELY?

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Introduction: The importance of education is well recognized in patients presenting with syncope, in order to reduce the recurrence rate. Our study aims to determine a predictive score of recurrent syncopal episodes after the first medical assessment.
Methods: We conducted a retrospective study enrolling patients followed in our Syncope Consultation from January 2015 to November 2019. Clinical and episodes characteristics, as well as diagnostic studies were analysed. Correlation between variables was performed by the chi-square and t-Student tests, with a significance level of 95%. Independent predictors of recurrent syncope were identified through a binary logistic regression analysis, considering p = 0.05. Then, a discriminatory function was applied using the Wilks lambda test to determine the discriminant score of the analysed groups. SPSS 24.0 was used for statistical analysis.
Results: A total of 694 patients were included, and 420 (60.5%) had recurrent syncope at the first evaluation. After educational approach, 97 (14%) maintain recurrent episodes. In this subgroup, the mean age was 63.7 ± 22.8 years-old and 88.7% already had previous recurrent syncope (vs 56.1%; p < 0.001). The prodrome of malaise was common (40.2% vs 26.8%; p = 0.008), but 32% of these patients had syncope without prodromes (vs 21.8%; p = 0.032). They also had frequently first-degree atrioventricular (AV) block (22.5% vs 6.8%; p < 0.001) and 51.7% had a final diagnosis of reflex syncope. No previous medication with calcium channel blockers (CCB) (p < 0.001), malaise (p = 0.011), not having Q-waves in the electrocardiogram (p = 0.022) and the presence of first-degree AV block (p < 0.001) were independent predictors of recurrent syncope. A predictive score of recurrence was determined using the formula: 0.108-1.556 x (medication with CCB) + 0.989 × (malaise)-1.031 × (Q-waves) + 2.406 × (first degree AV block). Variables should be replaced by 1 or 0, depending on whether the condition is present or not. A cut-off of 0.283 was obtained with a specificity of 96.1% and a discriminative power of 81.2%.
Conclusions: In our patients presenting with syncope, the recurrence rate reduced from 60.5% to 14% just with educational measures. To help identify patients who maintain recurrence, we determined a predictive score using clinical data from the first visit, with a good discriminative power and excellent specificity. It could be used to strengthen education, to direct diagnostic studies and to shorten follow-up visits, but it still needs validation to be used in clinical practice.

P 93. SYNCOPE IN A LARGE PORTUGUESE NATIONWIDE INPATIENT SAMPLE-EPIDEMIOLOGY AND IN-HOSPITAL COSTS

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Introduction: Syncope is a common symptom in the general population, with frequent emergency care visits, often followed by hospital admission. Although most of the causes are of benign origin, some comorbidities are accompanied by high mortality.
Objectives: to describe the epidemiologic characteristics of a population hospitalized after syncopal episode(s) in Portugal, and estimate associated costs for patients (P) undergoing a hospital-based evaluation for unexplained syncope.
Methods: The nationwide inpatient sample of Portugal of the years 2000 to 2015 was used for this analysis. P with syncope (ICD9-code 780.2) were stratified by presence of selected comorbidities. We collected complete health services data, including etiology, diagnostic testing, procedures performed and length of stay (LOS), on paediatric and adult P who were admitted with syncope in the national health care system hospitals.
Results: In total, 43,920 hospitalizations of P with syncope were identified. A steady increase in the number of admissions, from 746 in 2000, to a plateau of approximately 6,200 new admissions per year from 2013 onwards was seen. A bimodal age distribution was found, with a first peak around 10-19 years old (with female predominance), and a second peak at 70-79 years of age (with male predominance). While paediatric P (< 18 years old) had few comorbidities (6% of the cases), adult P revealed frequent comorbidities, predominantly cardiovascular disorders (56%) such as cardiac arrhythmias (34%), cardiomyopathies (20%) and heart failure (%?). At average, each P performed 5.45 diagnostic procedures (range 1-20) as inpatient, namely ECG in 73%, head computed tomography (45%), echocardiography (35%), Holter recording (22%) and EEG (14%). The average cost of a syncope event with hospital admission ranged between 650€ and 4,029€ (cost range from 45€ to 41,100€).
Conclusions: Syncope is a common cause for referrals in emergency care, often with cardiovascular co-morbidities in adults, leading to hospital admissions. Estimated costs associated with extensive evaluation may reach very high values. Therefore, further research is needed to risk stratify P, identify predictors of costs and define adequate diagnosis strategies.

Painel 5 - Arritmologia 4

P 96. CLINICAL RISK FACTORS FOR THE PREDICTION OF ACUTE KIDNEY INJURY POST CARDIAC RESYNCHRONIZATION THERAPY

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Introduction: There is only limited data available on the occurrence of acute kidney injury (AKI) in patients undergoing cardiac resynchronization therapy (CRT) implantation. The few studies that investigated the

occurrence of AKI, reported an incidence of 8-14%. These studies focused entirely on the administration of contrast medium as etiological risk factor for AKI. However, CRT implantation requires substantially less administration of contrast medium, compared with other invasive procedures, such as percutaneous coronary intervention. Therefore, the high incidence of AKI post CRT implantation, suggests the existence of other patient or procedure-related factors that may contribute to AKI occurrence.
Objectives: We aimed to assess the incidence of AKI post CRT and its impact on length of in-hospital stay (LOS), being the first to investigate the predictive value of patient and procedure-related risk factors for its occurrence.
Methods: Retrospective observational study. Patients that underwent CRT implantation in our hospital between April 2014 and May 2019 were included. Univariate and multivariate logistic regression models were generated in order to identify independent predictors of AKI.
Results: Twelve (20%) out of 60 patients developed AKI. Prior renal insufficiency predicted AKI significantly (p = 0.033; OR: 10.1). Furthermore, larger procedure time, intraoperative hypotension and -bleeding, showed to be significant predictors (p = 0.011; OR: 1.03, p = 0.001; OR: 1.77, p = 0.01; OR = 7.86, respectively). AKI was associated with a significantly longer LOS (p < 0.01).
Conclusions: AKI is a frequent complication of CRT implantation with an important impact on LOS. In addition to contrast administration, patient and procedure-related factors play a significant role in the occurrence of AKI. The physicians' awareness of this complication with its patient and procedure-related risk factors is crucial when considering patients for CRT.

P 97. LONG TERM CLINICAL OUTCOMES AFTER CARDIAC RESYNCHRONIZATION THERAPY IMPLANTATION IN ELDERLY PATIENTS

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Introduction: Cardiac Resynchronization Therapy (CRT) is a well-established treatment for symptomatic hear failure patients (pts) with reduced left ventricle ejection fraction (LVEF). Older pts have been underrepresented in randomized trials.
Objectives: To characterize pts who were submitted to CRT implantation at the age of 80 or more vs younger pts and to analyze the differences in long term outcomes (response, mortality and hospitalizations) between both groups.
Methods: Retrospective study of a single center analyzing patients submitted to CRT implantation in the last 7 years (2012-2019). Clinical and imaging data were collected, as well as long term outcomes concerning hospitalization, mortality and response. Responders were defined as pts who improved ≥ 1 NYHA class or/and > 10% LVEF.
Results: Total of 130 pts, 65% males with a mean age of 71 ± 11 years, with optimized medical treatment. 25% were considered elderly pts (≥ 85 years). Non-ischemic cardiomyopathy was present in 77% of pts. 70% had QRS > 150 and 79% had LBBB. The mean LVEF was 28 ± 7.5% and mean left ventricular end-diastolic volume index (LVEDVI) was 125 ± 116 ml/m^2. By the time of CRT implantation, most pts were in NYHA class 3 and 51.5% implanted CRT-P. 68.8% were considered responders, subsequent hospitalizations occurred in 25.4%, and 20 pts died. When analyzing both groups, we found no differences in what concerns gender, HF etiology or previous medical history, except for the fact that elderly pts had more chronic kidney disease (CKD) (56.3% vs 36.6% p = 0.049). They had higher rates of treatment with angiotensin receptors antagonist (25% vs 9.4% p = 0.035) and diuretic (81.3% vs 59.4% p = 0.025), although less betablocker therapy (53.1% vs 91.75% p < 0.001). Prior to implantation, elderly pts were more symptomatic (NYHA class-2.9 ± 0.6 vs 2.57 ± 0.5, p = 0.011) and had higher NT proBNP values (5,850 ± 8,727 pg/mL vs 2,706 ± 3,404 pg/mL, p = 0.008). CRT-P was the most implanted device (87.5% vs 39.8% p < 0.001), most with bipolar electrodes (46.9% vs 24.5% p = 0.016). After implantation, they maintained higher NYHA class (2.2 vs 1.9 p = 0.034). Concerning long-term outcomes, although there was no difference in final response (p = 0.883), they had more hospital admissions (43.8% vs 19.4% p = 0.006), especially due to HF (34.4% vs 13.4% p = 0.008). There were no differences regarding mortality and survival, although there was a tendency for higher rates of overall mortality (p = 0.06).
Conclusions: Although there were no differences regarding CRT response or mortality in elderly patients, they were associated to higher morbidity rates with regard to hospitalization (especially for heart failure), probably due to a more advanced stage of the disease. Selection of elderly pts should be conscious and adjusted.

P 98. POCKET HEMATOMA IN PATIENTS WITH CARDIAC DEVICES: PREVALENCE, RISK FACTORS AND OUTCOME PREDICTORS

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Introduction: The number of cardiac implantable electronic devices (CIED) procedures has increased over the past years. Pocket hematoma has been reported as a typically complication, with frequent need for reintervention and a potential impact in outcomes.
Objectives: To assess the prevalence and risk factors of pocket hematoma requiring surgical revision in a tertiary center, and to stablish potential adverse outcome predictors.
Methods: Between 2013 and 2018, there were 3,489 new CIED implants, 986 generator replacements and 508 reinterventions in our center. Thirty-nine patients (P) underwent surgical revision to drain pocket hematomas (one of them twice). Among these, data baseline, type of CIED, anti-thrombotic therapy and clinical events (mortality and hospitalizations for cardiac causes) during follow-up were noted.
Results: 39P (76.1 ± 11.8 years, 79.5% male, INR 1.64 ± 0.80 and platelet count 181.000 ± 67.000) developed pocket hematoma requiring surgical revision; a rate of 0.9% of total procedures. 56.4% (n = 22) had pacemakers, 28.2% (n = 11) cardiac resynchronization therapy devices and 15.4% (n = 6) implantable cardioverter-defibrillators, with 56.4% (n = 22) being previously submitted to one or more CIED procedures. All P were under anti-thrombotic therapy, with 59% (n = 23) taking vitamin K antagonists (VKA) and 56.4% (n = 22) having made bridging with enoxaparin. Thirty-four P were followed for a mean period of 19 months (5 lost to follow-up). Death occurred in 32.4% (n = 11), with 20.6% (n = 7) due to cardiac causes, mainly heart failure, 6.0% (n = 4) due to renal failure, one hemorrhagic stroke and one septic shock (2.9% each), none related with the hematoma. Hospitalizations occurred in 50% (n = 17), with cardiac cause in 32.4% and relation to the hematoma in only 5.9% (1P developed a new pocket hematoma and 1P had a pocket infection). Bridging with enoxaparin and renal function impairment (present in 53.8% of the cases) were predictors of re-hospitalization for cardiac reasons (OR 7.94 p = 0.02, 95%CI 1.41-44.80 each), with VKA therapy and INR values showing statistical significance tendency (OR 5.50 p = 0.05 95%CI 0.98-30.8 and OR 2.95 p = 0.07 95%CI 0.92-9.44).
Conclusions: In our population, the rate of pocket hematoma needing reintervention was below 1%, with all P taking anti-thrombotic medication. Renal dysfunction and VKA therapy were predictors of re-hospitalization.

P 99. REMOTE MONITORING ALERTS IN HEART FAILURE PATIENTS: WHICH PARAMETERS MATTER MOST?

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Introduction: Patients (P) submitted to cardiac ressynchronization therapy (CRT) are at high risk of heart failure (HF) events during follow-up. Analysis of various physiological parameters by remote monitoring (RM) may help

signal heart failure decompensation; however, the value of individual alerts is unclear.
Objectives: To assess the incidence and predictive value of RM alerts on incident HF admissions
Methods: Consecutive P submitted to CRT implantation between January 2013 and September 2019 who had regular RM transmissions were included. Assessed parameters were OptiVol (Medtronic Plc., MN, USA), patient activity, night heart rate (NHR), heart rate variability (HRV), percent CRT pacing, atrial tachycardia/atrial fibrillation (AT/AF) burden, ventricular rate during AT/AF (VRAF), and detected arrhythmia episodes/therapy delivered. Hospital admissions were systematically assessed by use of a national database ("Plataforma de Dados de Saúde"). Association between RM alerts and HF admissions was assessed by use of univariate and multivariate logistic regression and receiving operator characteristic (ROC) curve analysis.
Results: 1,108 transmissions of 35 CRT P, corresponding to 94 patient-years were assessed. Mean follow-up was 2.7 yrs. At implant, age was 67.6 ± 9.8 yrs, left ventricular ejection fraction 28 ± 7.8%, BNP 156.6 ± 292.8 and NYHA class > II in 46% of the P. At least one alert was observed in 84.4% of transmissions. The most common alert was reduction in HRV (44.2% of transmissions) followed by NHR (43.1%) and patient activity (34%). Individual predictors of HF events were BiV pacing, OptiVol and delivered device therapy (p < 0.050 for all). Best discrimination was observed with BiV pacing (AUC 0.92) followed by OptiVol (AUC 0.79) and heart rate variability (AUC 0.67). Accuracy of RM alerts was increased by the association of all reported parameters which yielded the best discrimination for HF events (OR 7.8, CI 3.5-16-9, p < 0.001, AUC 0.95).
Conclusions: Individual RM parameter alerts are common and usually not linked with HF events. Rather than individual alerts, simultaneous shift in multiple RM parameters may be the most reliable predictor of incident HF.

P 100. TRANSVENOUS LEAD VS EPICARDIAL LEAD: IMPACT OF THE DIFFERENT APPROACH IN CARDIAC RESYNCHRONIZATION THERAPY

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Introduction: Transvenous coronary sinus lead is the most common approach for cardiac resynchronization therapy (CRT) left ventricular lead (LVL) implant. However, this approach is not possible in some patients and epicardial leads (EPL) can be a solution. Since data comparing performance of these two lead types are limited, we decided to assess the response to CRT according to the approach type.
Methods: Retrospective, single-center study of 143 patients undergoing CRT implantation between 2013 and 2017 according to the current *guidelines* indications. Clinical, electrocardiographic and echocardiographic parameters were evaluated. Response to CRT was defined as an improvement in left ventricle ejection fraction (LVEF) > 10%.
Results: From the 143 patients (mean age 67.5 ± 10.8 years, 69.9% males, 42.4% ischemic, 31.5% atrial fibrillation) submitted to CRT implantation, 95 received transvenous coronary sinus and 48 epicardial left ventricular leads. Patients with EPL were more frequently male (82% vs 64%, p = 0.032) and diabetics (63% vs 37%, p = 0.006). At the basal evaluation, the median LVEF was 28% [24-30], end-diastolic volume was 175ml [137-216], end-systolic volume was 117 ml [99-167] and there were no statistic differences between the groups. There were no statistic differences in age, QRS duration and renal function. Regarding CRT efficacy, there was an increase in LVEF (10.5% in transvenous vs 14.9% in epicardial, p = 0.068), reduction of New York Heart Association (NYHA) class in 85.6% of the patients (87% transvenous vs 83.3% epicardial, p = 0.755) in whom 9.1% of them improve from class III to I of NYHA, reduction of ventricular end-diastolic volume (25.1 ml in transvenous vs 21.1ml in epicardial, p = 0.115) and reduction in degree of mitral valve insufficiency in 50.6% of patients (40% in transvenous vs 64.1% epicardial leads, p = 0.034). There was a higher degree of responders in the EPL group (78% vs 50%, p = 0.037).
Conclusions: In this study, patients with an epicardial lead showed a significantly higher degree of responders to CRT, showing that it could represent a good alternative when transvenous implantation fails or is not possible. We need to collect more data in order to clarify the role of epicardial lead.

P 101. NATURAL HISTORY OF RESYNCHRONIZED PATIENTS: EXPERIENCE OF A SINGLE CENTRE

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Introduction: Cardiac resynchronization therapy (CRT) is associated with reduced mortality, morbidity and improved quality of life in patients with low ejection fraction and left bundle brunch block.
Methods: Retrospective, single- centre study of 143 patients undergoing CRT implantation according to the current guideline indications, between 2013 and 2017. We assessed clinical events and 'lead related events', in order to compare the outcomes of patients with CRT according to the type of left ventricular lead: transvenous and epicardial lead. The primary endpoint was the rehospitalization caused by heart failure (HF) and the composite endpoint was the rehospitalization and death for any cause. The mean follow-up was 43 ± 18 months.
Results: From the 143 patients (mean age 67.5 ± 10.8 years, 69.9% males, 41% ischemic) undergoing CRT implantation, 95 received transvenous coronary sinus lead and 48 epicardial leads (EPL).
Patients with EPL were more frequently male (82% vs 64%, p = 0.032) and diabetics (63% vs 37%, p = 0.006). There were no significant differences in age, QRS duration, left ventricular ejection fraction (LVEF) or telediastolic left ventricular volumes between the groups. The number of days of hospitalization was higher in epicardial lead group comparing with transvenous (9.9 days ± 6.2 vs 6.4 ± 7.9, p = 0.008). Regarding complications related to the lead implant, an early revision of the lead (< 6 month) was nedded in 14.3% of transvenous group (42.9% right atrium, 14.3% right ventricle, 14.3% both, 25% left ventricle) and only 2.2% needed reintervention in EPL group (p = 0.037). During follow-up, there were no significant differences in the mortality and HF decompensated hospitalization between transvenous and EPL patients (18.4% vs 26.7%; 31.6% vs 28.9%, respectively). However, patients in transvenous group died more often due to cardiovascular cause than EPL (77.8% vs 33.3%, p = 0.015).
Conclusions: This study demonstrated a statistically significant difference in lead related complications between the two groups. There was a higher need of lead revisions in transvenous group. There were no significant differences in the mortality and hospitalization due to HF rate between the two groups. Our data shows that EPL is safe and has a very low complication rate. In our experience this approach is a good alternative when transvenous implantation fails.

Painel 6 - Doença Coronária 4

P 102. HOMOCYSTEINE AS A PREDICTOR OF CARDIOVASCULAR ADVERSE EVENTS IN CORONARY ARTERY DISEASE

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Introduction: After the diagnosis of coronary artery disease (CAD), traditional risk factors such as diabetes mellitus, dyslipidemia, hypertension

Table – Homocysteine level associated with MACE

	Homocysteine level			
MACE	**1st tercil**	**3rd tercil**	**Odds ratio (95% CI)**	**p-value**
With MACE, n(%)	176 (31.4)	221 (39.1)	1.431 (1.119 – 1.830)	0.004
Without MACE, n(%)	384 (68.6)	337 (60.4)		

MACE - major adverse cardiovascular events; Statistically significant for p<0.05.

P 102 Figure

and smoking have been used to assess the risk of major adverse cardiovascular events (MACE). However, despite reduction of these factors, presence of MACE remains high. It is necessary to identify other causal risk factors for MACE in coronary patients and increased plasma Homocysteine (Hcy) level seems to be a likely candidate. However, the influence of Hcy levels in the prognosis of coronary patients presents a limited knowledge.

Objectives: To evaluate the influence of high Hcy levels in MACE (defined as a composite endpoint of cardiovascular death, acute myocardial infarction, stroke, admission for heart failure and need to revascularization) of coronary artery patients from Madeira Island population.

Methods: Study analyses of 1,687 patients selected from GENEMACOR study population, with at least one > 75% coronary stenosis by angiography. Homocysteine was measured by fluorescence polarized immunoassay using an Abbot IMX automatic device. Population was divided in three terciles according to the Hcy levels and the population of the 2nd tercil (Hcy 11.1-13.6 mmol/L) was excluded. The final population of 1,118 patients had a median age of 53.1 ± 7.9 years and 77.6% were men. We compared patients from the 1st (Hcy < 11.1 mmol/L) and 3rd tercil (Hcy > 13.6 mmol/L) during a mean follow up of 5.0 ± 4.8 years.

Results: 560 (50.1%) patients were included in the 1st tercil group (median age 51.6 ± 3 years, 72.0% men) and 558 (49.9%) patients were in the 3rd tercil group (median age 54.6 ± 3 years, 83.3% men). In our population, high levels of Hcy were significantly associated with MACE (OR 1.43, 95%CI: 1.12-1.83, p 0.004).

Conclusions: In our population, a higher level of Hcy was associated with adverse prognosis and increased occurrence of MACE, therefore it is essential, in these patients, to have a more intensive therapeutic strategy.

P 103. PREDICTORS OF HIGH AND LOW SERUM HDL-CHOLESTEROL IN A PORTUGUESE POPULATION

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Introduction: Low HDL-C is the most common lipoprotein abnormality among patients with Coronary artery disease. Genetically higher HDL- levels were not associated with a reduced risk of myocardial infarction in contrast to genetic scores associated with reduced LDL levels. Genetic studies for polygenic HDL trait using genome-wide association (GWAS) studies have yet not driven a conclusive causal relationship.

Objectives: To characterize high and low HDL cholesterol population according to biochemical, Traditional risk factors for CAD and body mass Index (BMI).To evaluate possible association between genetic CAD variants and concentrations levels of HDL-cholesterol.

Methods: In 1676 patients from GENEMACOR study population (53.3 ± 7.9 years and 78.6% male) with proven coronary disease (at least one > 75% epicardial coronary stenosis by angiography) with a maximum Follow up of 5.01 ± 4.2 years (interquartile range 1.96-7.57) HDL levels were analyzed in quartiles. First to 4th quartile HDL level (n = 825, mean age of 53.3 ± 8.0 years and 78.7% male) comparison of genetic profile including 33 variants associated with CAD in south European populations, genotyped using standard Taqman technique (Applied Biosystems) with specifics primers. Forward logistic regression analysis was done for significant variables after bivariate analysis.

Results: In our population mean HDL in the 1st quartile was 30.5 ± 3.8gr/dl vs 58.1 ± 8.5 mg/dl in the 4th quartile. Lower vs higher HDL quartile patients were more diabetic (40.5% vs 24.4%; p < 0.0001), and with Higher alcohol consumption (> 50 g/day 17.6% vs 14.8%, p = 0.01). Lower HDL-cholesterol quartile patients had higher BMI (29.03 ± 4.1 vs 27.5 ± 4.2, p < 0.0001), Higher HS-C reactive protein (1.27 ± 2.75 vs 0.75 ± 2.72, p = 0.06. Lipid profile associated with low HDL quartile was lower total cholesterol (169.1 ± 43 vs 203.9 ± 45.9, p < 0.0001; Lower LDL (99.4 ± 34.6 vs 118 ± 38.5, p < 0.0001) and higher triglycerides (208.2 ± 147 vs 140.2 ± 142.4, p < 0.0001). Lower quartile of HDL levels was associated with 5 genetic variants (MIA3 AA (10% vs 6.2%, p = 0.021); SMAD3 CC (4.3% vs 8.9%, p = 0.027); ZNF259 GG (4.5% vs 2.0%, p = 0.001); KIF 6 CC (11% vs 8.9%, p = 0.043), MTHFR1298 C (7.1% vs 9.9%, p = 0.061). Multivariate regression analysis determined that Diabetes and moderate alcohol and ZNF259 genetic variant were independent genetic predictors of HDL. 2 Cellular cycle genetic variants namely MIA3 and SMAD were protective for low HDL levels.

Table: Predictors of Lower HDL – Logistic regression

Variables	Odds ratio (95% CI)	p-value
Diabetes	2.153 (1.584 – 2.927)	<0.0001
Alcohol consumption, gr/day		0.006
30-50	0.530 (0.340 – 0.828)	0.005
≥50	1.245 (0.839 – 1.848)	0.275
ZNF259		0.002
CG	1.646 (1.204 – 2.252)	0.002
GG	2.540 (1.069 – 6.034)	0.035
SMAD		0.021
TC	0.878 (0.648 – 1.188)	0.398
CC	0.419 (0.226 – 0.777)	0.006
MIA3		0.035
AC	0.500 (0.284 – 0.880)	0.016
CC	0.639 (0.367 – 1.114)	0.114
Constant	1.304	0.351

Statistically significant for p<0.05.

Conclusions: In our population, Diabetic patients were more likely to have lower HDL levels. Traditional lipid risk profile was not found to influence HDL levels in our index population possibly due to statin intervention. New genome wide variants located to the cellular cycle were associated with lower HDL levels. Based on this new data, interesting new cellular study lines may arise to explore the complex role for HDL functionality in Atherosclerosis.

P 104. IS CORONARY COMPUTED TOMOGRAPHY ANGIOGRAPHY A GOOD CHOICE FOR ELDERS AND HIGH PROBABILITY CASES?

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Introduction: Coronary computed tomography angiography (cCTA) is widely considered the optimal non-invasive test to rule out coronary artery disease (CAD) and the gatekeeper for invasive coronary angiography (ICA). However, its diagnostic utility in elderly patients (pts) and in cases of high pre-test probability (PTP) is still questioned.
Objectives: To determine whether older age and high PTP are correlated with non-diagnostic cCTA scans in pts with suspected chronic coronary syndrome (CCS).
Methods: Single-centre retrospective study of 302 pts with suspected CAD assigned to two groups: (A) 207 pts aged ≥ 70 years (y); (B) 95 aged < 70y. Younger pts were randomly selected from our database. We excluded pts with known history of CAD and suspected acute coronary syndrome. A 192 × 2 dual-source CT equipment was used. Baseline demographic and clinical characteristics were collected as well as scan features and findings. We defined high PTP according to clinical Morise score. Our endpoint was the obtention of diagnostic scan (all segments evaluable). Multivariate analysis was performed to assess the determinants of non-diagnostic scans. We used SPSS Statistics 22 for statistical analysis.
Results: Overall, mean age was 68 ± 9y and 53% were male. Baseline patient and study information for each group is depicted in Figure 1A. The proportion of pts with calcium score (CaS) considered prohibitive for angiography (13.5 vs 7.4%; p =.12) and calcium blooming artefacts impairing interpretation (14.5 vs 12.5%; p =.65) did not differ, although CaS was higher in elderly pts (p =.04). A diagnostic study was more frequently obtained in younger pts but without reaching statistical significance (69.1 vs 76.8%; p =.17). Obstructive CAD was equally identified (30.3 vs 30.4%; p =.92) with a respective accuracy of 68.4% (13/19) and 57.1% (8/14) comparing with ICA when performed. Multivariate analysis showed that left circumflex artery (LCX) CaS ≥ 75th percentile and multiple calcified plaques (≥ 5) were associated with non-diagnostic cCTA scan (Figure 1B). High PTP (p =.83) and age ≥ 70y (p =.61) were not associated with the endpoint.
Conclusions: In this comparison study of elderly and young pts undergoing cCTA for suspected CCS, age ≥ 70y and high PTP were not associated with non-diagnostic scan. Multiple calcified lesions and severe LCX calcification predicted inconclusive studies. Our results cast hope on the applicability of cCTA to elderly pts and cases with high clinical probability, although larger studies are required.

P 105. INNATE IMMUNITY IS LINKED TO THE SEVERITY OF STABLE CORONARY ARTERY DISEASE THROUGH SCD40L PATHWAY

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Introduction: Soluble CD40 ligand (sCD40L) activates different cell types involved in innate immunity, including macrophages and platelets. The influence of innate immunity, particularly of sCD40L pathway, on stable coronary artery disease (SCAD) expression is not fully understood. We evaluated if sCD40L expression is related to the presence of SCAD and to its clinical and anatomical severity.
Methods: We prospectively recruited two groups of age- and sex-matched participants: 1) without coronary artery disease (CAD) (calcium score = 0, no soft plaques on coronary angioCT scan) (controls); and 2) with stable obstructive CAD (≥ 50% for the left main, ≥ 70% for other epicardial vessels, on invasive coronary angiography). Acute atherosclerotic events or coronary artery bypass grafting (CABG) within 12 months, previous percutaneous coronary intervention, heart failure, infection, malignancy and severe renal dysfunction were exclusion criteria. Clinical, laboratorial and anatomical data were prospectively collected. Serum was stored at -80 ºC and measurements were performed in a blinded fashion, by ELISA (sCD40L Human Quantikine®).
Results: Sixty-three participants were included: 14 controls and 49 patients with SCAD. In SCAD patients, classical cardiovascular risk factors were globally more prevalent and the serum levels of sCD40L (5,553 ± 3,356 vs 3,099 ± 644 ng/mL, p < 0.001), leucocytes counts (7.6 ± 1.8 vs 6.4 ± 1.7 × 10^9/L, p = 0.010), neutrophils counts (4.4 ± 1.5 vs 3.5 ± 1.5 × 10^9/L, p = 0.010) and neutrophils/lymphocytes ratio (2.4 ± 1.1 vs 1.9 ± 0.7, p = 0.019) were significantly higher, while c-reactive protein (CRP) levels did not differ. sCD40L levels were positively correlated with leucocytes (r = 0.36) and

A

	A: Elderly patients (n=207, 68.5%)	B: Young patients (n=95, 31.5%)	p-value
CLINICAL AND DEMOGRAPHIC CHARACTERISTICS			
Age (mean±SD, years)	73.3±3.0	57.7±8.1	**<0.01**
Male	106/207 (51.2%)	54/95 (56.8%)	0.36
BMI (mean±SD, Kg/m2)	27.7±4.2	26.8±4.6	0.09
Clinical history			
Hypertension	162/207 (78.3%)	52/95 (54.7%)	**<0.01**
Diabetes	45/207 (21.7%)	15/95 (15.8%)	0.23
Hyperlipidaemia	143/207 (69.1%)	50/95 (52.6%)	**<0.01**
Smoker (current)	7/207 (3.4%)	12/95 (12.6%)	**<0.01**
Family history of CAD	16/207 (7.7%)	9/95 (9.5%)	0.61
Valvular heart disease	35/207 (16.9%)	12/95 (12.6%)	0.34
Rhythm disorder	30/207 (14.5%)	8/95 (8.4%)	0.14
Pulmonary disease	27/207 (13.0%)	4/95 (4.2%)	**0.02**
Previous stroke	14/207 (6.8%)	2/95 (2.1%)	0.09
Clinical presentation			
Typical angina	20/207 (9.7%)	6/95 (6.3%)	0.35
Atypical angina	115/207 (55.6%)	53/95 (55.8%)	0.97
Non-cardiac chest pain/other symptoms	72/207 (34.7%)	36/95 (37.8%)	0.56
Previous non-invasive stress test	73/202 (36.1%)	40/95 (42.1%)	0.29
Treadmill ECG-stress test	61/202 (30.2%)	33/94 (35.1%)	0.40
Stress echocardiogram / myocardial perfusion imaging	12/202 (5.9%)	7/94 (7.4%)	0.62
Left ventricular systolic dysfunction	14/165 (8.5%)	10/71 (14.1%)	0.19
Pre-test CAD probability (Morise score)			
Low-Intermediate risk	172/207 (83.0%)	89/95 (93.6%)	**<0.01**
High risk	35/207 (16.9%)	6/95 (6.3%)	**<0.01**
STUDY CHARACTERISTICS			
Baseline heart rate (mean±2SD, beats per minute)	60.1±8.0	60.1±8.2	0.99
Oral betablocker	85/207 (41.1%)	48/95 (50.5%)	0.12
Intravenous betablocker	23/207 (11.1%)	11/95 (11.6%)	0.17
Oral nitrates	151/207 (72.9%)	71/95 (74.7%)	0.77
Prospective study protocol	168/179 (93.9%)	95/95 (100.0%)	**0.02**
Voltage (mean±2SD, kV)	83.0±16.5	88.5±14.7	**0.02**
Radiation exposure (mean±2SD, mSV)	3.8±6.8	2.5±2.9	**0.03**
Contrast volume (mean±2SD, mL)	76.1±19.6	74.5±21.7	0.56

	A: Elderly patients (n=207, 68.5%)	B: Young patients (n=95, 31.5%)	p-value
STUDY FINDINGS			
Total coronary calcium score	382.7±658.7	243.5±490.8	**0.04**
Left main artery (calcium score ≥ 75th percentile)	26.9±82.1 55/207 (26.6%)	15.6±37.1 20/95 (21.1%)	0.05 0.30
Left anterior descending artery (calcium score ≥75th percentile)	156.7±254.2 57/207 (27.5%)	92.2±187.8 18/95 (18.9%)	**0.01** 0.11
Left circumflex artery (calcium score ≥ 75th percentile)	65.5±131.3 60/207 (29.0%)	26.8±67.6 15/95 (15.8%)	**<0.01** **0.01**
Right coronary artery (calcium score ≥ 75th percentile)	130.5±313.7 56/207 (27.1%)	106.9±281.1 19/95 (20.0%)	0.51 0.19
Total number of calcified lesions	8.4±8.6	5.7±7.2	**<0.01**
Left main artery	0.5±0.8	0.4±0.9	0.34
Left anterior descending artery	3.3±3.2	2.2±2.6	**<0.01**
Left circumflex artery	1.8±2.4	1.1±1.9	**0.01**
Right coronary artery	2.9±4.4	1.9±3.2	**0.04**
Calcification severity (Agatston)			
Severe calcification (calcium score 400-999)	52/207 (25.1%)	20/95 (21.1%)	0.44
Extensive calcification (calcium score ≥ 1000)	25/207 (12.1%)	5/95 (5.3%)	0.06
Multiple calcified lesions (≥ 4)	125/207 (60.4%)	43/95 (45.3%)	**0.01**
Angiography not performed due to extensive calcification	28/207 (13.5%)	7/95 (7.4%)	0.12
Artefacts causing non-diagnostic test	36/179 (20.1%)	15 (17.0%)	0.55
Calcium blooming artefact	26/179 (14.5%)	11/88 (12.5%)	0.65
Cardiac motion artefact (irregular/high heart rate)	7/179 (3.9%)	3/88 (3.4%)	0.84
Breath motion artefact	3/179 (1.7%)	1/88 (1.1%)	0.73
Diagnostic test	143/207 (69.1%)	73/95 (76.8%)	0.12
Diagnostic test findings			
Normal	11/179 (13.9%)	25/88 (28.4%)	**<0.01**
Non obstructive CAD (CAD-RADS ≤2)	102/154 (66.2%)	29/80 (36.3%)	**<0.01**
Obstructive CAD (CAD-RADS > 2)	47/155 (30.3%)	24/79 (30.4%)	0.93
Multivessel CAD (≥1 major artery with CAD-RADS > 2)	23/168 (13.7%)	13/81 (16.0%)	0.62

BMI: body mass index; ECG: electrocardiogram; CAD: coronary artery disease; CAD-RADS: CAD reporting data system

B

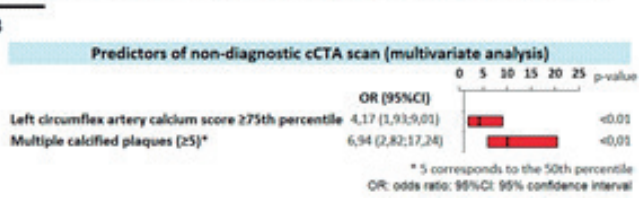

Figure 1. Baseline patient and study information **(A)**; Predictors of non-diagnostic coronary computed tomography (cCTA) scan

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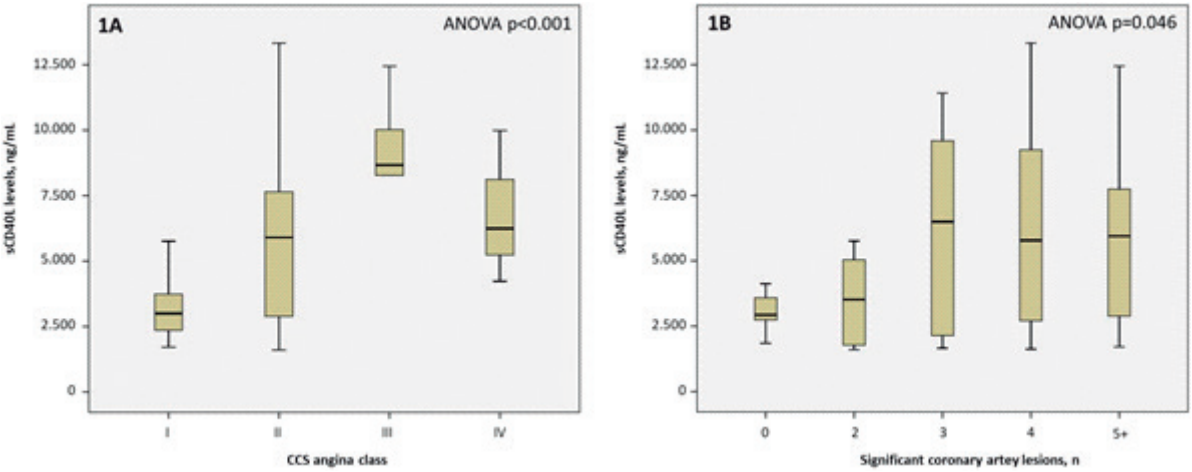

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neutrophils (r = 0.28) counts (all p < 0.05), but not with CRP. Clinically, sCD40L levels were associated (ANOVA p < 0.001) and positively correlated (Pearson r = 0.54, p < 0.001) with angina severity (Fig. 1A). Anatomically, sCD40L levels were positively correlated with the number of: diseased vessels (r = 0.33), significant coronary artery lesions (r = 0.31) (Fig. 1B) and all coronary artery lesions (r = 0.33) (all p < 0.05), without correlation with the Gensini score. Linear regression analysis considering clinical and laboratorial data revealed that sCD40L was an independent predictor of CAD severity, as assessed by the number of significant lesions (model: sCD40L β 0.28, 95%CI 0.03-0.34; hypertension β 1.1, 95%CI 0.97-3.64). Among SCAD patients, those with previous CABG (n = 14) had lower sCD40L levels than patients waiting for revascularization (n = 34) (3,317 ± 1,680 vs 6,793 ± 3,631 ng/mL, p < 0.001).

Conclusions: Increased expression of sCD40L was associated with the presence of SCAD, with angina severity and with CAD severity, while previous revascularization was associated with decreased sCD40L levels.

P 106. STRESS ECHOCARDIOGRAPHY WITH 2019 UPDATED PRE-TEST PROBABILITIES-LOVE OR HATE?

Luís Puga[1], Rogério Teixeira[2], Ana Rita Gomes[2], Diana Campos[2], João Gameiro[2], José Pedro Sousa[2], Carolina Saleiro[2], Ana Botelho[2], Lino Goncalves[2]

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Introduction: Recent 2019 guidelines on chronic coronary syndromes have significantly downgraded pre-test probability (PTP) for the diagnosis of coronary artery disease (CAD) based on contemporary data. PTP may not clearly reflect clinical practice and needs testing in different cardiovascular risk settings and to be put to the test with real-world data.

Objectives: Assess the results and outcome of patients referred for dobutamine stress-echo (DSE) for diagnosis of CAD if new PTP would have been applied.

Methods: We studied a sample of patients submitted to DSE for diagnosis CAD from august 2017 to July 2019. We assessed the 2013 ESC guidelines PTP and the new 2019 ESC guidelines PTP according to characteristics of chest pain, age and gender. We further divided our sample into two groups A (patients not reclassified in low PTP) vs B (patients reclassified in new low PTP, considered < 15%) for outcome and prognosis comparison.

Results: Our sample consisted of 115 consecutive patients, mean age of 68.6 ± 10.3 years old, 57% males. 81.7% (94) of the patients were referred due to chest pain (12.2% (14) typical, 40% (46) atypical and 29.6% (34) non-anginal). 30.9% (29) patients of the 94 with chest pain were newly reclassified with low PTP according to the new guidelines. 48.3% (14) of the newly reclassified patients with a new low PTP had a negative DSE, 31% (9) had a positive DSE and 20.7% (6) had a non-diagnostic DSE. Subsequently, 24% (7) had an invasive coronary angiography which identified CAD in 2 patients and 1 patient had a coronary CT scan which ruled out CAD. None of the patients were revascularized (due to non-significant CAD). Mean follow-up was 12.6 ± 6.9 months. None of the patients from group B died during follow-up (A 3% (2/62) vs B 0%(0/27)). None of the newly reclassified patients reached the endpoints of death, acute coronary syndrome, stroke or coronary artery bypass graft surgery during follow up.

Conclusions: In our sample, deferring diagnostic testing in patients with new low PTP as recommended by the new ESC guidelines would have resulted in 30,9% (29/94) less DSE, 17% (7/41) less invasive coronary angiography and 1 less CT scan. Our results are in agreement with the new downgraded PTP with the aim of decreasing false positive tests in the low risk population.

P 107. INSIGHTS FROM MICRORNAS INTO THE PATHOPHYSIOLOGY OF CORONARY AND MULTITERRITORIAL ATHEROSCLEROSIS

Tiago Pereira da Silva[1], Marina Costa[2], André Gabriel[2], Mafalda Selas[1], Felipa Silva[1], Vera Ferreira[1], António Valentim Gonçalves[1], Francisco Enguita[2], Patrícia Napoleão[3], Rui Cruz Ferreira[1], Miguel Mota Carmo[4]

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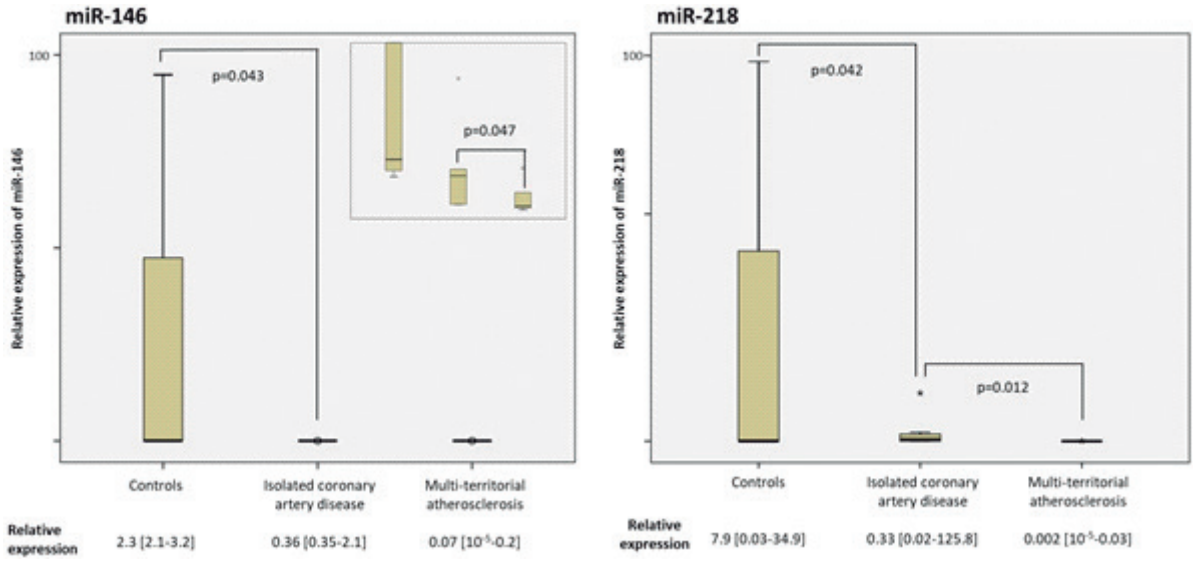
Introduction: The mechanisms underlying different phenotypic expression of atherosclerosis are still poorly understood. MicroRNAs regulate genetic expression at the post-transcriptional level and each has specific biological functions. MicroRNAs could therefore be useful for understanding the epigenetic drivers for development of isolated coronary atherosclerosis and more extensive disease. We evaluated if the circulating microRNAs expression profile was associated with coronary and multiterritorial atherosclerosis.

Methods: We prospectively recruited three groups of age- and sex-matched participants, with: 1) no coronary atherosclerosis (calcium score = 0, no soft plaques in coronary angioCT scan), neither carotid or inferior limbs atherosclerosis (controls); 2) isolated obstructive coronary artery disease (≥ 50% for the left main, ≥ 70% for other epicardial vessels) (CAD group); 3) obstructive disease of the coronary, inferior limbs and carotid arterial beds (multi-territorial disease). Obstructive atherosclerosis of carotid and inferior limbs arteries (≥ 50% stenosis by Doppler or angioCT imaging) was assessed in all participants. Acute atherosclerotic events or coronary



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revascularization within 12 months, heart failure, infections, malignancy and severe renal dysfunction were exclusion criteria. Six microRNAs with diverse mechanisms of action were selected (mir-21, miR-27b, miR-29a, miR-126, miR-146, miR-218) and measurements of their circulating levels were performed in a blinded fashion, using RT-PCR SYBR Green®.

Results: Twenty four patients were included, including 8 patients in each group. Mean age was 61 ± 9 years, and 83% were male. In patients with atherosclerosis, classical cardiovascular risk factors were globally more prevalent. The expression of miR-146 and miR-218, both of which regulate endothelial function, was significantly decreased in the CAD group comparing to controls (Figure; data are expressed as median [IQR]). Consistently, there was a further decrease in the expression of both microRNAs in patients with multiterritorial atherosclerosis comparing with patients with isolated CAD. The expression of other microRNAs did not differ. Smoking was associated with the presence of CAD and multiterritorial atherosclerosis (14% vs 30% vs 56% of smokers across groups, p = 0.002), and with decreased expression of miR-218 (1.6 [0.02-83] fold vs 0.1 [0.001-0.7] fold, p = 0.023).

Conclusions: The expression of the endothelial regulators miR-146 and miR-218 was decreased in patients with CAD comparing to controls, and even more hampered in patients with multiterritorial atherosclerosis. Higher degrees of endothelial dysfunction may therefore contribute to a more diffuse atherosclerotic presentation through miR-146 and miR-218. Atherogenesis related to smoking may be partially mediated by these two microRNAs.

Painel 7 - Doença Coronária 5

P 108. IS THE EARLY INVASIVE STRATEGY REALLY THE OPTIMAL TIME FOR PATIENTS AT HIGH-RISK OF ACUTE CORONARY SYNDROMES WITHOUT ST-SEGMENT ELEVATION

Isabel Durães Campos[1], Cátia Costa Oliveira[1], Carla Marques Pires[1], Paulo Medeiros[1], Rui Flores[1], Fernando Mane[1], Carlos Braga[1], António Gaspar[1], em nome dos investigadores do Registo Nacional de Síndromes Coronárias Agudas[2]

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Introduction: An early invasive strategy (< 24h) has become the standard of care for patients (pts) at high-risk of acute coronary syndromes without ST-segment elevation (NSTE-ACS) in the latest guidelines. However, the optimal timing of coronary intervention in pts with NSTE-ACSs is still a matter of debate.

Objectives: To compare the prognosis between pts at high-risk of NSTE-ACS submitted an early (< 24h) versus a delayed invasive strategy (24-72h) in Portugal.

Methods: A retrospective multicenter observational study including 6,722 pts at high-risk NSTE-ACS (established diagnosis of NSTE-ACS based on cardiac troponins OR dynamic ST/T-changes OR GRACE score > 140). Low, intermediate and very high-risk of NSTE-ACS pts were excluded, such as pts with an invasive strategy > 72h. Pts were divided into two groups: group 1-pts at high-risk of NSTE-ACS submitted an early invasive strategy (< 24h) (n = 3,351, 49.9%); group 2-pts at high-risk of NSTE-ACS submitted a delayed invasive strategy (24-72h) (n = 3371, 50.1%). Primary endpoint was the occurrence of death at 1 year; follow-up was completed in 50% of patients.

Results: The sample was formed by 5,010 (74.5%) men and 1712 (25.5%) women, with mean age of 65 ± 12 years. It was not observed statistically significant differences in gender (75.2 vs 73.9, p = 0.230) and age (64 ± 12 vs 65 ± 12, p = 0.008). Group 2 pts had a higher prevalence of hypertension (69.4% vs 73.0%, p = 0.001), dyslipidaemia (63.1% vs 66.7%, p = 0.002), peripheral arterial disease (4.2% vs 5.8%, p = 0.003), chronic kidney disease (3.2% vs 4.9%, p < 0.001), and history of previous myocardial infarction (19.9% vs 24.3%, p < 0.001), CABG (4.7% vs 6.0%, p = 0.017) and heart failure (2.4% vs 3.4%, p = 0.012). They also were taking more often vitamin K antagonist (1.6% vs 2.6%, p = 0.004). On admission, group 1 pts had more chest pain (96.9% vs 95.7%, p = 0.010) compared to group 2 pts that had more dyspnea (1.1% vs 1.9%, p = 0.007) and presented more to a non-PCI center (36.0% vs 46.3%, p < 0.001). During hospitalization, group 2 had more often ST transition changes (5.3% vs 3.9%, p = 0.006), heart failure (3.3% vs 4.5%, p = 0.013) and LVEF ≤ 40% (5.9% vs 7.6%, p = 0.042). Group 1 pts were more likely to have coronary revascularization (78.9% vs 74.6%, p < 0.001), with the culprit artery being less identified in group 2 (20.8% vs 25.2%, p < 0.001). Group 1 and 2 had the same 1-year mortality (3.0% vs 2.8%; p = 0.755). In multivariate analysis and after adjusting for different baseline characteristics, pts at high-risk of NSTE-ACS submitted an early strategy (< 24h) had the same risk of 1-year mortality compared to those submitted a delayed invasive strategy (48-72h) [OR 0.76, p = 0.280].

Conclusions: In Portugal, only half of patients at high risk of NSTE-ACS undergo an early invasive strategy (< 24h). However the early invasive coronary evaluation did not improve overall long-term clinical outcome compared with delayed invasive strategy (24-72h) in this group of pts.

P 111. PREDICTORS OF NEED OF NON-INVASIVE VENTILATION IN ACUTE CORONARY SYNDROME

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Introduction: Non-invasive mechanical ventilation (NIMV) plays an important role in the management of patients with cardiogenic pulmonary oedema, cardiogenic shock, or cardiac arrest. Despite that, data addressing the use of respiratory support in acute coronary syndromes are lacking. Our aim is to identify predictors of need of non-invasive mechanical ventilation among patients admitted for acute coronary syndrome (ACS).
Methods: Retrospective study of patients (pts) with ACS periodically included in one center registry between March/2013 and December/2018. The primary endpoint was necessity of NIMV during hospitalization for index event;
Results: From a cohort of 518 pts, 1 in each 20 patients with ACS will require respiratory support with either invasive mechanical ventilation or non-invasive ventilation. Those treated with NIMV presented more frequently with ST elevation myocardial infarction (STEMI), with higher Killip Kimbal (KK) class, higher NT proBNP levels and lower ejection fraction (all p value < 0.005). Shock index at admission (heart heart/systolic blood pressure) was significantly higher in this group of pts (p < 0.001). Multivariate analysis identified STEMI (OR 12, 95%IC 2-58, p = 0.002), Killip Kimbal class > 2 (OR 11.8, 95%IC 3.6-38, p = 0.001), shock index > 0.6 (OR 3.6, 95%IC 1.1-11.3, p = 0.033) and NT proBNP > 1400 (OR 3, 95%IC 1-9.5, p = 0.045) as predictors of need of non-invasive mechanical ventilation during hospitalization; A score with this 4 variables displayed excellent predictive performance of need of NIVM after ACS (AUC: 0.91, IC 0.862-0.953, p < 0.001).
Conclusions: Prediction of the need of NIVM can be made with simple and readily available variables at admission. Early identification of patients at risk of respiratory failure can avoid delay in proper treatment.

P 109. IMPROVED OUTCOMES AFTER INVASIVE STRATEGY IN FRAIL NON-ST-ELEVATION MYOCARDIAL INFARCTION PATIENTS

André Azul Freitas[1], Guilherme Pessoa-Amorim[2], Hélder Santos[3], Diogo Santos-Ferreira[4], Adriana Belo[5], Cristina Gavina[6], Rui Terenas Baptista[1], Sílvia Monteiro[6], em nome dos investigadores do Registo Nacional de Síndromes Coronárias Agudas[5]

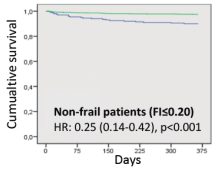
[1]Centro Hospitalar e Universitário de Coimbra. [2]UnIC, Faculdade de Medicina da Universidade do Porto; CIAFEL, Faculdade de Desporto da Universidade do Porto. [3]Centro Hospitalar Barreiro/Montijo, EPE/Hospital Nossa Senhora do Rosário. [4]Centro Hospitalar de Vila Nova de Gaia/Espinho. [5]Centro Nacional de Coleção de Dados de Cardiologia, Sociedade Portuguesa de Cardiologia, Coimbra. [6]Centro Hospitalar e Universitário de Coimbra/Hospitais da Universidade de Coimbra.

Introduction: Frailty is common among patients presenting with non-ST-elevation myocardial infarction (NSTEMI), who have conflicting risks regarding benefits and harms of invasive procedures. We aimed to assess the clinical management and the prognostic impact of invasive procedures in frail NSTEMI patients.
Methods: We included 6,602 NSTEMI episodes recorded from 2010-2019 in a multicentre registry. A validated deficit-accumulation model was used to create a frailty index (FI) comprising 22 clinical features (not including age). Frailty was initially defined as FI > 0.25.
Results: A total of 1,763 (26.4%) NSTEMI patients were considered frail. Guideline-recommended in-hospital medical therapy (including aspirin, P2Y12 inhibitors, dual-antiplatelet therapy, heparin/heparin-related agents, and statins) was less commonly used in frail patients. Coronariography, percutaneous coronary intervention (PCI) and coronary artery bypass surgery were less frequently performed in frail patients (p < 0.001). Delayed coronariography was more common in frail patients (p < 0.001), and radial access was less commonly used (p < 0.001). At discharge, frail patients were less often offered aspirin, P2Y12 inhibitors and lipid-lowering therapy other than statins, and more often prescribed with anticoagulants. Frail patients had increased in-hospital stay, all-cause and cardiovascular (CV)

Figure 1 – Impact of coronariography and PCI in 1-year outcomes in NSTEMI patients according to frailty status

1.1 - Coronariography

A- All-cause death

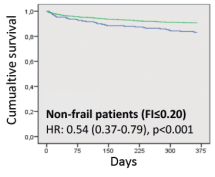


Wald test for interaction: p=0.854

Multiple Cox regression model*: HR: 0.30 (0.23-0.39), p<0.001

Frailty index	Coronariography performed	Total N	N of events	Censored N	Censored Percent
Non-frail (FI≤0.20)	No	200	20	180	90,0%
	Yes	1581	40	1541	97,5%
	Overall	1781	60	1721	96,6%
Frail (FI>0.20)	No	390	99	291	75,6%
	Yes	890	64	826	92,8%
	Overall	1280	163	1117	87,3%
Overall		3061	223	2838	92,7%

B - CV hospitalization

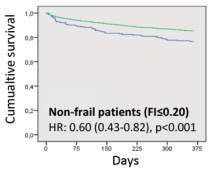


Wald test for interaction: p=0.699

Multiple Cox regression model*: HR: 0.61 (0.50-0.75), p<0.001

Frailty index	Coronariography performed	Total N	N of events	Censored N	Censored Percent
Non-frail (FI≤0.20)	No	191	32	159	83,2%
	Yes	1552	144	1408	90,7%
	Overall	1743	176	1567	89,9%
Frail (FI>0.20)	No	330	112	218	66,1%
	Yes	854	184	670	78,5%
	Overall	1184	296	888	75,0%
Overall		2927	472	2455	83,9%

C - All-cause hospitalization



Wald test for interaction: p=0.942

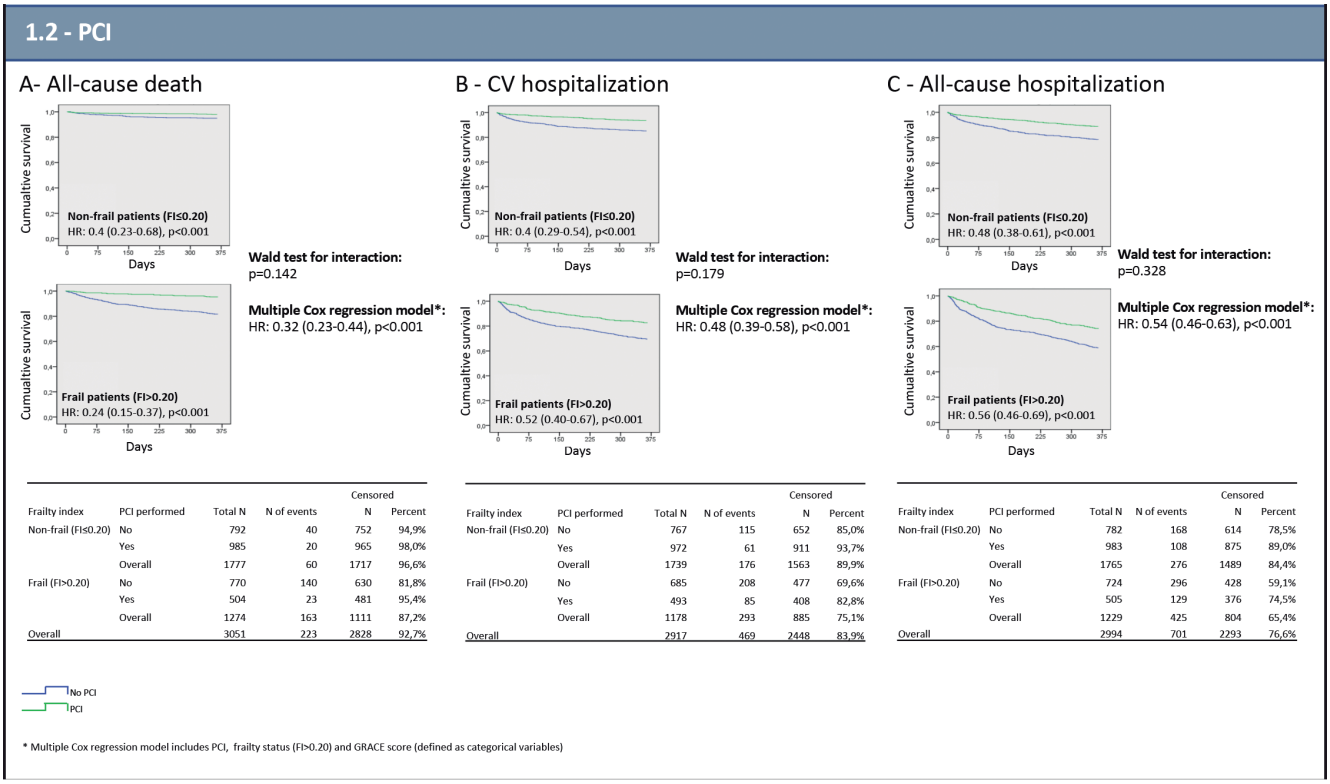
Multiple Cox regression model*: HR: 0.54 (0.50-0.63), p<0.001

Frailty index	Coronariography performed	Total N	N of events	Censored N	Censored Percent
Non-frail (FI≤0.20)	No	193	45	148	76,7%
	Yes	1576	231	1345	85,3%
	Overall	1769	237	1493	84,4%
Frail (FI>0.20)	No	355	162	193	54,4%
	Yes	880	266	614	69,8%
	Overall	1235	428	807	65,3%
Overall		3004	704	2300	76,6%

No coronariography
Coronariography

* Multiple Cox regression model includes coronariography, frailty status (FI>0.20) and GRACE score (defined as categorical variables)

P 109 Figure



Frailty index	PCI performed	Total N	N of events	Censored N	Censored Percent
Non-frail (FI≤0.20)	No	792	40	752	94,9%
	Yes	985	20	965	98,0%
	Overall	1777	60	1717	96,6%
Frail (FI>0.20)	No	770	140	630	81,8%
	Yes	504	23	481	95,4%
	Overall	1274	163	1111	87,2%
Overall		3051	223	2828	92,7%

Frailty index	PCI performed	Total N	N of events	Censored N	Censored Percent
Non-frail (FI≤0.20)	No	767	115	652	85,0%
	Yes	972	61	911	93,7%
	Overall	1739	176	1563	89,9%
Frail (FI>0.20)	No	685	208	477	69,6%
	Yes	493	85	408	82,8%
	Overall	1178	293	885	75,1%
Overall		2917	469	2448	83,9%

Frailty index	PCI performed	Total N	N of events	Censored N	Censored Percent
Non-frail (FI≤0.20)	No	782	168	614	78,5%
	Yes	983	108	875	89,0%
	Overall	1765	276	1489	84,4%
Frail (FI>0.20)	No	724	296	428	59,1%
	Yes	505	129	376	74,5%
	Overall	1229	425	804	65,4%
Overall		2994	701	2293	76,6%

P 109 Figure *(cont.)*

death, as well as 1-year all-cause death and all-cause and CV hospitalization (p < 0.001). Receiver-operator-characteristics curve analysis identified 0.20 as the best FI cutoff to predict all-cause 1-year mortality (area under the curve: 0.702; p < 0.001)-this cutoff was subsequently used to define frailty. Although frailty status modified in-hospital risk reduction from coronariography and PCI (Wald test p < 0.05), their long-term prognostic benefit remained unaffected (Wald test p > 0.05). In a multiple regression model, coronariography and PCI were associated with reduced in-hospital all-cause and CV death, as well as 1-year all-cause death and all-cause and CV hospitalization, independently of frailty status or GRACE score (p < 0.001 for all comparisons).

Conclusions: Frail NSTEMI patients are less commonly offered guideline-recommended therapy; however, coronariography and PCI were associated with reduced short- and long-term risk regardless of frailty status or GRACE score. Increased adherence to guideline recommendations might improve clinical outcomes in frail NSTEMI patients.

P 110. PRECISE-DAPT SCORE FOR LONG-TERM BLEEDING PREDICTION AFTER ACUTE CORONARY SYNDROME

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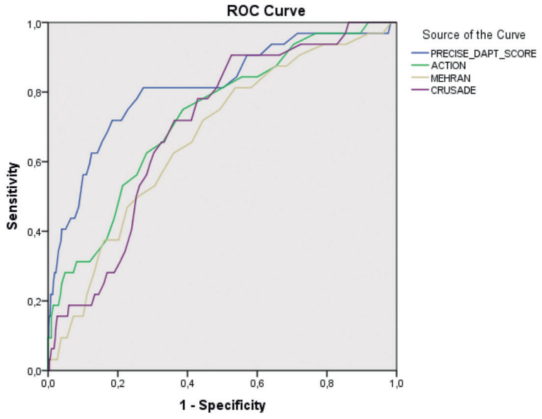
Introduction: PRECISE-DAPT (PD) is a recently validated score for long-term bleeding prediction after coronary stenting in patients undergoing double antiplatelet therapy (DAPT). We aimed to evaluate its predictive power on long-term bleeding events and mortality compared to other bleeding risk scores, namely CRUSADE, ACTION and a score validated by Mehran et al obtained from analysis of the ACUITY/HORIZONS AMI 3 trials, in patients hospitalized for acute coronary syndrome (ACS).

Methods: Retrospective analysis of 993 patients admitted for ACS, planned to undergo DAPT with aspirin and a P2Y12 inhibitor for a minimum of 12 months, regardless of revascularization strategy. Bleeding event was defined as Thrombolysis in Myocardial Infarction minor or major bleeding. Mentioned scores were calculated for each patient. ROC curves were used to ascertain score predictive capacity for 12-month bleeding events (12MB) and 12-month mortality (12MM). Kaplan-Meier and Cox-regression analysis of 12MB and 12MM was performed.

Results: Mean age was 69 ± 13y; 69.2% were men. 42% had ST-elevation myocardial infarction. 75% of patients were treated with coronary stenting (PCI), 4.4% with coronary artery bypass graft surgery and 20.6% underwent conservative management. Mean of scores were: CRUSADE 35 ± 15, Mehran 18 ± 8, ACTION 29 ± 8, PD 24 ± 13.12MB was 4.5%. 12MM was 11.7%.ROC curve analysis for 12MB revealed that PD score had the highest discriminative power (AUC: 0.813, p < 0.001), with lower values for other scores. ROC curve analysis for 12MM mortality revealed that ACTION score had the highest discriminative power (AUC: 0.797, p < 0.001), closely followed by PD score (AUC: 0.749, p < 0.001). Kaplan-Meier analysis stratified by high vs non-high bleeding risk (PD < or ≥ 25) using PD revealed significantly increased 12MB in high-risk group (8.0% vs 1.6%, χ^2: 23.43, p < 0.001). When stratified by type of treatment-PCI or no PCI-PD score was a predictor of 12MB regardless of treatment modality (10.3% vs 1.6%, χ^2: 21.965, p < 0.001 for PCI group; 8.6% vs 1.0%, χ^2: 5.676, p = 0.017 for non-PCI). 12MM analysis by Kaplan-Meier revealed that high-risk patients by PD had higher mortality, in comparison with non-high-risk patients (19.9% vs 4.4%, χ^2: 63.35, p < 0.001). Cox-regression analysis of PD revealed that it was an independent predictor for 12MB (HR: 1.143, p < 0.001) and 12MM (HR:1.14, p < 0.028), even after adjustment for other risk factors, such as diabetes, platelet count, alcoholism, ejection fraction, number of diseased coronary vessels and max troponin level at index event.

Conclusions: In comparison with other bleeding-risk scores, PD was the best predictor of 12MB events in a population with recent ACS on DAPT. Patients with a high bleeding risk as assessed by PD score have significantly higher 12MB and 12MM, independently from other bleeding-risk factors. PD is a useful tool and may aid in the decision of DAPT duration after ACS.



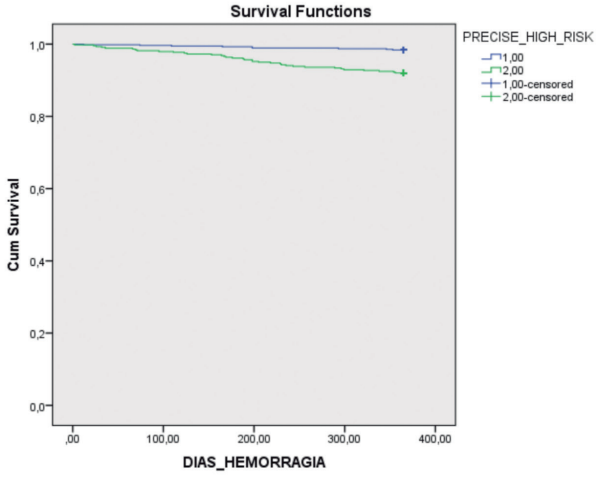
Area Under the Curve

Test Result Variable(s)	Area	Std. Error[a]	Asymptotic Sig.[b]	Asymptotic 95% Confidence Interval	
				Lower Bound	Upper Bound
PRECISE_DAPT_SCORE	,813	,044	,000	,727	,900
ACTION	,729	,045	,000	,642	,817
MEHRAN	,670	,047	,001	,579	,762
CRUSADE	,702	,041	,000	,622	,782

The test result variable(s): PRECISE_DAPT_SCORE, ACTION, MEHRAN, CRUSADE has at least one tie between the positive actual state group and the negative actual state group. Statistics may be biased.

a. Under the nonparametric assumption

b. Null hypothesis: true area = 0.5



Overall Comparisons

	Chi-Square	df	Sig.
Log Rank (Mantel-Cox)	23,431	1	,000

Test of equality of survival distributions for the different levels of PRECISE_HIGH_RISK.

P 112. PREMATURE ACUTE CORONARY SYNDROME

Raquel Menezes Fernandes[1], Teresa Mota[1], João Bispo[1], Pedro Azevedo[1], Dina Bento[1], João Guedes[1], Daniela Silva[1], Nuno Marques[2], Walter Santos[1], Jorge Mimoso[1], Ilídio Jesus[1], on behalf of the Portuguese Registry of Acute Coronary Syndromes investigators[3]

[1]Centro Hospitalar e Universitário do Algarve. [2]Centro Hospitalar do Algarve, EPE/Hospital de Faro. [3]CNCDC-Centro Nacional de Coleção de Dados em Cardiologia.

Introduction: The prevalence of acute coronary syndrome (ACS) at an early age is rising, resulting in higher morbidity and mortality rates. Our study aims to characterize patients admitted with premature ACS, comparing with those with non-premature ACS.

Methods: A retrospective study encompassing patients of a National Registry of ACS was performed. We compared two groups: one composed of men < 55 and women < 65 years-old; and other with men ≥ 55 and women ≥ 65 years-old at the ACS admission. Clinical characteristics, in-hospital evolution and 1-year clinical outcomes were analysed. Primary endpoint was the composite of in-hospital mortality, stroke and re-myocardial infarction (MI). Secondary endpoints were re-MI, stroke, in-hospital and 1-year mortality, 1-year cardiovascular (CV) and non-CV readmissions.

Results: A total of 26,523 patients were enrolled and 6,637 (25%) had premature ACS, with a mean age of 49 ± 7 years-old. It was found a larger prevalence of smoking habits, obesity and dyslipidemia, but not diabetes. ST-segment elevation MI (STEMI) was the main admission diagnosis (51.2% vs 40.3%), with more frequent activations of the STEMI network (17.1% vs 12.8%) and a consequently shorter time from symptom onset to admission (483 vs 584 min). Coronary angiogram was largely performed in younger patients (91.4% vs 82.1%), mainly revealing one-vessel disease (49.3% vs 34.3%). They had lower Killip-Kimbal (KK) class (6% vs 18.1% with KK class > 1) and mostly preserved left ventricular ejection fraction (LVEF) (67.3% vs 58.6%). Major bleeding (0.9% vs 1.7%), sustained ventricular tachycardia (1.1% vs 1.5%) and mechanical complications (0.2% vs 0.7%) were uncommon. Composite endpoint was more frequent in non-premature ACS patients (6.2% vs 1.9%). Non-premature age, KK class > 1, multivessel disease and depressed LVEF were independent predictors of primary endpoint (each with $p < 0.001$). Younger patients had inferior rates of in-hospital mortality (1% vs 4.7%), re-MI (0.5% vs 1%) and stroke (0.4% vs 0.7%). One-year mortality (1.7% vs 9.1%), and 1-year CV (9.7% vs 15.5%) and non-CV readmissions (3.7% vs 8.2%) were also lower. All comparative data presented have a statistically significant p-value ($p < 0.012$).

Conclusions: Premature ACS affects 25% of the ACS population, mostly presenting with STEMI, but generally associated with better clinical evolution. Nevertheless, primary prevention is essential to correct modifiable CV risk factors and reduce coronary events in these patients.

P 113. MEAN PLATELET VOLUME AS A PREDICTOR OF IN-HOSPITAL COMPLICATIONS IN ACUTE CORONARY SYNDROMES

Inês Pires, João Miguel Santos, Maria Luísa Gonçalves, Joana Correia, Hugo Antunes, José Costa Cabral, Inês Almeida

Centro Hospitalar Tondela-Viseu, EPE/Hospital de São Teotónio, EPE.

Introduction: Mean Platelet Volume (MPV) is an indicator of platelet activation, with higher volumes being associated with increased prothrombotic potential. Some studies have related increased MPV with poor outcomes in acute coronary syndromes (ACS). Global Registry of Acute Coronary Events (GRACE) Score is the most used tool in risk stratification in ACS. This study aims to evaluate MPV as a predictor of in-hospital complications in ACS and compare it with the GRACE Score (Gs).

Methods: All patients (P) admitted for ACS in a Cardiology Department for 9 years were included. MPV and Gs were obtained at admission. MPV was considered elevated if superior to its median (8.9 fL). Primary outcome was in-hospital complications: death, cardiogenic shock, ventricular arrhythmias, mechanical complications, stroke, bleeding or worsening of renal function. Statistical analysis used Chi-square and Mann-Whitney U tests, logistic regression analysis and receiver operating characteristic (ROC) curves.

Results: 1,003 P were studied (mean age 67.8 ± 12.7 years, 71.2% male). Mean MPV was 9.1 ± 1.1 fL, and 47.8% P had high MPV. Primary outcome occurred in 268 (26.7%) P: 22.7% with low MPV vs 31.1% with high MPV ($p = 0.003$). Higher MPV was associated with older age ($p < 0.001$); type 2 diabetes mellitus ($p = 0.017$) and previous coronary artery bypass graft ($p = 0.048$). At admission, P with high MPV had lower levels of platelets ($p < 0.001$) and hemoglobin ($p = 0.004$); higher levels of urea ($p = 0.009$) and BNP ($p < 0.001$); lower left ventricle ejection fraction ($p = 0.02$) and higher Gs ($p < 0.001$). There was no difference in antithrombotic therapy or revascularization strategy between the groups. Univariate logistic regression analysis showed that high MPV was a predictor of in-hospital complications (OR 1.537; 95%CI 1.160-2.036; $p = 0.03$). In multivariate analysis, high MPV was a predictor of the primary outcome (OR 1.399; 95%CI 1.034-1.892; $p = 0.03$) independent from Gs > 140 or admission levels of platelets and hemoglobin. The addition

of high MPV to Gs was superior (AUC 0.582) in the prediction of in-hospital complications than the sole use of either MPV (AUC 0.551, p = 0.06) or Gs (AUC 0.561, p = 0.03).
Conclusions: In this study, MPV was a predictor of in-hospital complications in P with ACS, and was independent of Gs > 140 and of hemoglobin and platelets levels at admission. The combination of MPV with Gs allowed better risk prediction, so in the future this readily available value might be used in risk stratification.

Painel 8 - Doença Coronária 6

P 114. CORONARY ARTERY FISTULAS: A SINGLE-CENTER CASE SERIES

Sofia Torres[1], Mariana Vasconcelos[1], Carlos Resende[1], Pedro Diogo[1], Ricardo Pinto[1], Tânia Proença[1], J. Miguel Carvalho[2], Cristina Cruz[2], Jorge Moreira[2], Paulo Pinho[2], João Carlos Silva[1], Júlia Maciel[2]

[1]Centro Hospitalar Universitário de São João. [2]Centro Hospitalar de S. João, EPE.

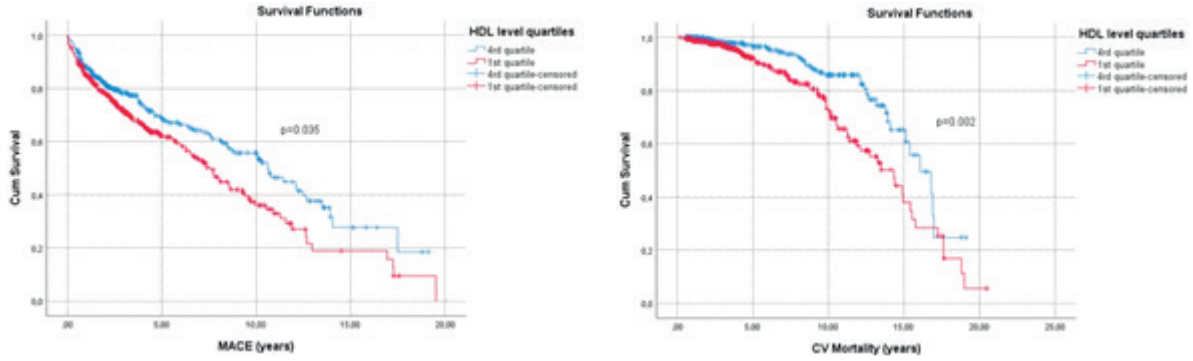
Introduction: Coronary artery fistulas (CAFs) are rare anomalous connections between a coronary artery and a major vessel or cardiac chamber. Currently they are being increasingly encountered due to the more widespread use of various imaging modalities and coronary angiography. Although the vast majority of CAFs are incidentally diagnosed and have no clinical relevance, they can cause significant morbidity such as myocardial infarction, congestive heart failure and endocarditis.
Methods: A consecutive series of 55,867 coronary arteriograms performed in our Cardiology Department from 2007 to 2019 was retrospectively investigated for the presence of coronary artery fistulas. Patients clinical, angiographic and therapeutic data up to november 2019 were analyzed.
Results: We identified 50 patients who were diagnosed with one or more CAFs, with ages between 5 and 85 years (mean 59 years). 62% (n = 31) were males. The great majority of patients had a single fistula (n = 34, 68%), 11 patients had two fistulas (22%), 1 patient had 3 fistulas (2%) and 4 patients had multiple fistulas (8%). CAFs arose more frequently from the LAD (n = 27), followed by RCA (n = 18), LCX (n = 15), LMCA (n = 5) and intermediate artery (n = 2). The most frequent drainage site was the PA (n = 38). The majority of CAFs were incidentally found (n = 32; 64%) and thought to have no significance for the patients' clinical status. As for the rest of the patients, CAFs were diagnosed during evaluation of: a heart murmur (n = 7); exertional chest pain with no associated significant atherosclerotic coronary artery disease (n = 7); exertional dyspnea (n = 2); positive exercise stress test (n = 1); NSTEMI and cardiac arrest (n = 1). Regarding treatment, watchful waiting was the main approach (n = 40; 80%). 3 patients had their CAFs closed during surgery for another heart condition (CABG/aortic valve replacement). In 1 patient, heart surgery was specifically conducted for fistula closure. 6 patients (12%) underwent fistula transcatheter closure.
Conclusions: CAFs are rare coronary anomalies and the majority has no clinical relevance, so watchful waiting is the commonest approach. When they are hemodynamically significant or symptoms/complications arise, surgical or transcatheter closure should be considered. This study describes the angiographic, clinical and therapeutic data of CAFs detected along the last 12 years in a single tertiary care center catheterization laboratory.

P 115. CLINICAL EVIDENCE FOR INCREASED CARDIOVASCULAR MORTALITY AND LATE ADVERSE EVENTS WITH LOW HDL LEVELS

Andreia Pereira[1], Marina Santos[1], Margarida Temtem[1], Flavio Mendonça[1], Adriano Sousa[1], Joel Monteiro[1], Ana Célia Sousa[1], Sónia Freitas[1], Eva Henriques[1], Ilídio Ornelas[1], António Drumond[2], Roberto Palma dos Reis[3], Maria Isabel Mendonça[1]

[1]Hospital Dr. Nélio Mendonça-Unidade de Investigação Dra. Maria Isabel Mendonça. [2]Hospital Dr. Nélio Mendonça. [3]Nova Medical School.

Introduction: The major cause of CAD is known to be atherosclerosis, and reduction of low-density lipoprotein (LDL) has proven to reduce major cardiovascular events risk in coronary patients. There has been no consensus as to whether subjects with high serum HDL-C levels are resistant to atherosclerosis.
Objectives: To evaluate cardiovascular mortality (CV Mortality) and major adverse events (MACE) in a population with proven angiographic coronary disease according to concentration levels of HDL.
Methods: 1,676 patients selected from GENEMACOR study population, with at least one > 75% coronary stenosis by angiography divided according to the HDL level quartiles (1st quartile HDL < 35.3 mg/dL; 2nd quartile HDL 35.3-42 mg/dL; 3rd quartile HDL 42-49 mg/dL; 4th quartile HDL > 49 mg/dL). Population of the 1st (n = 420, median age 53.2 ± 7.9 years, 85.7% male) and 4th quartiles (n = 405 patients, 53.4 ± 8.0 years, 71.4% male) were prospectively followed up of mean 5.0 ± 4.2 years (1.96-7.57). CV Mortality, and MACE events were adjudicated during follow up. Survival Kaplan Meyer curves were plotted according to HDL quartiles. Cox Regression analysis was derived.
Results: In our population, 298 MACES (170; 1° quartile vs 128 events 4° quartile) and 106 CV deaths (70, 1st quartile vs 36 4th quartile) were adjudicated. HDL was lower in patients with CV mortality (66% vs 34%, p = 0.001) and lower in patient with MACE occurrence (57% vs 43%, p = 0.008). First quartile of HDL translated with higher CV mortality (OR 2.050, 95%CI 1.337-3.144, p = 0.001) and higher occurrence of MACE (OR of 1.472, 95%CI 1.105-1.959, p = 0.008). Survival Kaplan Meyer curves confirmed increased survival and reduced MACES in higher vs lower quartile of HDL levels.
Conclusions: In our population a lower level of HDL was associated with adverse prognosis and increased cardiovascular mortality. To date, there are no secure and effective drugs available for the increase of HDL functionality, so new therapeutic targets in lipid metabolism might be approached to efficiently reduce cardiovascular risk.



P 115 Figure

P 116. INFLUENCE OF A GENETIC OXIDATIVE PREDISPOSITION SCORE ON HDL-CHOLESTEROL

Andreia Pereira[1], Marina Santos[2], João Adriano Sousa[1], Margarida Temtem[2], Flávio Mendonça[2], Ana Célia Sousa[1], Mariana Rodrigues[1], Eva Henriques[1], Ilídio Ornelas[1], Ana Isabel Freitas[1], António Drumond[1], Roberto Palma dos Reis[3], Maria Isabel Mendonça[1]

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Introduction: Effect modification by oxidative status like smoking was observed in some candidate gene studies on lipids.We aimed to evaluate the interaction effect of an oxidative predisposition gene score (*O*-GRS) and HDL-C levels, in Coronary artery disease (CAD).
Methods: In 1,627 patients selected from GENEMACOR population (53.2 ± 7.7, 75.5%) Oxidative related SNPs were determined in 6 candidate genes associated with oxidative stress (MTHFD1L, MTHFR677, MTHFR1298, PON108, PON55 e PON192). Weighted genotypic predisposition SNP oxidative score was calculated according to the number of risk aleles (0, 1-3,4-5, > 5). Bivariate analysis was done to determine HDL predictors. Coefficients of O-GRS-scores and HDL quartiles were included in age- and sex-adjusted logistic regression model for CAD disease. Further adjustment for potential confounding variables that influence oxidative status (Diabetes, Smoking, Obesity) were used to fully adjust the model.
Results: Mean O-GRS was 4.3 ± 1.5. Just 7 individuals (0.4%) had no risk alele for Oxidative stress, 484 (29.7%) had 1-3 risk aleles, 784 (48.2%) had 4 o 5 risk aleles, and 352 (21.6%) had 5 or more risk aleles. HDL-Cholesterol for first quartile was ≤ 38 mg/dl and > 53 mg/dl for the 4th quartile. Multivariate regression analysis just HDL variable was independently associated with CAD disease (OR = 4.9; 4.0-6.1, p < 0.0001). Fully adjusted model additionally identified diabetes (OR = 3.1; 2.4-4.2, p < 0.0001) and Smoking (OR = 2.5; 2.0-3.1, p < 0.0001) as independent predictors for CAD. HDL remained as independent predictor for CAD in the fully adjusted model (OR 3.8; 3.0-4.7, p < 0.0001).

Logistic regression

	Adjusted model*	p-value	Full model	p-value
HDL 1st quartile	4.934 (3.997-6.092)	<0.0001	3.799 (3.045-4.739)	<0.0001
Smoking	-----	-----	2.494 (1.980-3.140)	<0.0001
Diabetes	-----	-----	3.148 (2.376-4.169)	<0.0001
Constant	0.531	<0.0001	0.246	<0.0001

*Age and sex.

Conclusions: In our population, we observed a significant influence of HDL load in CAD occurrence. Despite a possible HDL protective role to be dependent on oxidative status, no influence of genetic predisposition score for oxidative status in CAD was observed. Further studies should be performed to understand possible protective HDL in Atherosclerosis.

P 117. MANAGEMENT OF CHRONIC CORONARY SYNDROMES: DEVELOPING MATHEMATICS TO CALCULATE RISK IN PERCUTANEOUS REVASCULARIZATION.

Rui Flores[1], Marco Costa[2], Rui Teles[3], Pedro Braga[4], Hélder Pereira[5], Pedro Canas da Silva[6], José Batista[7], João Costa[1], Rui Ferreira[8], João Carlos Silva[9], Pedro Pinto Cardoso[10], Fernando Matias[11], Filipe Seixo[12], João Brum da Silveira[13], Pedro Farto e Abreu[14], Renato Fernandes[15], Pedro Costa Ferreira[16], Graça Caires[17], Dinis Martins[18], Luís Bernardes[19], Francisco Pereira Machado[20], José Palos[21], Hugo Vinhas[22], Jorge Marques[1]

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Introduction: Percutaneous or surgical revascularization of chronic coronary syndrome remains an appropriate approach for patients who fail to respond to optimal pharmacological therapy. Selection of patients for this approach is complex and there is a lack of models to estimate the procedural risk. Our objective is to assess potential predictors of successful percutaneous intervention in patients with CCS.
Methods: We conducted a multicentered retrospective study that included chronic coronary syndrome patients that were submitted to percutaneous revascularization between January 2012 and December 2018. Successful intervention was defined by TIMI flow improvement with a final result of 3 in patients with previous flow scale inferior to 3. Potential predictors of success were determined by logistic regression. We enrolled a total of 15,877 patients with chronic coronary syndrome that were treated by percutaneous coronary intervention. Mean age was 66.7 ± 10.2. Our sample was mostly composed of men (75.6%, 12,010 patients) with multiple cardiovascular risk factors (hypertension, 78.3%; hypercholesterolemia, 72.9%; diabetes, 35.9%) and with some degree of ventricular dysfunction. About 33% (5,230 patients) were previously revascularized by percutaneous procedure. A total of 6,383 patients (40.2%) had one-vessel coronary disease, 5,263 (33.1%) had two-vessel disease and 3,589 (22.6%) three-vessel disease.
Results: Previous peripheral arterial disease (OR 1.36; 95%CI 1.10-1.65), main left branch (OR 1.30; 95%CI 1.04-1.61) or right coronary disease (OR 1.38; 95%CI 1.25-1.53), intrastent stenosis (OR 1.30; 95%CI 1.05-1.61) and procedure with cutting-balloon (OR 2.45; 95%CI 1.52-3.97) were found to predict the unsuccess of percutaneous revascularization by logistic regression. Involvement of anterior descending (OR 0.77; 95%CI 0.69-0.85) or circumflex artery (OR 0.86; 95%CI 0.77-0.94), radial access (OR 0.79; 95%CI 0.71-0.88) and use of aspirin (OR 0.47; 95%CI 0.43-0.53) and anticoagulants (OR 0.55; 95%CI 0.49-0.63) were found to predict success of revascularization.
Conclusions: Optimal care of chronic coronary syndromes may require invasive approaches to reduce ischemic events and symptoms. Previous comorbidities, coronary anatomy and procedural complications seem to be central to predict (un)success of percutaneous revascularization. Patients should be selected carefully considering overall prognosis and estimated outcomes.

P 118. TRANSRADIAL VERSUS TRANFEMORAL ACCESS FOR CORONARY ANGIOGRAPHY IN POST-CABG PATIENTS: A RETROSPECTIVE COMPARATIVE STUDY

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Introduction: With the advancement of technology and equipment, transradial coronary angiography causes less risk of developing local vascular complications, makes patients more comfortable, and turns ambulation possible at an early stage following the procedure, thereby is the first choice for coronary angiography. The rate of patients needing coronary angiography who have undergone coronary artery bypass graft (CABG) surgery has increased in the past years.
Methods: Retrospective unicentric study compared the data from 351 patients with previous CABG who underwent coronary angiography between 2017 and 2019. The catheterization pathways (right radial, left radial and femoral) were compared in terms of procedure time, fluoroscopy time, radiation exposure and amount of contrast given. The results are presented in mean and standard deviation.
Results: The right radial (RR) route was used in 44 cases (12.5%), the left radial (LR) route in 167 (47.6%), and femoral (FR) route in 140 (39.9%). The procedure time was similar between groups: RR 36.34 ± 17.53 min; LR

35.40 ± 14.85 min; FR 36.47 ± 18.10 min. Time of fluoroscopy and radiation exposure were similar between the different approaches (RR 8.96 ± 7.21 min; LR 8.45 ± 5.61 min; FR 7.77 ± 6.12 min). The amount of contrast needed was similar between the different approaches: RR 105.63 ± 46.46 mL; LR 126.24 ± 81.43 mL; FR 127.68 ± 51.10 mL. We compared the radial approach (left and right) versus femoral: procedure time (35.77 ± 15.5 vs 36.47 ± 18.10; p = 0.79); time of fluoroscopy (8.56 ± 5.86 vs 7.77 ± 6.12; p = 0.23); radiation exposure (5,226.82 ± 3,000.84 vs 5,324.24 ± 3,211; p = 0.77); amount of contrast (122.12 ± 76.09 vs 127.67 ± 51.08; p = 0.456).
Conclusions: The bypass graft angiography via radial access was effective in accessing bypass grafts, when compared with transfemoral approach, without increasing the time of procedure nor the amount of contrast and radiation given to the patient.

P 119. A GENETIC RISK SCORE PREDICTS CARDIOVASCULAR MORTALITY IN YOUNG ADULTS WITH CORONARY HEART DISEASE

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Introduction: The risk for Coronary Artery Disease (CAD) is determined by both genetic and environmental factors, as well as by the interaction between them. Young patients with CAD usually lack most of the clinical factors and almost invariantly have low cardiovascular risk. There is an increasing interest in the potential use of Genetic Risk Score (GRS) in cardiovascular disease.
Objectives: Evaluate whether additive GRS (aGRS) improves the prediction of cardiovascular mortality in young nondiabetic patients with CAD and identifies a more aggressive form of atherosclerosis in this population.
Methods: A prospective study with consecutive inclusion of nondiabetic patients aged < 55 years (46.47 ± 5.72, 84.1% male) with CAD angiographically proven. The primary outcome was cardiovascular mortality. We have included 12 genes associated to cell cycle, cellular migration and inflammation; genes involved in pro-oxidative status; genes associated with modifiable risk factors such as lipids metabolism, hypertension and diabetes/obesity. The GRS was constructed under an additive model. Genotyping was performed by TaqMan Real-Time PCR method. For statistical analysis, the GRS was divided into 4 quartiles and Kaplan-Meier survival curves were plotted for the primary outcome. The low-risk GRS (1st quartile) was used as the reference group. Cox regression models were constructed.
Results: A logistic regression under a Forward Wald method was performed including hypertension, dyslipidemia, smoker, multivessel coronary artery disease (MVCAD), serum creatinine and aGRS (1st vs 4nd quartile). In this multivariable analysis, MVCAD (OR = 2.38; 95%CI: 1.05-5.39; p = 0.037) and aGRS (OR = 2.89; 95%CI: 1.19-7.06; p = 0.020) were independent predictors for cardiovascular mortality. Kaplan-Meier analysis showed that the cumulative survival rate of the 1st quartile was not significantly higher than 4th quartile of aGRS (p = 0.065).
Conclusions: An additive genetic risk score identified nondiabetic young patients with CAD at higher risk for cardiovascular mortality. There was no difference in the cumulative survival rate between 1st and 4th quartile, low and high-risk aGRS, respectively; but Kaplan-Meier analysis showed a separation of survival curves at the beginning (Figure). The possibility to identify patients at higher risk represents an actionable goal to modify to a more aggressive secondary therapy.

Painel 9 - Doença Valvular 3

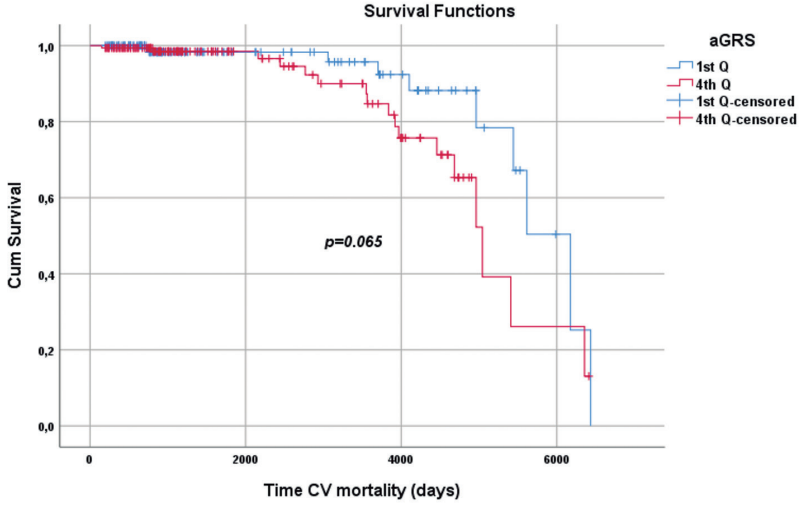
P 120. GLOBAL LONGITUDINAL STRAIN INDICES PRIOR TO AORTIC SUBSTITUTION PREDICTS POST INTERVENTION OUTCOMES

Sara Lopes Fernandes, Beatriz Santos, Margarida Cabral, Rita Carvalho, Luís Graça Santos, Fernando Montenegro Sá, Catarina Ruivo, Francisco Soares, Hélia Martins, João Morais

Centro Hospitalar de Leiria/Hospital de Santo André.

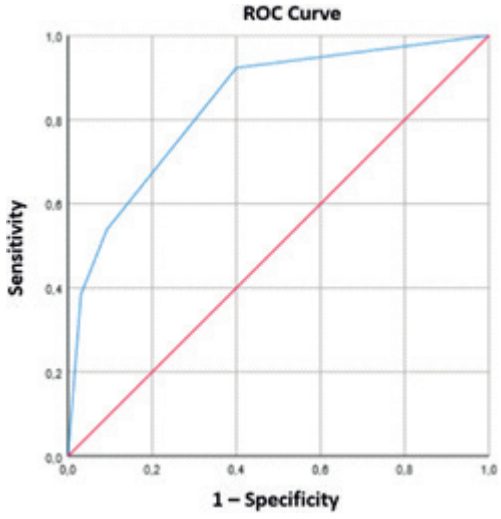
Cox regression for cardiovascular mortality

Variables	B	S.E.	Wald	df	Hazard ratio (95% CI)	P value
Multivessel disease	0.867	0.417	4.333	1	2.381 (1.052 – 5.388)	0.037
aGRS	1.062	0.455	5.453	1	2.893 (1.186 – 7.056)	0.020



P 119 Figure

Introduction: Global longitudinal strain (GLS) is often reduced in severe aortic stenosis (SAS); nevertheless its impact on prognosis after aortic valve intervention (AVI) is not well established.
Objectives: To determine the impact of moderate to severely reduced pre-intervention GLS on clinical outcomes after AVI.
Methods: Retrospective study of 78 patients submitted to severe aortic stenosis intervention (n = 73, 94% surgical aortic valve replacement and n = 5, 6% transcatheter aortic valve implantation). Baseline clinical, demographical and echocardiographic data were collected. Two groups were defined to GLS (moderate to severely reduced [< -13%]-Group 1, and mildly reduced to normal [≥ 13%]-Group 2). The primary endpoint was a composite of hospitalization due to heart failure and all-cause mortality. Forward stepwise logistic regression was used to assess the independent association of GLS with the primary endpoint, along with relevant covariables. The model was tested for calibration with the Hosmer and Lemeshow test, and for goodness-of-fit with receiver operating characteristic (ROC) curve.
Results: Mean age was 71 ± 10 years in group 1 and 71 ± 8 years in group 2, p = 0.824; Group 1 had more male patients (n = 25, 78% vs n = 26, 57%, p = 0.049), and had more severe symptoms (NYHA class ≥ III n = 12, 38% vs n = 5, 11%, p = 0.005). In group 1 left ventricular (LV) ejection fraction was lower (53 ± 8% vs 60 ± 6%, p < 0.001), with more LV hypertrophy (interventricular septum 16 ± 3 mm vs 14.5 ± 2 mm, p = 0.02; LV mass 179 ± 31 g/m^2 vs 137 ± 36 g/m^2, p = 0.015) and higher E/e' (17 ± 5.6 vs 14 ± 4.3, p = 0.012). More patients in group 1 reached the primary endpoint (n = 10, 31% vs n = 3, 7%; p = 0.004). After multivariate analysis, moderate to severely reduced GLS remained an independent predictor of the composite endpoint (OR 7.3, 95%CI 1.5-35, p = 0.013), along with permanent pacemaker status (OR 12.8, 95%CI 3-60, p = 0.001). The model showed good calibration (Hosmer & Lemeshow test p = 0.921) and discrimination (AUC 0.84, p < 0.001).



Conclusions: Moderate to severely reduced GLS (< -13%) prior to valve aortic intervention predicts worse postoperative clinical outcome with respect to hospitalisation due to heart failure and all-cause mortality.

P 124. MITRAL VALVE PROLAPSE-CAN WE STRATIFY PROGNOSIS IN THESE PATIENTS?

Sara Couto Pereira[1], Joana Rigueira[1], Tiago Rodrigues[1], Inês Aguiar-Ricardo[1], Joana Brito[1], Pedro Alves da Silva[1], Ana G. Almeida[1], Rafael Santos[1], Rui Plácido[1], Cláudio David[1], Luís Brás do Rosário[1], Fausto J. Pinto[1], Ana G. Almeida[1]

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Introduction: Mitral valve prolapse (MVP) is one of the most frequent causes of mitral valve disease in developed countries, traditionally with a benign prognosis, however some patients develop arrythmias and significant mitral regurgitation (MR) with need of intervention. Herein our purpose was to establish clinical, electrocardiographic and echocardiographic predictors of arrythmias, mitral valve intervention (MVI) and hospitalization in MVP patients to better characterize the prognosis in these patients.
Methods: Single-center retrospective study of consecutive patients with MVP documented in transthoracic echocardiogram between January 2014 and October 2019. MVP was defined as systolic displacement of the mitral leaflet into the left atrium ≥ 2 mm from the mitral annular plane. Demographic, clinical, echocardiographic, electrocardiographic data were collected as well as adverse events at follow-up. The results were obtained using Chi-square and Student-t tests; predictors were found with logistic regression.
Results: 247 patients were included (mean age 62.9 ± 18 years, 61% males), most with MVP involving the posterior leaflet (48.6%). 40% were symptomatic, 47.4% had more than moderate MR, and 25% had interventricular conduction delay in the ECG. During a mean follow-up of 30 ± 19 months, 38% had arrythmias, 27.1% needed mitral valve intervention (95% surgery and 5% percutaneous), 27.1% had atrial fibrillation (AF), 3.4% had ventricular arrythmias, 19.2% had ventricular premature beats, 13.3% had hospital admission for cardiovascular cause and 8.5% (n = 21) died. 9.3% of the patients had mitral annulus disjunction (MAD). Palpitations (p = 0.018), AF (p < 0.001), significant MR (p < 0.001), higher NYHA class (p = 0.016) systolic pulmonary artery pressure (SPAP) (p < 0.001), LV mass (p < 0.001), QTc (p = 0.01) and MAD maximum distance (p = 0.02) associated with MVI. MAD maximum distance value presented an excellent capacity to predict the MVI (AUC 0.85 p = 0.019); the best cut-off was 11,5 mm (Sens = 80%, Spec = 83%). AF was a predictor of hospitalization in univariate analysis (OR = 2.57, 95%CI 1.15-5.75, p = 0.022). Regarding arrhythmic events, we found association with aortic root dilatation (p = 0.032), NYHA III-IV (p = 0.013), age and LV mass (both with p < 0.001). In multivariate analysis, LV mass (OR = 1.02, 95%CI 1.005-1.027, p = 0.005) and age (OR = 1.038, 95%CI 1.004-1.053, p = 0.021) were independent predictors of arrythmias. In this sample, MAD was not associated with arrythmias.
Conclusions: Opposing to previous studies in our population, MAD was not associated with arrythmias but had an excellent capacity to predict MVI. Age and LV hypertrophy were independent predictors of arrythmias in our patients. Larger studies are needed to better stratify patients with MVP, as its association with arrhythmias, hospitalization and the need for intervention is not negligible.

P 122. CONTEMPORARY CORONARY ARTERY DISEASE PREVALENCE IN A VALVULAR HEART DISEASE POPULATION UNDERGOING SURGERY

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Introduction: Patients undergoing heart valve surgery are routinely evaluated for the presence of Coronary Artery Disease (CAD), with the standard practice of combining valve intervention with a revascularization procedure, notably Coronary Artery Bypass Graft (CABG). Older studies suggest rates as high as 50% prevalence of CAD in this population. However, CAD prevalence, its treatment and prognostic implication has been questioned recently.
Objectives: The goal of this study is to evaluate the baseline characteristics, prevalence of CAD and treatment strategies in a contemporary population with valvular heart disease (VHD) referred for valve surgery.
Methods: In a national multicentre registry, consecutive patients, from Jan 2015 to Dec 2016, with a formal indication for heart valve surgery referred for a pre-op routine invasive coronary angiogram (ICA) were systematically analysed. Baseline characteristics, valve pathology and CAD prevalence and patterns were determined. Obstructive CAD was defined as luminal angiographic stenosis ≥ 70% (≥ 50% for left main artery). The prognostic impact of the different valve disease and CAD treatment strategies were assessed.

Results: 1175 patients (mean age 72.5 ± 10.1; male 49.2%) were referred for pre-operative ICA. Valvular disease prevalence was: aortic stenosis (66.7%), aortic regurgitation (6.6%), mitral stenosis (6%), mitral regurgitation (19.2%), tricuspid regurgitation (7.5%). Multivalvular disease was present in 7.1%. Follow-up time was 29.06 ± 18.46 months. Prevalence of comorbidities was: Diabetes Mellitus (DM) 26%, chronic obstructive pulmonary disease (COPD) 5.7% and chronic kidney disease (CKD) 23.4%. Mean Euroscore II was 2.6%. Obstructive CAD was present in 27.3% patients. Mean Syntax score was 10.2 (< 22 in 88%, 23-32 in 10.2% and > 33 in 1.8%). Left main artery and 3-vessel disease were found in 13.1% and 11.8% of patients with CAD, respectively. Valvular surgery was ultimately performed in 80.3%. In patients with CAD, 57.3% were revascularized. All-cause mortality rate during follow-up was 12.9%, with 7.8% from cardiovascular causes. In univariate analysis DM, COPD, CKD, NYHA class, obstructive CAD and no surgery ($p < 0.05$) were associated with mortality on follow up. In multivariate analysis obstructive CAD (OR 2.36, 95%CI 1.53-3.65, $p < 0.01$) and no surgery (OR 6.05, 95%CI 3.95-9.30, $p < 0.01$) persisted as independent all-cause mortality predictors.
Conclusions: In a contemporary cohort of patients with VHD and surgical indication, CAD prevalence is lower (27.3%) than described in literature. Mortality rates were higher in patients with obstructive CAD and in those who never underwent surgery.

P 121. RELATIVE APICAL SPARING IN PATIENTS WITH SEVERE AORTIC STENOSIS: PREVALENCE AND SIGNIFICANCE

João Abecasis[1], Gustavo Sá Mendes[1], António Ferreira[1], Carolina Campino Padrão[1], Regina Ribeiras[1], Maria João Andrade[1], Rosa Gouveia[1], Daniel Gomes Pinto[2], Sância Ramos[1], José Pedro Neves[1], Pergiorgio Masci[3], Victor Gil[4], Nuno Cardim[5]

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Introduction: Relative apical sparing (RAS) of left ventricular longitudinal strain (LS) is a red flag for the diagnostic suspicion of amyloid cardiomyopathy (AC). However, it may present in patients with aortic stenosis, where the prevalence of transthyretin AC is being increasingly reported.
Objectives: To describe the prevalence of RAS deformation pattern in patients with aortic stenosis and its clinical significance.
Methods: We prospectively studied 53 consecutive patients (age: 71 ± 8 years, 51-84 years, 54.7% men) with severe symptomatic aortic stenosis-mean transaortic pressure gradient (AVmean): 54.6 mmHg [IQR 46.6-63.2]; aortic valve area 0.74 cm^2 [IQR 0.61-0.89]), referred for surgical aortic valve replacement with no previous history of ischemic cardiomyopathy. Beyond 12 lead-ECG and transthoracic echocardiography (TTE), all patients underwent cardiac magnetic resonance (CMR), with tissue characterization (T1 mapping, delayed enhancement and extracellular volume-ECV), before surgery. RAS was defined as *average apical LS/average basal LS + average mid LS > 1* at bidimensional LV longitudinal strain analysis by speckle tracking. Aortic valve replacement and septal myocardial biopsy were already performed in 26 patients. Aortic stenosis severity indexes, LV remodelling and tissue characterization was compared in both groups of patients, with and without RAS.
Results: RAS was present in 16 patients (30.8%). In the whole group of patients there were neither pseudoinfarct pattern or low voltage at ECG, nor infiltration suspicion from CMR study (native T1 value 1,047 ms [IQR 1,028-1,084]; ECV 22% [IQR 18-25]). Furthermore, none of the patients had the suspicion of amyloid deposition at histopathology. In overall patients, median CMR LV ejection fraction was 64.5% [IQR 51.3-70.8%] and 36 patients (67.9%) had non-ischemic delayed enhancement, with a median fraction of 6.0% [IQR 4.9-12.7%] of LV mass. Comparing both groups, RAS cohort showed a significantly higher AVmean, relative wall thickness, maximum septal thickness, peak systolic dispersion at TTE, as well as higher LV indexed mass, delayed enhancement and lower LV ejection fraction at CMR. RAS group has also higher NT pro BNP values (Table).
Conclusions: RAS is relatively common in this group of patients despite the absence of clinical and histological signs of myocardial infiltration. This deformation pattern occurs in patients with worse indexes of left ventricular remodeling and fibrosis, being consistent with a more advanced stage of the disease.

P 123. PREDICTORS OF MORTALITY IN MITRAL VALVE PROLAPSE

Pedro Silvério António[1], Joana Rigueira[2], Tiago Rodrigues, Inês Aguiar-Ricardo[2], Rafael Santos, Afonso Nunes-Ferreira, Nelson Cunha, Sara Couto Pereira[2], Pedro S. Morais[2], Joana Brito, Rui Plácido[2], Cláudio David, Susana Gonçalves[2], Fausto J. Pinto[2], Ana G. Almeida[2]

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Introduction: Mitral valve prolapse (MVP) is a prevalent valvular pathology, commonly associated with a benign prognosis. Previous series have reported

		RAS		No-RAS	*p-value*
TTE	**AVmean** (mmHg)	66.2	vs	54.1	***p= 0,044***
	Relative wall thickness (mm)	0.58	vs	0.48	***p= 0,013***
	Maximum septal thickness (mm)	17.9	vs	16.1	***p= 0,020***
	Peak systolic dispersion (ms)	69.1	vs	53.5	***p= 0,046***
CMR	**LV ejection fraction** (%)	53.7	vs	69.1	***p= 0,007***
	LV indexed mass (g/m2)	94.8	vs	75.7	***p= 0,029***
	Delayed enhancement (% of mass)	9.6	vs	5.7	***p= 0,044***
	NT-proBNP (ng/mL)	1872	vs	1042	***p= 0,039***

P 121 Figure

an excessive risk of mortality, however definite predictors of mortality remain to be established.
Objectives: We aimed to evaluate predictors of mortality in a population with MVP.
Methods: A single-center retrospective study of consecutive patients with MVP documented in transthoracic echocardiogram between January 2014 and October 2019. MVP was defined as systolic displacement of the mitral leaflet into the left atrium ≥ 2 mm from the mitral annular plane. Demographic, clinical, echocardiographic, electrocardiographic data were collected and adverse events, including mortality, were also analyzed during follow-up. The results were obtained using Chi-square and Student-t tests; logistic regression was used to find predictors of death.
Results: 247 patients were included (mean age 62.9 ± 18 years, 61% males), most with MVP involving the posterior leaflet (48.6%). 40% of the patients had symptoms, 47.4% had significant mitral regurgitation (> moderate), 18.6% had aortic dilatation and 25% had interventricular conduction delay in the ECG. During a mean follow-up of 30 ± 19 months, 38% had arrythmias, 27.1% needed mitral valve intervention (95% surgery and 5% percutaneous), 27.1% had atrial fibrillation, 0.8% had acute aortic syndrome, 13.3% had hospital admission for cardiovascular cause and 8.5% (n = 21) died. 9.3% (n = 23) of the patients had mitral annulus disjunction, but this was not associated with more death in our population. Acute aortic syndrome was associated with death (p = 0.019), as hospital admission (p = 0.003), LBBB (p = 0.001) and higher NYHA functional class (p = 0.006). Sinus rhythm (OR 0.3 95%CI 0.119-0.786, p = 0.014) and prolapse (OR 0.37 95%CI0.148-0.935, p = 0.035) according to the ESC classification (comparing to flail and billowing) predicted survival. In multivariate analysis hospitalization for cardiovascular cause (p = 0.011 OR 7.27 95%CI 1-59-33.3), higher NYHA functional class (III-IV) (p = 0.036 OR 5.7 95%CI 1.125-28.84) and the presence of LBBB (p = 0.021 OR = 6.78 95%CI 1.13-28.85) were independent predictors of mortality. Mitral regurgitation severity and intervention were not associated with death in this population.
Conclusions: Although commonly described as a benign entity, in our population MVP had a mortality rate of 8.5%, being hospitalization, severely symptomatic heart failure and LBBB predictors of death. More studies are needed to establish the definite markers of death in patients with MVP.

P 125. MITRAL VALVE PROLAPSE: AMERICAN VERSUS EUROPEAN GUIDELINES-WHICH ONE IS BETTER

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Introduction: According to the most recent recommendations of AHA, mitral valve prolapse (MVP) is defined as systolic displacement of the mitral leaflet into the left atrium (LA) of at least 2 mm from the mitral annular plane. The ESC recommendations define MVP, flail and billowing, according to the location of the leaflet tips in relation to the coaptation plan. Differences in outcomes considering these classifications are not established.
Objectives: To evaluate the differences in clinical presentation and outcomes of MVP considering AHA and ESC classifications.
Methods: Single-center retrospective study of consecutive patients with MVP (defined according to the AHA classification) documented in transthoracic echocardiogram between January 2014 and October 2019. Demographic, clinical, echocardiographic and electrocardiographic data were collected. The results were obtained using Chi-square and ANOVA tests.
Results: We included 247 patients (mean age 62.9 ± 18 years, 61% males) according to AHA classification; considering the ESC classification: 147 (59%) had prolapse, 30 (12%) flail and 67 (39%) billowing. In comparison to patients with flail and billowing, patients with MVP had less cordae rupture (p = 0.02). Prolapse was associated with better survival (p = 0.037) and was an independent predictor of survival (OR = 0.372, 95%CI [0.148-0.935], p = 0.035) Patients with flail were older in comparison to the ones with prolapse and billowing (71 ± 14 vs 63 ± 17 vs 60 ± 21 years, respectively, p = 0.022). Patients with flail were mostly men (80%, p = 0.028), with more significant mitral regurgitation (p = 0.003) and higher NYHA class (p = 0.018). They also had higher systolic pulmonary artery pressure (SPAP) (48 ± 23 vs 38 ± 18 vs 36 ± 12 mmHg, p = 0.015) and higher values of LV mass and posterior wall thickness (144 ± 32 vs 125 ± 44 vs 114 ± 37 g/m^2, p = 0.005 and 11 ± 1,5 vs 10 ± 1,7 vs 9 ± 1.9 mm, p = 0.009, respectively). Women had more billowing (p = 0.04) than prolapse and flail.
Conclusions: The ESC classification adds information to the AHA classification in what concerns to clinical presentation and prognosis of mitral valve prolapse, so both classifications should be used in daily practice.

Painel 1 - Insuficiência Cardíaca 5

P 144. LEVOSIMENDAN THERAPY IN PATIENTS WITH ACUTELY DECOMPENSATED CHRONIC HEART FAILURE-OUTCOMES AND MORTALITY PREDICTORS

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Introduction: Levosimendan is a novel agent for the treatment of acutely decompensated chronic heart failure (ADCHF). Besides patient's (pts) hemodynamic and symptomatic improvement, levosimendan also showed a survival advantage.
Objectives: To characterize the population of pts with ADCHF who were submitted do levosimendan treatment in what concerns baseline characteristics and long-term outcomes, as well as to determine mortality predictors.
Methods: Single center retrospective study that analyzed pts with ADCHF submitted to levosimendan therapy in the last 10 years (2008-2018). Clinical and imaging data were collected, as well as long term outcomes (hospital admission and mortality). Uni and multivariate analysis were used to determine mortality predictors.
Results: We analyze a total of 106 hospitalizations in 75 pts, 81% males with a mean age of 66 ± 45 years old. 75% of pts were in NYHA class 4 and the mean left ventricle ejection fraction (LVEF) was 22.6 ± 6.9%. The average number of previous HF admissions was 1.5 ± 1.2, with a mean hospitalization time of 25 ± 21 days. Most pts were admitted through the emergency department (49.1%). The main cause for initiating levosimendan infusion was decompensated HF (NYHA class 4). 18.9% were in cardiogenic shock. Previously to administration, the mean systolic blood pressure (SBP) was 99 ± 15 mmHg, mean creatinine (Cr): 1.7 ± 0.9 mg/dL and mean NTproBNP: 9,840 ± 9,143 pg/mL. Levosimendan was administered as a 24h infusion and 54% of pts tolerated a dose titration up to 0.2 μg/kg/min. 29 pts required concomitant dobutamine treatment and 14% required vasopressor therapy. 7 pts had adverse effects: 5 severe hypotension and 2 hepatotoxicity. After levosimendan perfusion, we found a significant reduction on Cr value (1.7 vs 1.2 p < 0.001), NT-proBNP value (9,840 vs 5,116 p < 0.001) and number of hospitalizations (1 vs 2 p = 0.004). Most pts improved to NYHA class 3 and 22% presented an improvement of LVEF of at least 5%.21% of pts died during hospitalization and 43.4% died in the next 12 months. For our population, the 12 months mortality predictors were: concomitant dobutamine treatment (HR: 3.6 p < 0.001), number of days of hospitalization prior to the infusion (HR: 1.03, p = 0.022), initial LVEF value (HR: 1.06 p = 0.021) and absence of NYHA class improvement, especially maintenance in NYHA class IV (HR: 1.8 p = 0.008 and HR 3.6, p = 0.003, respectively).
Conclusions: Treatment of levosimendan was safe and associated with a clinical and analytic improvement, namely Cr and NTproBNP reduction as well as reduced number of hospitalizations. However, the mortality rate remains a major challenge in these pts.

P 145. DAPAGLIFLOZIN IN A REAL-WORLD POPULATION WITH CHRONIC HEART FAILURE: HOW MANY WOULD BE ELIGIBLE?

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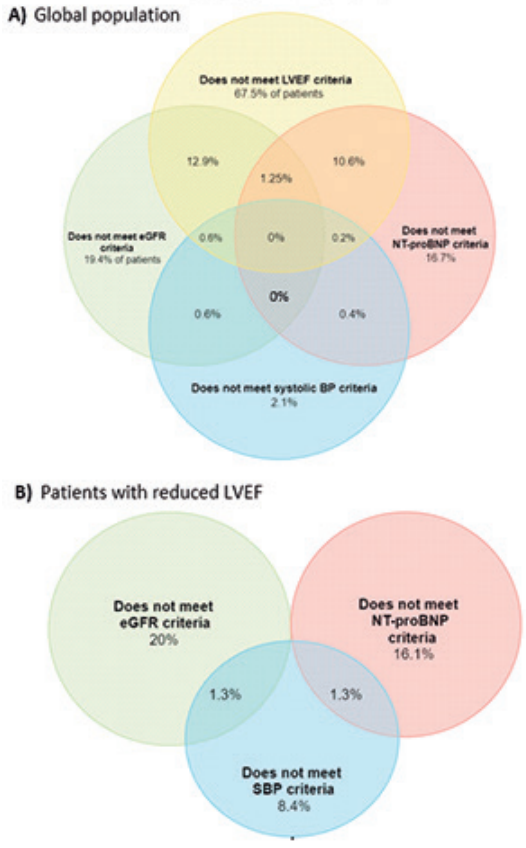
Introduction: In patients with heart failure (HF) and reduced left ventricle ejection fraction (LVEF), the sodium-glucose cotransporter inhibitor (iSGLT2) dapagliflozin has recently been shown to reduce the risk of worsening heart failure or death from cardiovascular causes in the DAPA-HF trial. Results of iSGLT2 in HF with preserved LVEF are awaited. Our goal was to investigate how many patients in a real-world setting would be eligible for dapagliflozin according to the DAPA-HF criteria.

Figure 1. Venn diagram for patients eligible for dapagliflozin according to the DAPA-HF criteria



Methods: This is a single-center retrospective study enrolling consecutive patients followed in an HF Clinic from 2013 to 2019. The key DAPA-HF inclusion criteria [i.e., Left Ventricular Ejection Fraction (LVEF) < 40% and NT-proBNP > 600 pg/mL (or > 900 pg/ml if AF)] and exclusion criteria [estimated glomerular filtration rate (eGFR) < 30 ml/kg/1.73 m^2, systolic blood pressure (SBP) < 95 mmHg] were considered.
Results: Overall, 479 patients (mean age 75.7 ± 12.8 years; 50.4% male; 78.8% with hypertension; 45.0% with an eGFR < 60 ml/min/1.73 m^2; 36.5% with type 2 diabetes mellitus; 33.5% ischaemic HF) were assessed. Of these, 155 (33.2%) patients had LVEF < 40%. Patients had a mean SBP of 131 ± 28 mmHg, a median eGFR of 48 (IQR 33-65) ml/min/m^2 and a NT-proBNP of 2,183 (IQR 1,010-5,310) pg/mL Overall, according to the DAPA-HF trial key criteria, 88 patients (18.3%) would be eligible for dapagliflozin. The remainder would be excluded due to a LVEF > 40% (67.5%), eGFR < 30 ml/min/1.73 m^2 (19.4%), NT-proBNp < 600 pg/mL (or < 900 pg/mL if AF) (16.7%) and/or SBp < 90 mmHg (2.1%) (Figure). If we limit the analysis to those with a LVEF < 40%, 56.7% would be eligible for dapagliflozin. The remainder would be excluded due to a eGFR < 30 ml/kg/1.73 m^2 (20%), NT-proBNp < 600 pg/mL (or < 900 pg/mL if AF) (16.1%) and/or SBp < 90 mmHg (8.4%) (Figure).
Conclusions: Roughly one in every five patients in our real-world HF cohort would be eligible to start dapagliflozin according to the key criteria of the DAPA-HF trial. The main reason for non-eligibility was a LVEF > 40%. These findings highlight the urgent need for disease-modifying drugs in mid-range and preserved LVEF. The results of ongoing iSGLT2 trials in these LVEF subgroups are eagerly awaited.

P 146. DOES ATRIAL FIBRILLATION INFLUENCE THE PERFORMANCE OF SURVIVAL SCORES FOR ADVANCED HEART FAILURE?

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Background and aim: The prognostic evaluation of ambulatory patients with advanced heart failure and reduced ejection fraction (HFrEF) is essential to guide treatment decisions, such as listing for transplantation. Multiparameter scores and cardiopulmonary exercise testing (CPET) are recommended in this context. We evaluated whether atrial fibrillation (AF) affects the prognostic value of four prognostic scores for HFrEF.
Methods: Single-centre retrospective cohort study of consecutive HFrEF patients undergoing CPET for functional and prognostic assessment from October 1996 till May 2018. The Heart Failure Survival Score (HFSS), Seattle Heart Failure Model (SHFM), Meta-analysis Global Group in Chronic Heart Failure (MAGGIC) and Metabolic Exercise Cardiac Kidney Index (MECKI) were calculated for each patient. Primary endpoint was all cause mortality or urgent transplant (whichever came first within 2 years of follow-up). Cox-regression and ROC curve comparison analyses were performed to assess the added discriminative power of AF on top of each score.
Results: Overall, 387 patients were included in the analysis, median age 58 (IQR 49-65) years, and 77% were male. Ischemic heart disease was the most common aetiology for HFrEF (54%). Median peak oxygen consumption was 15.7 mL/kg/min (IQR 12.8-20.0). Permanent AF was present in 47 (12.1%) patients. Over the 2-year follow-up period, 48 patients died, and 52 underwent heart transplantation (of which 25 were urgent). HFSS showed the weakest (c-statistic 0.581; 95% [CI] 0.54-0.71) and MECKI score the strongest (c-statistic 0.848; 95% [CI] 0.76-0.88) discriminatory ability for the outcome. Adding the occurrence of AF to the MAGGIC and HFSS improved their prognostic ability, although it did not reach statistical significance

	Score alone		Score + AF		p for comparison
Score	c-statistic	CI	c-statistic	CI	
HFSS	0.581	0.604-0.727	0.617	0.507-0.727	0.066
SHFM	0.757	0.695-0.820	0.754	0.665-0.842	0.866
MAGGIC	0.675	0.615-0.734	0.691	0.6-0.781	0.07
MECKI	0.848	0.797-0.898	0.765	0.657-0.873	<0.001

P 146 Figure

(Table). In contrast, adding AF on top of the MECKI score significantly reduced its prognostic ability (p < 0.001).
Conclusions: The presence of AF did not add significant prognostic information on top of current available HFrEF survival scores.

P 47. AVALIAÇÃO DO ESTADO DE SAÚDE DE PACIENTES ACOMPANHADOS NUMA CLÍNICA DE INSUFICIÊNCIA CARDÍACA

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Introdução: A insuficiência cardíaca (IC) é uma síndrome com significativa morbidade e impacto socioeconómico. O estado de saúde (ES) relaciona-se com a perceção do impacto funcional dos sintomas na vida diária. O Índice Europeu de Qualidade de Vida (EuroQol) é um questionário validado internacionalmente que reflete a visão do doente sobre o seu ES, melhorando a sua sensibilidade e compreensão da doença.
Objetivos: Avaliar o ES e a sua variação em doentes com IC acompanhados numa clínica de IC (CIC).
Métodos: Análise retrospetiva e unicêntrica de doentes acompanhados numa CIC desde 3/2011, com diagnóstico de IC há pelo menos 1 ano ou com internamento prévio por IC, que completaram o questionário EuroQol no ano de 2018. O EuroQol é composto por 3 componentes: uma escala visual sobre a perceção do ES no dia da consulta; uma questão sobre o entendimento do seu ES atual comparado com 1 ano antes; 5 perguntas relacionadas com as principais áreas da avaliação do ES.
Resultados: Incluídos 88 doentes. A média de idade foi de 60 ± 13,4 anos; 78,4% de sexo masculino. 65% com IC de etiologia isquémica. Não foram encontradas diferenças significativas na autoavaliação do ES entre géneros. Houve uma correlação inversa entre ES e idade. Doentes residentes em áreas urbanas e com maior nível de escolaridade tiveram melhor perceção do ES. 46% referiam ansiedade/depressão (16% dos doentes referiam sentir-se extremamente ansiosos/deprimidos). Em relação à escala visual, a perceção média do ES no momento da consulta foi de 64,3 ± 17,6. Comparando a questão relativa à compreensão do seu ES atual com a anteriormente avaliada, 54,5% obtiveram melhoria.
Conclusões: Na nossa coorte constatou-se uma melhoria na perceção do ES dos doentes em comparação com o ano anterior. Não obstante, os doentes apresentavam altos níveis de ansiedade/depressão, alguns até referindo estes sintomas de forma extrema. Apesar de parecer existir uma melhoria que poderá refletir o impacto da CIC na vida dos doentes, este questionário permite-nos melhorar a nossa intervenção na vida do doente, criando alertas para a necessidade de desenvolver intervenções em áreas específicas (como a ansiedade/depressão) com objetivo de abordar estes temas à posteriori em sessões de Enfermagem e melhorar o ES geral.

P 148. MMSE/MOCA: ESTUDO COMPARATIVO NUMA UNIDADE DE INSUFICIÊNCIA CARDÍACA -RESULTADOS PRELIMINARES

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Introdução: A insuficiência cardíaca (IC) tornou-se uma prioridade entre as doenças crónicas devido ao seu impacto económico e social. A educação para a saúde é uma grande aliada à terapêutica farmacológica reduzindo os internamentos por IC e auxiliando no controlo da sua sintomatologia, através da deteção precoce das descompensações e tratamento destas. Considerando que a performance dos testes *Mini-Mental State Examination* (MMSE) e *Montreal Cognitive Assessment* (MoCA) para determinar a capacidade cognitiva da pessoa com IC não é consensual, pretendemos avaliar a sua eficácia, com vista à orientação dos ensinos sobre a doença no doente ou no cuidador. Na nossa unidade de IC aplicamos o MMSE para avaliar o potencial do doente para melhorar os conhecimentos. No entanto, com o decorrer do tempo, mostrou-se um instrumento deficitário, uma vez que muitos daqueles que não apresentavam déficit cognitivo tinham dificuldade em reter a informação não adquirindo os conhecimentos desejados.
Métodos: Aplicámos ambos os testes a todos os doentes internados consecutivamente na nossa unidade sem diagnóstico prévio de demência, entre Outubro de 2019 e Dezembro de 2019. Estes são aplicados sequencialmente até às primeiras 48h de internamento. Será utilizado o *SClinico* para identificação dos doentes com diagnóstico de *Potencial para melhorar os conhecimentos* e desses, os que não adquiriram conhecimento após terem sido executadas intervenções no âmbito do ensinar durante o internamento. Fizemos uma análise semelhante tendo em conta os resultados do MMSE e do teste MoCA referentes aos mesmos doentes, e correlacionámos com a capacidade de aprendizagem dos mesmos na tentativa de determinar qual dos testes seria o mais sensível para a identificação de defeito cognitivo, aspeto determinante no processo ensino aprendizagem.
Resultados: Dos 39 doentes internados nesse período, 17 foram excluídos por serem: analfabetos (4), por incapacidade de preenchimento nas primeiras 48h ou de forma sequencial (descompensação/exames (11)), por óbito (4) e 23 foram incluídos na análise, 14 homens e 9 mulheres, idade média de 74,19 anos. Destes 23, 11 apresentaram MMSE sem deficit cognitivo, mas com MOCA com deficit cognitivo ligeiro (7) e deficit cognitivo ou outras demências (4). Destes, apenas nos com deficit cognitivo ou outras demências, com escolaridade entre 1 e 6 anos, não adquiriram conhecimentos tendo que recorrer ao prestador de cuidados, enquanto os outros conseguiram adquirir conhecimentos. Todos os doentes com deficit cognitivo no MMSE apresentam deficit cognitivo no MoCA.
Conclusões: Ao pretendermos educar para a saúde o maior número possível de doentes, o MMSE parece servir melhor o nosso propósito- é preferível insistir em 4 que não aprendem do que excluir 11 dos quais 7 têm potencial de aprendizagem. A aplicação simultânea dos doistestes poderá, contudo, melhorar a performance de cada um isoladamente.

P 149. PREDICTORS "RELAPSE"AFTER IMPROVED EJECTION FRACTION IN PATIENTS WITH HEART FAILURE

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Introduction: Patients with systolic dysfunction that improved/recovered left ventricular ejection fraction (LVEF) present a more favourable clinical profile when compared to patients that maintain dysfunction. However, little is known about the characteristics of patients who "relapse" after LVEF improvement.
Objectives: Evaluate prevalence, clinical characteristics and outcomes of patients in whom ejection fraction declined after previous improvement.
Methods: We retrospectively studied patients followed at a heart failure (HF) clinic with left ventricle systolic function improvement after an initial diagnosis of HF with reduced ejection fraction (EF), which was defined as having an LVEF > 40% on follow-up. We then evaluated the presence of LVEF "relapse" in these patients-a decline in LVEF to < 50% or < 40%, in cases where it recovered to preserved EF or to mid-range EF, respectively. We analysed patient demographic factors, previous medical history, medication, echocardiographic parameters and outcomes. We used logistic regression to assess the predictors of LVEF "relapse".
Results: 98 patients were studied, 70 (71%) male, median age 69 (58-76) years. Patient characteristics are described in Table 1. In this population, 54 (55%) patients had recovered EF (> 50%) and in 44 (45%) it had improved to mid-range values. In 36 (37%) occurred LVEF "relapse": in 10 (10%) patients to an EF 40-50% and in 88 (90%) to an EF < 40%. Ischemic cardiomyopathy and non-ischemic dilated cardiomyopathy were the main HF aetiologies (38% and 35%, respectively). 36 (37%) patients had a previously implanted cardiac electronic device, 17 (17%) an implantable cardioverter-defibrillator and 21 (21%) a

Previous medical history	
Arterial hypertension, n (%)	70 (71)
Type 2 diabetes *mellitus*, n (%)	33 (34)
Dyslipidemia, n (%)	61 (62)
Alcohol abuse, n (%)	23 (23)
Coronary heart disease, n (%)	39 (40)
Stroke, n (%)	13 (13)
Atrial fibrillation, n (%)	68 (69)
Valvular heart disease, n (%)	25 (26)
Chronic kidney disease, n (%)	27 (28)
Respiratory disorders, n (%)	34 (35)
Cancer, n (%)	19 (19)
HF etiology	
Ischemic, n (%)	37 (38)
Non-ischemic dilated cardiomyopathy, n (%)	34 (35)
Valvular, n (%)	5 (5)
Alcohol/chemotherapy/radiation therapy, n (%)	19 (19)
Tachycardia induced cardiomyopathy, n (%)	12 (12)
Other, n (%)	8 (8)

Table 1: Patient characteristics

	With "relapse"	Without "relapse"	Univariate analysis OR (95% CI), p-value	Multivariate analysis OR (95% CI), p-value
HF duration in years, median (IQR)	8 (4)	6 (5)	1.142 (1.014-1.286), **0.028**	1.125 (0.986-1.284), 0.079
Type 2 Diabetes *mellitus*, n (%)	19 (53)	17 (27)	2.958 (1.252-6.991), **0.013**	3.039 (1.082-8.537), **0.035**
Left main or LAD coronary disease, n (%)	15 (43)	8 (13)	4.969 (1.827-13.512), **0.002**	3.991 (1.271-12.529), **0.018**
Valvular heart disease, n (%)	17 (47)	9 (15)	5.269 (2.011-13.803), **0.001**	4.953 (1.662-14.760), **0.004**
Chronic kidney disease, n (%)	16 (44)	13 (21)	3.015 (1.229-7.400), **0.016**	2.564 (0.898-7.317), 0.079

Table 2: Predictors of LVEF "relapse"
HF: Heart failure; LAD: left anterior descending artery

P 149 Figure

cardiac resynchronization therapy device. During a median follow-up of 7 years, 39 (40%) patients had at least one HF hospitalization. Global mortality was 30%, with no significant statistical difference between the two groups. In univariate analysis, HF duration, type 2 diabetes *mellitus*, left main or left anterior descending coronary disease, valvular heart disease and chronic kidney disease predicted LVEF "relapse". In multivariate analysis, type 2 diabetes *mellitus*, left main or left anterior descending coronary disease and valvular heart disease were the only predictors of LVEF "relapse" (Table 2).
Conclusions: In this group of patients, LVEF "relapse" after it had initially improved was frequent and was predicted by the presence of type 2 diabetes mellitus, left main or left anterior descending coronary disease and valvular heart disease. Despite improved systolic function, these patients remain at high risk, thus the need to maintain treatment.

Painel 10 - Doença Valvular 6

P 198. HYPERTROPHIC CARDIOMYOPATHY IN THE ELDERLY-DOES AGE MATTER?

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Introduction: Hypertrophic Cardiomyopathy(HCM) is usually diagnosed until the 5th decade. With aging, this diagnosis (dx) is increasing later in life. Some studies point out that in elderly, HCM has different clinical and morphological characteristic and a more (+) benign prognosis.
Objectives: To evaluate in patients (pts) of a country-based nationwide HCM registry if the elderly (HCM diagnosed at or after 65 years old(≥ 65Y)) have clinical, morphological and prognostic differences than younger ones (less (<) than 65 years (< 65Y) at dx).
Methods: Of the 1,033 patients (pts) studied (mean age of 53.3 ± 16.6 years), 28.5% had ≥ 65Y. During the follow-up (median of 3 years) 3.5% of the pts died. A comparative analysis (≥ 65Y versus (vs) < 65Y) was done with all registry data.
Results: Elderly were + frequently (freq) women (p < 0.001), + symptomatic (Symp) at dx (presenting + freq with heart failure (HF) (p < 0.001) and angina (p = 0.004)) and at 1st evaluation (p < 0.001), had + history (hx) of atrial fibrillation (AF), hypertension, coronary disease (p < 0.001), valvular disease (p = 0.002), cerebrovascular and pulmonary diseases (p < 0.001) but < familiar hx of HCM (p < 0.001) and sudden death (p = 0.011). On ECG had + AF (p < 0.001), ST-T abnormalities (p = 0.041) and left bundle block (p = 0.024). On echocardiogram (echo) elderly had larger left atriums (p = 0.041) and ventricles (LV) (p = 0.027), + freq apical morphology (p = 0.002), diastolic dysfunction (p = 0.002), mitral regurgitation and higher (>) intraventricular gradient (IVg) (p < 0.001). On Holter, they had + AF (p = 0.003) and ventricular extrasystoles (p = 0.027). Were + Symp on exercise (Exer) test (p = 0.003) with < functional capacity (p < 0.001). On Exer echo had > IVg in orthostatism (p = 0.006) but on cardiac magnetic resonance imaging < maximum thickness of LV (p = 0.004). They have + coronary artery disease on cardiac computed tomography (p = 0.003) and > values of brain natriuretic peptide (p < 0.001) at dx. Elderly were + treated with amiodarone (p = 0.039), calcium and angiotensin II antagonist, ACE inhibitors, diuretics, anticoagulants and antiplatelet drugs (p < 0.001). They underwent + pacemaker implantation but < implantable cardioverter defibrillator implantation (p < 0.001). At follow-up, elderly overall mortality was > (p < 0.001); they also remain + Symp (p < 0.001), were + often hospitalized for angina (p = 0.006) and HF (p < 0.001) but < submitted to procedures (p = 0.004) and had < risk of sudden death (p = 0.011). Mortality predictors were different in the 2 groups (Table). In multivariable modelling, age ≥ 65Y remained independently associated with overall mortality (HR 6.853 [2.579-18.212], p < 0.001).

Predictors of death from any cause

>=65Y			95% CI for HR	
Preditors	p-value	HR	Lower	Upper
Body mass index <=26.4	0.004	6.143	1.790	21.080
History of sudden death	0.006	3.311	1.408	7.813
<65Y			**95% CI for HR**	
Preditors	p-value	HR	Lower	Upper
TNNI3 mutation	0.015	6.567	1.443	29.892
Global population			**95% CI for HR**	
Preditors	p-value	HR	Lower	Upper
Age >=65 years	<0.001	6.853	2.579	18.212
HF at 1st evaluation	0.001	3.817	1.368	10.638
TNNI3 mutation	0.012	7.006	1.527	32.139

Conclusions: In this population we can say that age matters, since elderly pts form a distinct group with a clearly different clinical presentation, evolution and morphological characteristics, but unlike other studies, they had worse prognosis.

P 199. CLINICAL DESCRIPTION AND FOLLOW-UP OF ADULT HYPERTROPHIC CARDIOMYOPATHY PATIENTS

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Introduction: Hypertrophic cardiomyopathy (HCM) is the most common inherited heart disease, with a notable heterogeneity regarding clinical presentation, instituted therapies and prognosis.
Objectives: This study aimed to describe an adult patient population with the diagnosis of HCM, based on clinical and outcome data.
Methods: Retrospective study of consecutive adult patients diagnosed with HCM between 2008 and 2019 (year of initial diagnosis). Demographical, clinical, imaging, electrocardiographic and outcome data were collected based on the patient follow-up.
Results: A total of 58 patients were included in this study, with a median follow-up of 2.6 years [interquartile range (IQR) 1.4-5.8 years]. The median age at diagnosis was 57.0 years (IQR 42.8-65.2 years) and 60.3% (n = 35) of the patients were male. HCM was reported as familial in 50% (n = 29) of the cases and a genetic test was ordered in 51.7% (n = 30). A pathogenic or likely pathogenic variant was found in 65.4% of the patients tested (n = 17), mainly in the *MYH7* gene. The most frequent reported symptom was fatigue (56.9%, n = 33), followed by chest pain (29.3%, n = 17); 13.8% (n = 8) were reported as being asymptomatic. Patients often presented with atrial fibrillation (62.1%, n = 36), arterial hypertension (60.3%, n = 35) and dyslipidemia (53.4%, n = 31). In what regards HCM phenotypic variant, the most common was septal non-obstructive (53.4%, n = 31); obstructive variant was present in only 27.6% of the patients (n = 16) of whom 18.8% (n = 3) were offered septal reduction therapy. Regarding electrocardiographic data, T wave inversion was the most frequent observed alteration (58.6%, n = 34). Only 27.6% showed electrocardiographic signs of left ventricle hypertrophy (n = 16). A total of nine patients (15.9%) had an estimated five-year risk of sudden cardiac death > 6%, nonetheless a cardioverter-defibrillator was implanted in 14 patients (24.1%). During follow-up, a total of three patients died (all-cause mortality of 1.4%/year).
Conclusions: In the present cohort of patients, HCM is characterized by an advanced age of diagnosis, with frequent comorbidities and a high genetic burden with variants in *MYH7* gene being the most frequent. All-cause mortality in this population was low, with only a few patients having a high estimated five-year risk of sudden cardiac death.

P 200. TRANSTHYRETIN AMYLOID CARDIOMYOPATHY OPPORTUNISTIC DIAGNOSIS: WHERE'S WALLY?

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Introduction: Transthyretin Amyloid Cardiomyopathy (ATTR-CM) is an underdiagnosed though treatable cause of Heart Failure (HF). We aimed to determine the prevalence of incidental ^{99m}Tc-HMDP myocardial uptake in patients undergoing bone scintigraphy for a non-cardiac reason.
Methods: We conducted a single-center prospective study enrolling patients without previously known HF who consecutively underwent ^{99m}Tc-HMDP bone scintigraphy for a non-cardiac reason, throughout the year 2019. Images

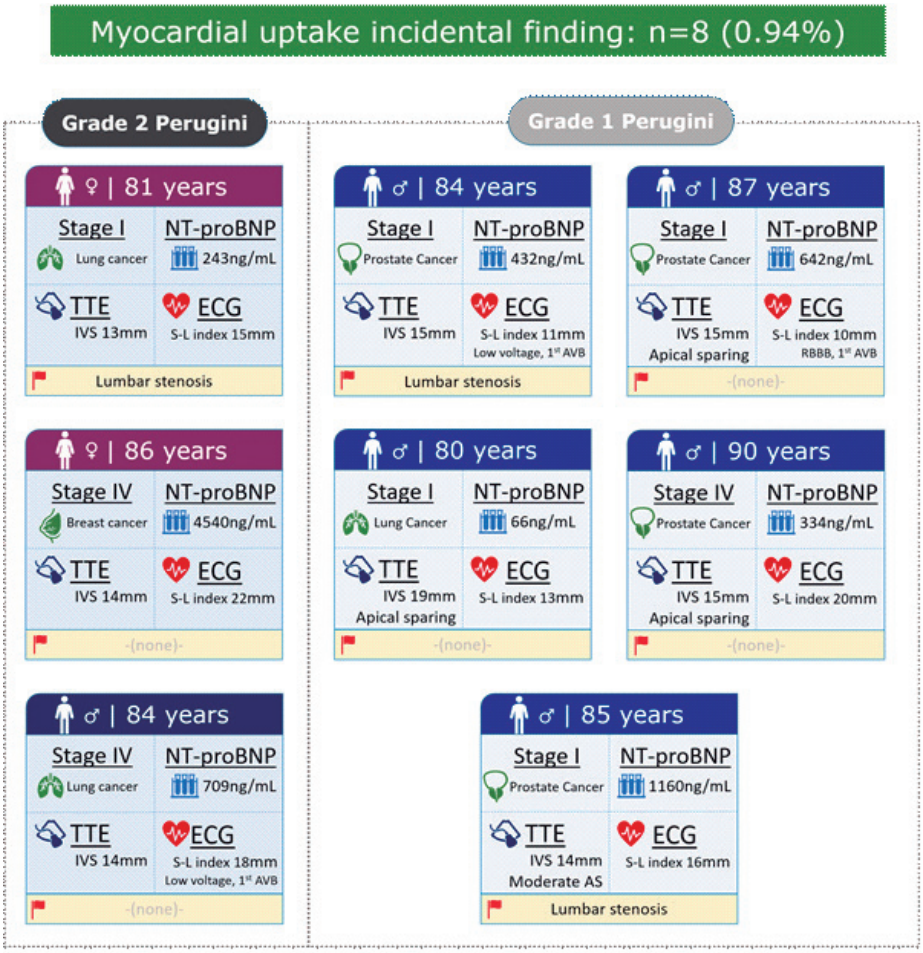

Figure 1: Patients with an incidental finding of myocardial radiotracer uptake; AS = Aortic Stenosis; AVB = Atrioventricular Block; ECG = Electrocardiogram; IVS = Interventricular Septum; S-L = Sokolow-Lyon; TTE = Transthoracic Echocardiography.

P 200 Figure

were independently assessed by two experienced analysts blinded to patient data. Those who had myocardial radiotracer uptake Perugini grade 1-3 were identified and screened for ATTR-CM.
Results: A total of 877 patients underwent bone scintigraphy in our center, of whom 24 (2.74%) for suspected ATTR-CM (1 with grade 1 and 9 with grade 2-3 Perugini). The latter were excluded from further analysis. Thus, 853 patients (mean age 69 ± 13 years; 49.9% male; 91.7% referred for oncologic staging or surveillance) were included. There were 8 (0.94%) patients with the incidental finding of myocardial radiotracer uptake, 5 of whom with grade 1 and 3 with grade 2 Perugini. All had AL amyloidosis thoroughly excluded. Patients were ≥ 80 years of age, most (n = 6) were male, with good functional status (e.g., n = 6 had a Karnofsky Performance Status Scale ≥ 80), 3 with stage IV and 5 with stage I or cured cancer. Three patients had known lumbar stenosis and none had carpal tunnel syndrome. Three had NYHA ≥ II HF symptoms and NT-proBNP > 125 pg/mL was identified in 7 cases (range: 334-4,540 pg/mL). All were in sinus rhythm, none had ECG criteria for left ventricular hypertrophy (i.e., Sokolow-Lyon index range: 10-22 mm), and low-voltage (n = 2) or 1st degree AV block (n = 3) were additional ECG red flags. On echocardiography, interventricular basal septum was thickened in all cases (range: 13-19mm), while a few had apical sparing (n = 3) or LVEF < 55% (n = 2). One has non-invasive ATTR-CM diagnostic criteria, 4 are undergoing additional assessment and 3 under Heart Team discussion.
Conclusions: Incidental myocardial ^{99m}Tc-HMDP uptake was observed in roughly 1% of the cohort referred for bone scintigraphy for a non-cardiac reason. Despite the low prevalence, our strategy opportunistically identified 8 ATTR-CM potential cases over 1 year. Given the competing oncologic prognosis, a case-by-case individualized decision for invasive testing and disease-modifying treatment should be carefully considered.

P 201. LATE GADOLINIUM ENHANCEMENT AS A PREDICTOR OF ARRHYTHMIAS IN PATIENTS WITH HYPERTROPHIC CARDIOMYOPATHY

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Introduction: Patients with hypertrophic cardiomyopathy (HCM) are at increased risk of arrhythmias and sudden cardiac death (SCD). The Late gadolinium enhancement (LGE) in cardiovascular magnetic resonance (CMR) has been associated with the occurrence of arrhythmic events.
Objectives: The aim was to analyze the association between LGE burden and location and arrhythmic events in HCM patients (P).
Methods: Retrospective analysis of P with HCM in a single tertiary center. Baseline clinical, echocardiographic and CMR characteristics were collected. On follow up arrhythmias (ventricular fibrillation (VF), sustained ventricular tachycardia (SVT), non-sustained ventricular tachycardia (NSVT), paroxysmal supraventricular tachycardia (PSVT), atrial fibrillation (AF) and atrial flutter (AFL)) were identified. LGE on CMR was compared between patients with and without arrhythmias.
Results: 61P (59% male) were included, with a mean age of 58 ± 2 years. The HCM risk-SCD score was 3.35 ± 0.28%. On echocardiography mean left ventricle ejection fraction was 62.16 ± 1.36% and maximum wall thickness 20.59 ± 0.596 mm. 31.1% had systolic anterior movement of mitral valve and 26.7% had left ventricle outflow tract obstruction. LGE was present in 88.5% P with a median number of 5 ± 7 segments involved. Interventricular septum (IVS) was involved in 78.7% P, anterior wall in 57.4%, inferior wall in 54.1%, lateral wall in 52.5%, posterior wall in 9.8%, basal segments in 62.3%, median segments in 68.9% and apical segments in 63.9%. On follow up 3.3%P died, 45.8% had hospitalizations (22.2% because of an arrhythmia) and 75% had arrhythmias (1.6% VF, 6.6% SVT, 50% NSVT, 9.8% PSVT, 37.7% AF and 6.6% AFL). The number of segments with LGE correlated with arrhythmias (p = 0.05 for arrhythmias, p = 0.03 for SVT, p = 0.008 for NSVT and p = 0.042 for PSVT). A cut off of 5 segments involved was a good predictor of arrhythmias (p = 0.002), NSVT (p = 0.006), PSVT (p = 0.024) and AF (p = 0.0029). For SVT the best cut off was 9 (p = 0.003). Considering the LGE location, we found an association between the segments involved and the occurrence of different arrhythmias (Table).

	Arrhythmias	SVT	NSVT	PSVT	AF
Median Inferior IVS	**p = 0.007**	**p = 0.020**	**p = 0.002**	**p = 0.042**	**p = 0.042**
Median Anterior IVS	**p = 0.001**	**p = 0.025**	**p <0.0001**	p = 0.053	p = 0.068
Median Anterior Wall	**p = 0.042**	p = 0.077	**p = 0.028**	p = 0.080	p = 0.610
Basal Anterior IVS	**p = 0.017**	p = 0.255	**p = 0.002**	p = 0.899	p = 0.275
Apical Anterior Wall	p = 0.943	**p = 0.027**	p = 0.154	p = 0.058	p = 0.500
Median Inferior Wall	p = 0.137	**p = 0.030**	p = 0.243	p = 0.203	p = 0.349
Apical Inferior Wall	p = 0.655	**p = 0.030**	p = 0.605	p = 0.064	p = 0.573
Basal Inferior IVS	p = 0.092	p = 0.131	p = 0.063	p = 0.574	**p = 0.033**

Table 1. Associations between segments with LGE and arrhythmias

Conclusions: Supraventricular and ventricular Arrhythmias are frequent in patients with HCM, with the most frequents being NSVT and AF. The LGE burden (> 5 segments) and location (median inferior IVS, median anterior IVS, median anterior wall, basal anterior IVS, apical anterior wall, median inferior wall, apical anterior wall and basal inferior IVS) were correlated with arrhythmic events.

P 202. CARDIAC MAGNETIC RESONANCE EVALUATION AND CHARACTERIZATION OF FEATURES OF CARDIAC SARCOIDOSIS

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Introduction: Sarcoidosis is a multisystemic inflammatory disease, which accounts for substantial morbimortality. Cardiac involvement portends a worse prognosis. A major limitation in the evaluation of cardiac sarcoidosis is that no gold standard clinical diagnostic criteria exist. Cardiac magnetic resonance (CMR) may be indicated in patients with suspected cardiac involvement as a diagnostic and prognostic tool.
Objectives: The aim of this study was to characterize the features of cardiac involvement of sarcoidosis in patients with stablished diagnosis of the systemic disease, as well as to describe changes observed.
Methods: A multicenter, 6-years prospective study of all patients with sarcoidosis who performed CMR to evaluate possible cardiac involvement. We followed a protocol to evaluate the left and right ventricles (VE; RV) both anatomically and functionally, T2- weighted STIR sequences to evaluate myocardial edema and presence of late gadolinium enhancement (LGE).
Results: A total of 20 patients were included. Female patients accounted for 75% of the cases, and the mean age was 53 ± 15 years old. A majority of the patients (90%) had preserved LV (mean LV ejection fraction (EF) 63 ± 6%) and RV ejection fraction (mean RV EF 62 ± 7%). Patients observed presented with mean LV end diastolic indexed volume(EDIV) of 72 ± 19 mL/m^2 and mean RV EDIV of 63 ± 18 mL/m^2, with only one patient presenting with LV dilation(LV EDIV 138 mL/m^2) and two with RV dilation (mean RV EDIV 107 ± 6 mL/m^2). Possible features of cardiac sarcoidosis were present in 10% (n = 2) of patients. One of them presented with biventricular dilation and severe ejection fraction depression (LV EF 22% and RV EF 28%). LGE was observed in these two patients, with one presenting with an intramyocardial lesion with nodular appearance on the apical inferior segment and the other patient having its distribution characterized with two different patterns: linear appearance on the septal intramyocardium and subepicardial on the basal and mid segments of the inferior wall. On STIR sequences none of the patients presented with hypersignal suggestive of edema. None of them presented with left atrium dilation.
Conclusions: CMR provides a noninvasive and multidimensional assessment of the heart for evaluation of cardiac sarcoidosis. In our population of patients with

sarcoidosis but without established cardiac involvement diagnosis, CMR allowed a 10% increasement on the diagnosis of cardiac sarcoidosis. CMR myocardial fibrosis detection allowed a better stratification of patients with sarcoidosis.

P 203. ROLE OF CONDUCTION ABNORMALITIES IN HYPERTROPHIC CARDIOMYOPATHY

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Introduction: Conduction abnormalities as left bundle branch block (LBBB) are common in myocardial disease and contributes to LV dyssynchrony and adverse LV remodeling. The relevance of LBBB in the context of hypertrophic cardiomyopathy (HCM) is unclear. The aim of this study is to find factors that contribute to LBBB in HCM and its impact in prognosis.
Methods: Retrospective single-center study of 36 consecutive patients (pts) with HCM defined by wall thickness ≥ 15 mm in ≥ 1 LV myocardial segments in CMR; pts with history of uncontrolled hypertension (HTN) and significant valvular disease were excluded. Demographic, clinical, ECG and CMR data (including volumes, LGE and strain using feature tracking using the application of Circle CVi 42®) were analyzed. For statistical analysis χ^2 test, Mann-Whitney and logistic regression model were used.
Results: Patient's median age was 63 years (IQR: 49.5-74.8), 64% men. 69% had controlled hypertension, 46% dyslipidemia and 23% diabetes; family history of sudden death and HCM occurred in 16% and 46% respectively. 42% had genetic study and mutations were identified in 25% (TNNT2: 8%; MYBPC3: 6%).During a mean follow-up (FUP) of 17 ± 11 months, 24% had HF, 3% thromboembolic events, 26% new onset atrial fibrillation, 20% ventricular tachycardia (VT), 29% received an ICD and 3% died. On ECG evaluation, 49% had LVH criteria, 33% had intraventricular disturbance conduction with 12% having LBBB, and 39% T wave inversion. On CMR, most pts had septal hypertrophy (81%), 11% apical, 3% anterior-wall LVH and 6% lateral-wall hypertrophy. SAM was present in 28% and LVOTO in 33%. 69% of the patients had LGE (midwall: 61%, subendocardial: 11%, subepicardial: 3%; at segments with LVH: 47%, RV/LV insertion points: 25%, other: 19%); the median LGE was 13.6 g (IQR 6.7-22.4) corresponding to 7.4% of the LV mass (IQR 3.7-10.9). The median of the maximal wall thickness was 19 mm (IQR 16.9-20.9), median LVEF was 70% (IQR 35-87); median LV indexed mass of 105 g/m² (IQR 54.9-160.7). The median longitudinal strain in 4 and 2 chambers was -9.1 (IQR -15.6--4.6) and -9.1 mm (-16- -2.6), respectively and the median radial strain in 4 and 2 chambers was 15.6 (IQR 6.5-28.2) and 13.7 (3.5-30.1), respectively. The presence of LGE in RV/LV insertion points (p = 0.019) and in the area of higher LVH (p = 0.033) was associated with LBBB. Patients with LBBB had more VT and ICD implantation in follow-up (p = 0.038). The area of LGE involving the RV/LV insertion points was an independent predictor of LBBB (p = 0.021, OR 36.0, IC: 1.710-757.79).
Conclusions: Fibrosis in the RV/LV insertion points in CMR is an unspecific finding in patients with and without cardiomyopathy. In our sample, it was an independent predictor of LBBB, which was associated with ventricular arrhythmias in FUP. Further studies with larger number of patients and longer FUP are needed to confirm our findings.

Painel 11 - Cardiologia Intervenção 3

P 204. VASCULAR CLOSURE DEVICES IN TAVI: MANTA® VERSUS PROGLIDE® IN A PROPENSITY-MATCHED POPULATION

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Introduction: Vascular complications increase morbidity and mortality in transcatheter aortic valve implantation (TAVI). A collagen plug-based closure device-*MANTA®* was recently introduced as an alternative to the

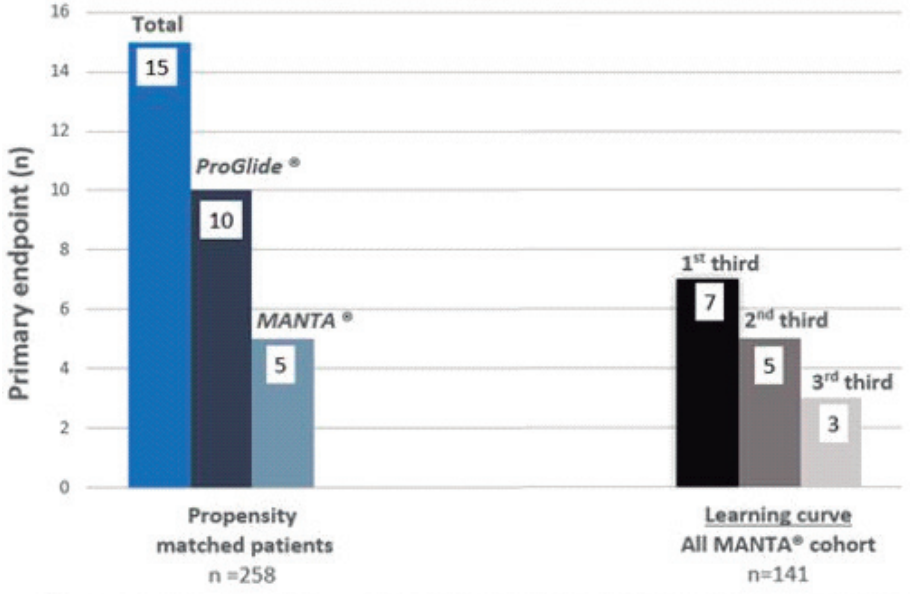

Figure 1: *(a) Numerical Comparison between primary endpoints in ProGlide® vs MANTA® propensity matched patients; (b) Learning curve showing numerically lower primary endpoints events in every MANTA® patients treated, over time (the patients was divided in thirds - 47patients for each period).*

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suture-mediated *ProGlide®* vascular closure device (VCD). Data regarding the efficacy and safety comparing both VCD is scarce. The present study sought to compare the effectiveness of both devices.
Methods: Single center retrospective analysis on prospectively collected data of 300 consecutive patients who underwent TAVI using *MANTA®* or *ProGlide®* since 2018. A 1:1 propensity-score matched population derived by a multivariate logistic regression model based on age, sex, body mass index, pre-procedural haemoglobin, EuroSCORE II, main access calcification and the sheath-to-artery ratio. The primary endpoint was the composite of major or life-threatening bleeding (VARC-2 definition), femoral artery stenosis/dissection, pseudoaneurysm and need for endovascular/surgical bailout intervention.
Results: The propensity score matching resulted in 129 matched pairs. The median age was 84 years old [IQR 80-87], 42% males with a median EuroSCOREII of 4.29% [IQR 3.05-6.24]. There were no differences in the primary endpoint between MANTA® and ProGlide® cohorts (3.9% vs 7.8%, p = 0.287, respectively). The rates of the primary endpoint with the *MANTA®* device decreased with center experience, with relatively steep learning curve effect concerning device success. Major or life-threatening bleeding (3.1% vs 5.4%, p = 0.540) and pseudoaneurysm (0.8% vs 2.3%, p = 0.622) occurred less frequently in MANTA® cohort, but the differences did not reach statistical significance. Endovascular (stent or balloon) or surgical rescue intervention (9.3% vs 5.4%, p = 0.341) and femoral artery stenosis/dissection (6.2% vs 3.1%, p = 0.376), were also similar rates. In ProGlide® cohort, to achieve VCD success (without primary endpoint events), 15.5% needed more than 2 devices, significantly different from MANTA ® (p < 0,001).
Conclusions: In patients undergoing transfemoral TAVI, the *MANTA®* VCD showed a similar efficacy and safety compared to the *ProGlide® device* and it reduced significantly the need of additional VCDs for completion of hemostasis. These results were obtained despite a clear learning curve associated with MANTA.

P 205. TEMPORAL TRENDS AND OUTCOMES AFTER TAVI: WHAT WE HAVE LEARNED OVER THE PAST DECADE

Pedro Gonçalves Teixeira[1], Ana Raquel Barbosa[1], Cláudio Guerreiro[1], João Gonçalves Almeida[1], Ana Mosalina[1], Pedro Ribeiro Queirós[1], Cátia Serena[2], Mariana Silva[1], Gualter Silva[1], Mariana Brandão[1], Diogo Ferreira[1], Ricardo Fontes-Carvalho[1], Adelaide Dias[1], Alberto Rodrigues[1], Pedro Braga[1]

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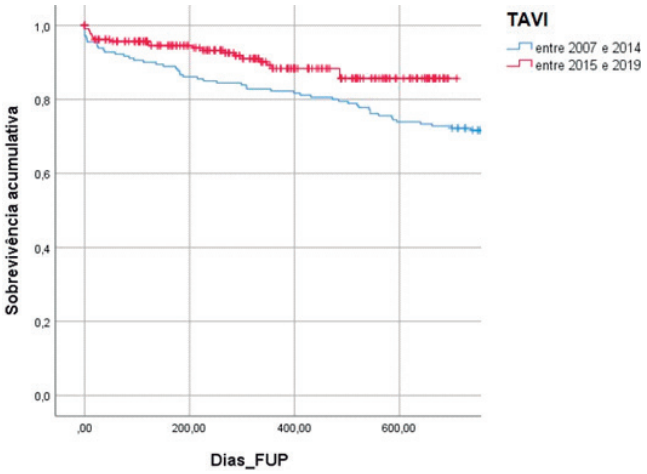
Introduction: Over the past decade, TAVI has emerged as a valid and safe treatment option for severe symptomatic aortic stenosis, from prohibitive surgical risk patients in the early days, to those at intermediate risk in current practice. Advances in device technology, as well as growing operators' skills, were remarkable in this short time window.
Objectives: The authors aim to compare early safety and success endpoints, and major clinical outcomes, between early and late periods of a twelve-year single-center experience.
Methods: All patients that underwent TAVI at our centre between 2007 and 2019 were included in the analysis. Patients were divided in two groups according to the procedure date, in those representing the early experience (2007 to 2014) and those comprising a more contemporary cohort (2015 to 2019).
Results: A total of 681 patients that underwent TAVI were enrolled, 51.6% were female, and the mean age was 79.8 ± 7.6 years, with 181 patients being treated between 2007-2014, and 500 between 2015-2019.
No significant between-group differences were observed in the mortality risk prediction scores (Euroscore II X 14.0 ± 10.1% vs 13.1 ± 13.4%, p = 0.92; STS score X 6.8 ± 4.6% vs 5.1 ± 5.2%, p = 0.47), but contemporary patients (2015-2019) were less likely to have NYHA≥ III functional class (53.7% vs 74.7%, p < 0.001). In contemporary procedures, transfemoral access were more frequently used (96.4% vs 82.9%, p < 0.001), delivery system's caliber was significantly smaller (17.2 ± 1.8 vs 15.3 ± 2.3 Fr, p < 0.001), and less volume of contrast agent was used (170 ± 75 vs 153 ± 86 ml, p = 0.03). The composite endpoint of 30-day procedural success (VARC-2 definition) was achieved in similar rates between groups. The 30-day safety endpoint was more frequently observed in patients treated between 2015-2019 (62.7% vs 51.9%, p = 0.015). This was driven by significantly less access site complications (35.4% vs 40.2%, p = 0.029), acute renal injury (17.3% vs 25.8%, p = 0.025), pacemaker implantation (14.7% vs 27.0%, p = 0.001), as well as ischemic stroke or TIA (4.2% vs 9.5%, p = 0.016). New-onset AF (7.3% vs 15.1%, p = 0.004), complete LBBB (27.3% vs 44.9%, p < 0.001), and any peri-prosthetic leak (50% vs 72.9%, p < 0.001), were also less frequently observed in those treated between 2015-2019. All-cause mortality was significantly lower in patients submitted to TAVI between 2015-2019, in a median follow-up of 24 months (Kaplan Meier survival curve with log rank = 0.015).



Conclusions: Technical advances and operator's skills improvement have made the path for TAVI expansion with increasingly better safety profile, and a tremendous impact in major clinical outcomes. Contemporarily treated patients have lower procedure-related complications, such as vascular complications, AKI, pacemaker implantation, and early stroke/TIA. Our analysis suggests these patients may have lower all-cause mortality rates in a 2-year follow-up.

P 206. PERCUTANEOUS LEFT ATRIAL APPENDAGE CLOSURE: A 10-YEAR EXPERIENCE

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Introduction: Oral anticoagulants are the standard treatment for prevention of stroke in patients with atrial fibrillation (AF). However, some patients still have stroke despite therapeutic anticoagulation and/or have contraindications to anticoagulation. The left atrial appendage closure (LAA closure) is an option for those patients.
Objectives: This study aims to evaluate the safety and efficacy of LAA closure in the 10-year experience of our center.
Methods: Between 2009 and 2019, a total of 80 patients (75.5 ± 10.3 years, 66.3% men, with a CHA2DS2-VASc score ≥ 2) underwent percutaneous LAA closure. Stroke risk assessment was performed with CHA2DS2-VASc and the bleeding risk with HAS-BLED. Mortality, embolic and bleeding events were accessed retrospectively.
Results: Permanent AF was present in 71.3% and paroxystic in 28.7%. History of major bleeding was the most common reason for LAA closure (65%, n = 52) followed by high bleeding risk (17.5%, n = 14), ischemic events under therapeutic anticoagulation (11.3%, n = 9) and labile INR (3.3%, n = 3). The average CHA2DS2-VASc and HAS-BLED were 4.1 ± 1.4 and 3.6 ± 1.1, respectively. Successful implantation was achieved in 92.5% (n = 74). In the hospitalization period, there was 1 death (1.3%) related to the procedure

(a LAA closure device embolization to left ventricle, with resultant cardiac arrest). The registered complications were thrombus formation in the device without embolization in 3.8%, femoral pseudoaneurysms in 3.8%, inguinal bleeding in 2.5%, other site bleedings in 5.0%, transient ischemic accident (TIA) in 2.5%, stroke in 1.3%, right coronary artery gas embolization in 1.3% and cardiac tamponade in 1.3%. The average follow-up duration was 22 months, with an all cause mortality of 13.8% (n = 11). Hospital readmissions were reported in 41.3% of the patients (n = 33) and in 6.1% (n = 2) of those the readmissions were related with elective surgical LAA closure. Ischemic stroke (excluding TIA) occurred in 4 patients and major bleeding in 10 patients, resulting in an annual stroke rate of 2.8% and annual bleeding rate of 7.0%. These rates are inferior than predicted from the standard risk scores (4% strokes/year based on CHA2DS2-VASc and 8.7% major bleeding/year based on HAS-BLED).
Conclusions: This data support the effectiveness and safety of the percutaneous LAA closure in stroke prevention in patients with AF and formal contraindication to oral anticoagulation or whom developed embolic events under anticoagulation.

P 207. EARLY DISCHARGE AFTER TAVI: SHOULD WE STILL BE AFRAID OF CONDUCTION DISTURBANCES?

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Introduction: Conduction disturbances (CD) after TAVI remains the most frequent complication of the procedure, frequently increasing the length of hospital stay. A lack of consensus exists regarding in-hospital management of CD post-TAVI.
Objectives: To evaluate if an early discharge (ED) protocol could be safely implemented in patients (pts) with CD post-TAVI.
Methods: Retrospective study of all pts submitted to TAVI between 2016 and 2018. Pts with prior permanent pacemaker (PP) and non-transfemoral approach were excluded. ECG data before, immediately after the procedure and at day 3 post-TAVI were collected, and continuous telemetry monitoring was recorded. We applied a recently proposed ED algorithm (Table) to identify which pts could have been candidates for ED. ED was defined as discharge in the first 72 hours (h) after the procedure. We evaluated if an ED strategy would have been safe at 1-year follow-up (FUP), as defined by the absence of need for PP, syncope and mortality. Results and discussion: 242 pts were included, 44.8% males, mean age 80.4 years, mean Euroscore II 5.4 and the majority implanted a self-expandable prosthesis (64.1%). Mean hospital stay after TAVI was 7.7 days. The most frequent CD after TAVI were: new onset left bundle brunch block (36%) and high degree atrioventricular block (HAVB) (16.3%). During hospital stay 21.6% needed PP, mainly because of HAVB (mainly implanted in the first 72h). According to the proposed algorithm, 70.7% of our pts were ED-candidates. ED-candidates had lower prevalence of predilation (18.5% vs 36.8%, p = 0.008) with no significant differences between type of prosthesis or baseline ECG. ED-candidates had smaller PR interval post-TAVI (184.5 vs 202.5 ms, p = 0.044) and smaller PR and QRS at 72h (p < 0.001 in both). At 1-year FUP, only 2.3% of ED-candidates needed a PP (vs 37.7% non-ED, p < 0.001). It is noteworthy that in those ED-candidates who needed a PP during FUP, the percentage of ventricular pacing was less than 2% at 6 months. In the FUP period, 3.2% of ED-candidates presented at the ER because of syncope, with no significant differences to non-ED pts. No differences between groups were found in 30-days and 1-year ER presentation because of syncope or all-cause mortality.
Conclusions: According to the proposed algorithm for ED in pts with CD post-TAVI, pts with specific ECG characteristics and without rhythm events during continuous telemetry monitoring can be early discharged with long-term safety.

P 208. IN AND OUT-WHAT IS THE REAL IMPACT OF THE" WAITING SETTING" IN CARDIAC SURGICAL PATIENTS?

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Introduction: Cardiac surgical patients are an heterogenous population, who cross cardiologists' paths in many different settings. While in most cases the decision on where to wait for surgery is straightforward, some patients that leave us doubting; additionally, the social and economic pressures to shorten admission duration have never been heavier.
Objectives: The authors meant to evaluate the impact of the setting where patients wait for cardiac surgery (in-hospital or ambulatory), in outcomes such as mortality and hospital readmission. Characterization of both populations, as well as comparison between different types of procedures was also performed.

ECG at the end of the procedure		ECG criteria for discharge at 72h
Group 1: No ECG $changes^*$ in pts without RBBB pre-procedure	**Continuous telemetry for 72h**	No ECG $changes^*$ or bradyarrhythmias
Group 2: No ECG $changes^*$ in pts with preexisting RBBB		
Group 3: ECG $changes^*$ in pts with pre-existing RBBB, LBBB, IVCD with QRS≥120 ms or 1st degree AVB		Regression of ECG $changes^*$ (to baseline values) **OR** no further ECG $changes^*$ **AND** QRS ≤150 ms **AND** PR ≤ 240 ms
Group 4: New-onset LBBB		LBBB resolution **OR** LBBB with QRS ≤150 ms **AND** PR ≤240 ms
Group 5: HAVB/CHB during the procedure		Resolution/no recurrent HAVB/CHB **AND** no conduction disturbances

Table 1: Management of conduction disturbances associated with TAVI. Adapted from Management of Conduction Disturbances Associated With Transcatheter Aortic Valve Replacement - JACC Scientific Expert Panel (JACC 2019;74(8):1086-106). RBBB, right bundle brunch block; LBBB, left bundle brunch block; IVCD, intraventricular conduction delay; AVB, atrioventricular block; HAVB, high-degree atrioventricular block; CHB, complete heart block. * 1st degree AVB, RBBB, LBBB or QRS≥ 120 ms with IVCD

P 207 Figure

Methods: The authors present a monocentric, retrospective, observational and analytical study, which included all patients assisted at our Cardiology Department who were referred to cardiac surgery between January 1st 2016 and December 3tst 2018. Clinical data and outcomes were collected through clinical files scrutiny. Patients were divided according to the place where they waited for surgery (inpatients vs outpatients). Statistical analysis was performed using SPSS 24.0 software. For analytical inferences, a significance level of 0.05 was used.
Results: A total of 591 patients were included in the analysis, 28.9% of which were female, with a mean age of 68.6 ± 11.36 years. Considering the different types of procedures, 41.9% of patients were referred to valvular surgery, 37.1% to CABG, 14.4% to both and 6.6% to other interventions. Regarding the "waiting setting", 64.1% of patients awaited surgery at home, while 34% remained hospitalized; patients who were referred during hospital admission were more likely to remain hospitalized than patients referred through outpatient settings (71.4% vs 28.6%, p < 0.001). Inpatients were more frequently referred to CABG (66.2%), while outpatients had mainly a valvular surgical indication (56.3%). The first were younger (66.6 vs 69.5 years, p = 0.004), and had a higher incidence of smoking (24.5% vs 15.5%), dyslipidaemia (68.5% vs 59.5%, p = 0.041) and recent Acute Myocardial Infarction (68.2% vs 15%, p > 0.001), but no differences were detected regarding other CV risk factors and previous cardiac surgery. Inpatients waited significantly less for surgery, when compared to outpatients (9.69 vs 132 days, p < 0.001). On a comprehensive analysis, patients who stayed hospitalized while waiting for surgery suffered lower mortality during that period of time (0.5% vs 6.3%, p = 0.001) and summed less hospital readmissions (21.6% vs 78.4%, p < 0.001).
Conclusions: In patients referred for cardiac surgery, the "waiting setting" proved to be a statistically significant factor, with impact on mortality before surgery and on hospital readmissions; time until surgery may have a crucial influence in the outcomes analysed.

P 209. ARE OUR PATIENTS WAITING TOO LONG FOR CARDIAC SURGERY?

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Introduction: Recommended pre-established waiting periods in patients referred for cardiac surgery aim to improve clinical outcomes. This study proposes to determine the prognostic impact of the delay until cardiac surgery.
Methods: We conducted a retrospective study encompassing patients referred to cardiac surgery from a Cardiology Department, since January 2016 to December 2018. Clinical characteristics, diagnostic studies and follow-up were analysed. Primary endpoints were global mortality and re-hospitalization rates at follow-up. Independent predictors of clinical outcomes were identified through a binary logistic regression analysis, considering p = 0.05.
Results: A total of 591 patients were included, with 71.1% male predominance and a mean age of 68.6 ± 11.36 years old. 55.2% of patients had severe valvular disease (aortic-38.6%, mitral-9.6%, mixed valvular disease-2.9%), and 37.1% had surgical coronary artery disease. The mean left ventricle ejection fraction was 56.1% ± 12.2% and the mean Euroscore II was 3.7%. 120 patients (20.3%) required more than one type of surgical intervention. 360 patients (60.9%) were referred to elective procedures, with a mean waiting time of 129.4 days and only 29.2% of them were operated in a 6-week period. The remaining 39.1% of patients needed urgent/emergent surgery, and the mean time until the intervention was 27.2 days (70.1% operated in 2-weeks). Mean waiting time was higher for valvular patients comparing with coronary patients (110.7 vs 48 days; p < 0.001). 9.8% and 4.6% of patients were re-hospitalized or died while waiting for surgery, respectively. In a median follow-up of 520 days since the surgical referral, 25.5% of patients were re-hospitalized and 13.7% died. Waiting time was an independent predictor of global mortality (p = 0.018), as well as arterial hypertension (p = 0.002), severe valvular disease (p < 0.001) and higher Euroscore II values (p = 0.023). Waiting for surgery in an out-patient setting (p = 0.011) and higher Euroscore II values (p = 0.002) were independent predictors of re-hospitalization.
Conclusions: In our study, waiting time until surgery was an independent predictor of global mortality. Efforts should be made to enable referral surgical centres to timely respond to the needs of the population, considering the impact that delaying the appropriate treatment can have on the survival of these patients.

Painel 12 - Prevenção/Reabilitação Cardíaca 3

P 210. HIGH DENSITY LIPOPROTEIN CHOLESTEROL AND ALCOHOL CONSUMPTION: ARE THEY RELATED?

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Introduction: High density lipoprotein cholesterol (HDL-C) is known to be inversely related to coronary artery disease (CAD). Previous observational studies have consistently reported that individuals with moderate alcohol consumption have a lower risk of cardiovascular disease compared with that of nondrinkers and heavy drinkers. The beneficial effects of moderate drinking appear to be mediated in large part by alcohol-induced increases in HDL-C concentrations.
Objectives: To evaluate if a moderate alcohol consumption (30-50 g a day) is associated with higher levels of HDL-C in coronary patients.
Methods: 1,676 patients selected from GENEMACOR study population, with at least one > 75% coronary stenosis by angiography (median age 53.3 ± 7.9 years, 78.6% male, median HDL 43.0 ± 11.1 mg/dL). Population was divided according to the HDL level quartiles (1st quartile HDL < 35.3 mg/dL; 2nd quartile HDL 35.3-42 mg/dL; 3rd quartile HDL 42-49 mg/dL; 4th quartile HDL > 49 mg/dL). Population of the 1st and 4th quartiles (825 patients, median age of 53.3 ± 8.0 years and 78.7% male) were adjudicated and prospectively followed-up by 5.0 ± 4.2 years. χ^2 and t Student tests were used to analyze the demographic, laboratorial, angiographic and anthropometric characteristics of the population.
Results: 420 (50.9%) patients were included in the 1st quartile group (median age 53.2 ± 7.9 years, 85.7% men) and 405 (49.1%) patients were included in the 4th quartile group (median age 53.4 ± 8.0 years, 71.4% men). The mean HDL level was higher in the population with moderate alcohol consumption (mean HDL 43.7 ± 15 mg/dL in patients with alcohol consumption < 30 g/day, mean HDL 48.8 ± 16 mg/dL in patients with moderate alcohol consumption and mean HDL 41.6 ± 15 mg/dL in patients with alcohol consumption > 50 g/day). From 104 (median age 51.9 ± 7.9 years, 96.2% male) patients with a moderate alcohol consumption, 62.5% vs 37.5% were in 4th HDL quartile, p 0.01.
Conclusions: We conclude that in our population, a moderate alcohol consumption is associated with higher levels of HDL-C. However, even if there is a causal association between alcohol consumption and higher HDL cholesterol levels, it is suggested that efforts to reduce coronary heart disease risks concentrate on the control of another risk factors.

P 212. NEW VALUES OF LOW-DENSITY LIPOPROTEIN CHOLESTEROL IN ACUTE CORONARY SYNDROME-ARE WE FAR FROM THEM?

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Introduction: Several studies have shown a linear relationship between low-density lipoprotein cholesterol (LDL-C) values and atherosclerotic

cardiovascular disease. All individuals with a history of acute coronary syndrome (ACS) should receive intensive statin therapy in order to achieve the desirable LDL-C values recently modified in the guidelines of the European Society of Cardiology.
Objectives: To evaluate the lipid profile control of ACS patients with 6 year follow-up.
Methods: Retrospective study of 138 consecutive patients (P) admitted in our hospital for ACS during one year: 76.8% male, 63 ± 13 years, 26.9% with history of coronary artery disease and 56.5% of dyslipidemia. A 6 year follow-up was performed and a therapeutic goal was defined as LDL-C values below 55 mg/dL and an LDL-C reduction of ≥ 50% from baseline, according to the guidelines of the European Society of Cardiology. High/moderate/low intensity statins were defined according to the therapeutic recommendations of the American College of Cardiology. Univariate analysis was performed.
Results: The mean LDL-C value at ACS admission was 112.5 ± 36.9mg/dL. 96.4% of patients were discharged on statins: 41.3% with rosuvastatin 10mg, 15.2% with simvastatin 20 mg, 15.2% with atorvastatin 10mg, 10.9% with pitavastatin 2 mg and 6.5% with atorvastatin 20 mg. The least prescribed statins were simvastatin 40 mg (n = 4), simvastatin 10 mg (n = 2), atorvastatin 40 mg (n = 2), pitavastatin 1 mg (n = 2), rosuvastatin 20 mg (n = 1) and fluvastatin 80 mg (n = 1). Antidislipidemic therapy was changed in 7.9% of patients in the scheduled evaluation 1 month after discharge: in 3.1% of patients there was a change in dose, 3.9% in class and in 0.9% in both; after that, most P (92.1%) remained with the prescribed statin. The mean LDL-C value after a 6 year follow-up was 83.6 ± 27.2 mg/dL, with 85.8% P not meeting the defined therapeutic goal. Most of them (97.5%) continued medicated with statin, however, only 28.3% of P were on high-intensity statins and 3.8% were on low-intensity statins, despite the verified statistically significant association between LDL-C values and statin type used (high/medium/low intensity, $p < 0.05$).
Conclusions: Despite the proven benefit of statins, especially in high-risk patients, there are still aspects to improve, notably in the establishment of more effective therapies in order to achieve the desired new goals.

P 211. LIPID PROFILE IN ADULT HEALTHY POPULATION FROM MADEIRA ISLAND

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Introduction: Dyslipidaemia remains an important risk factor for Coronary Artery Disease (CAD), and consequently a cause of morbility and mortality worldwide. It is widely known that plasma level of LDL cholesterol (LDL-C) is strongly associated with atherosclerosis and CAD. According to the recent guidelines of dyslipidaemia the target values of LDL-C are increasingly demanding and it is recommended that, in a healthy population, LDL-C values should be below 115 mg/dL.
Objectives: To evaluate the lipid profile in adult healthy population from Madeira Island.
Methods: The study consists of the evaluation and stratification of the lipid profile of 1,433 asymptomatic individuals (median age 52.8 ± 7.8 years and 76.5% men) free of known coronary heart disease, enrolled from GENEMACOR study controls. LDL-C was determined by chemical methods and mean values were calculated. According to the target values of dyslipidaemia guidelines, 4 groups were created: 1st with LDL-C < 55 mg/dL; 2nd with LDL-C < 70 mg/dL, 3rd LDL-C < 115 mg/dL and remaining individuals with LDL-C≥ 115 mg/dL.
Results: In this population, the LDL-C mean value was 128,36 mg/dL ± 35.86 mg/dL. In the analysis of the different groups: 3.1% (n = 45) had LDL < 55 mg/dL vs 96.9% (n = 1,388) that had LDL > 55 mg/dL; 4.9% (n = 70) had LDL < 70 mg/dL vs 95.1% (n = 1,363) that had LDL > 70 mg/dL and 38.5% (n = 551) had LDL < 115 mg/dL vs 61.5% (n = 882) that had LDL > 115 mg/dL.
Conclusions: In our "healthy" population, whatever the cardiovascular (CV) risk, LDL-C value is above the guidelines recommendations in the majority (61.5%). This warns, first of all, for the emergence of behavioral measures and the need for a wide screening across general population. In people who remain at high risk, with high LDL-C levels, it is important to evaluate the need of pharmacological strategies in primary prevention of atherosclerosis and CAD.

P 213. LIPOPROTEIN(A) AND MAJOR CARDIOVASCULAR EVENTS: 15-YEAR FOLLOW-UP IN A SOUTHERN EUROPEAN POPULATION

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Introduction: Elevated plasma lipoprotein(a) [Lp(a)] concentrations are associated with an increased risk of atherosclerotic cardiovascular disease and its role in risk categorizing was recognized in the new ESC guidelines for the management of dyslipidaemias. We investigated 1) the association between baseline Lp(a) levels and incident long-term cardiovascular (CV) events and 2) its relationship with type 2 diabetes mellitus (T2DM) in a Southern European population.
Methods: We retrospectively assessed baseline Lp(a) concentrations in a total of 499 patients of a primary prevention cohort followed at the Lipidology Clinic of our hospital, with a median follow-up time of 15 (IQR 12-17) years. Lp(a) was analysed as a continuous variable, as a categorical variable with a 180 mg/dL cut-off and by quartiles. We collected data on major CV events (CV death, myocardial infarction, stroke) as a composite outcome. Cox proportional hazard regression analyses were used to estimate hazard ratios (HR) and 95% confidence interval (CI).
Results: Mean age was 48.30 ± 14.41 years and 61.70% were male (n = 499). Median Lp(a) was 36.60 (IQR 0-396) mg/dL and 12.4% of patients had very high Lp(a) (≥ 180 mg/dL); T2DM prevalence was 13.60%. The composite outcome incidence was 10%. At the baseline, individuals with T2DM had lower Lp(a) levels (11.85 IQR 3-330 mg/dL vs 46.40 IQR 0-396, $p < 0.01$ mg/dL). There was a moderate inverse correlation between Lp(a) and HbA1c ($r = -0.67$, $p < 0.01$) but no significant correlations with lipid profile (total, LDL or HDL), risk scores (SCORE or the ACC pooled cohort equation), age nor gender. We found no relationship between baseline Lp(a) quartiles and composite outcome's incidence (age-, sex-, and diabetes-adjusted HR: 1.15, 95%CI: 0.71-1.87, $p = 0.57$), neither with the individual CV endpoints.

Table – LDL-C levels in the healthy population

Variables	With	Without
LDL <115, n (%)	551 (38.5)	882 (61.5)
LDL <70, n (%)	70 (4.9)	1363 (95.1)
LDL <55, n (%)	45 (3.1)	1388 (96.9)

LDL – Low density lipoprotein; Statistically significant for p<0.05.

P 211 Figure

Exploratory analysis showed that patients on aspirin had lower Lp(a) levels (29.55 IQR 0-264 mg/dL vs 63.60 IQR 1-396 mg/dL, p < 0.01).
Conclusions: In a single centre cohort of a primary prevention southern European population, we did not find an association between Lp(a) levels and incident CV events in a 15-year median follow-up time.

P 214. PREVALENCE AND PREDICTORS OF GLUCOSE METABOLISM DISORDERS AFTER ACUTE CORONARY SYNDROME

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Introduction: Coronary heart disease is a major determinant of long-term prognosis in patients with diabetes *mellitus* (DM) and the presence of DM increases mortality risk from cardiovascular disease 2-4 fold. It is therefore important to identify patients with glucose metabolism disorders (GMD), since early life-style modifications and pharmacological therapy allow adequate metabolic control and prevent cardiovascular events.
Objectives: The objective of this study was to ascertain the prevalence of GMD during and after hospitalization for acute coronary syndrome (ACS).
Methods: A *Cohort* study was performed comprising patients admitted in the cardiac intensive care unit between October 2017 and September 2018 with a final diagnosis of ACS. Patients were excluded from this study if they had a previous or an at admission diagnosis of DM. The values of HbA1c at admission and fasting plasma glucose at the day of discharge were obtained, and an oral glucose tolerance test (OGTT) was performed, at least, 1 month after discharge.
Results: A total of 74 patients were included, having a mean age of 61 years, of which 85% were of the male gender. 46% of the patients had dyslipidemia, 43% had arterial hypertension, 21% were obese, and 18% had an history of coronary artery disease. Regarding the admission diagnosis, 35% of the patients were admitted for acute myocardial infarction (AMI) with ST segment elevation, 46% for non-ST segment elevation AMI and 19% for unstable angina. The mean value of HbA1c at admission was 5.8 ± 0.4% and 59.5% of the patients presented with pre-diabetes criteria (HbA1c: 5.7-6.4%). The mean fasting plasma glucose at the time of discharge was 95 ± 14 mg/dL. After OGTT, 48.6% of the patients had GMD, where 9.5% of the patients fulfilled DM diagnostic criteria and 39.1% pre-diabetes criteria. Of these patients, only 17.6% had normal HbA1c at admission (HbA1c < 5.7%). Higher values of HbA1c at admission (p < 0.001) and fasting plasma glucose at discharge (p = 0.003) were significantly associated with the presence of GMD (diabetes or pre-diabetes) after OGTT; however, only the value of HbA1c was revealed to be an independent predictor (p = 0.008, OR: 14). A value of HbA1c ≥ 6% at admission was significantly associated with the presence of DM diagnostic criteria in the OGTT (p = 0.041).
Conclusions: There was a high prevalence of pre-diabetes (59.5%) at the time of discharge in patients admitted for ACS. The OGTT, after acute phase, identified 48.6% patients with GMD, of whom, 9.5% met DM criteria. The value of HbA1c at admission was an independent predictor of GMD in OGTT and an HbA1c ≥ 6% was significantly associated with the presence of DM criteria.

P 215. SECONDARY PREVENTION AFTER ACUTE CORONARY SYNDROME-CAN WE ACHIEVE DYSLIPIDEMIA GUIDELINE TARGETS?

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Introduction: Lipid control is one of the most important secondary cardiovascular prevention targets. New studies showed the importance of aggressive lipid control. The European Society of Cardiology (ESC) Dyslipidemia Guidelines recently published changed the recommendation of LDL targets from below 70 mg/dL to below 55 mg/dL in very high risk patients.
Objectives: To observe the dyslipidemia control in a secondary prevention population (with coronary artery disease) in light of the 2019 ESC Dyslipidemia Guidelines.
Methods: We retrospectively analyzed all patients who participated in a Coronary Rehabilitation Program (after an Acute Coronary Syndrome) at a Portuguese center from May 2008 to December 2017. Clinical data was collected at presentation and during a 12 months follow up (FUP).
Results: 989 patients were enrolled in a Cardiac Rehabilitation Program (85% male, mean age 54 ± 10 years). 561 (56.7%) patients had dyslipidemia, 410 (41.5%) had hypertension, 179 (18.1%) were diabetic, 723 (73.1%) were smokers or previous smokers, 257 (26.0%) had family history of coronary disease and 138 (14.0%) had previous coronary disease (acute coronary syndrome or > 50% coronary artery stenosis). The vast majority of patients (97.5%) were medicated with statin at hospital discharge and maintained the prescription during the FUP (97.1%). At hospital admission, mean LDL concentration was 121.7 ± 38.8 mg/dL with 2.9% of the patients below 55 mg/dL and 7.6% below 70 mg/dL. During the FUP, at the end of the rehabilitation program (3 months after event), there was a significant decrease of LDL values (p < 0.001) with 18.7% patients below 55 mg/dL and 46.3% below 70 mg/dL (mean LDL 76.6 ± 23.6 mg/dL). At 1-year FUP, the lipid control was better than at admission but inferior than at the end of the rehabilitation program, both findings statistically significant (11.0% patients were below 55 mg/dL and 33.1% were below 70 mg/dL, with a mean LDL of 82.7 ± 28.3 mg/dL; p < 0.001).
Conclusions: Our real life observational cohort showed that guideline recommended LDL control is not achieved in the majority of very high risk patients in a structured coronary rehabilitation program. Of note, the number of patients at LDL target decreased from 3 months to 1 year FUP. This state the importance of a sustained therapy adherence, lifestyle changes and aggressive pharmacologic therapy.

Painel 2 - Insuficiência Cardíaca 6

P 150. INFLUENCE OF SACUBITRIL-VALSARTAN ON OUTCOMES OF PATIENTS WITH CHRONIC HEART FAILURE IN DIFFERENT POPULATIONS: BRAZIL AND PORTUGAL EXPERIENCE

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Introduction: Sacubitril/Valsartan (Sac/Val) significantly reduces hospitalizations and mortality of heart failure patients (pts) with reduced ejection fraction (HFrEF). Considering that real world evidence is still scarce, it's important to observe if there are regional differences regarding safety and efficacy.
Objectives: To observe the effect of SacVal on clinical, therapeutic, hemodynamic and laboratorial parameters of two different outpatients' populations with HFrEF followed-up in Brazil and Portugal.
Methods: From August 2017 to January 2019, an observational study of two HFrEF cohorts, 74 Portuguese and 47 Brazilian patients with optimal drug therapy were switched from Angiotensin-Converting Enzyme Inhibitor/Angiotensin Receptor Blocker (ACEI-ARB) to Sac/Val. We observed the efficacy and safety of Sac/Val reggarding the differences in both groups according to demographics, laboratorial, echocardiogram and outcomes.
Results: Comparing Brazil × Portugal: median follow-up was 182 [139-293] × 255 [124-337] days, age = 62[55-74] × 74[64-80] years (p = 0.001), 61.7% × 79.2% male (p = 0.037), 34.8% × 61.4% with ischemic HF (p = 0.008), 52.3% × 70.4% hypertension (p = 0.049), 20.5% × 43.7% permanent atrial fibrillation (p = 0.015). The median systolic blood pressure (SBP) pre Sac/Val was 105 [96-118] × 130 [113-141] (p < 0.001), SBP post Sac/Val was 97 [87-113] × 125

[111-140] (p < 0.001), dyastolic BP post Sac/Val was 65 [58-85] × 70 [65-80] (p = 0.019). All other clinical parameters were similar. Considering ESC guidelines for HF therapy, 93.6% × 95.7% were using betablockers (p = 0.161), 91.5% × 94.2% ACEI/ARB (p = 0.571), 81.8% × 58.8% MRA (p = 0.013), 90.9% × 73.9% loop diuretics (p = 0.016) and 25% × 15.9% ivabradine (p = 0.236), 0% × 15.7% CRT (p = 0.006) and 4.5% × 20% ICD (p = 0.026). The median SacVal dose was 200 [100-400] × 200 [100-200] (p = 0.009). Regarding the laboratory parameters there were no differences. When data BEFORE and AFTER Sac/Val are compared, Brazil × Portugal, respectively: LVEF = 28% [25-32] and 33.5% [24.4-39.9] in Brazil, 30% [25-35] and 35.6% [30.3-40.8] in Portugal (p = NS); median NTproBNP did not have any statistical difference. On ECG, the QRS had 120 [80-152] ms × 129 [110-166] (p = 0.006). The NYHA functional classes improved post SacVal in both countries (p = NS). A significant therapeutic finding was a marked reduction in furosemide dose in both countries post SacVal (Brazil = 58.5% × 40.4%, Portugal, p = 0,101). During follow-up, there were no differences regarding hospitalizations and deaths either in Brazil or Portugal. About safety, Sac/Val had been discontinued in 8.7% in Brazil and 5.4% in Portugal (p = 0.482).
Conclusions: Although there were many differences between Brazil and Portugal populations, the efficacy and safety are similar which showed the great importance of using this new drug in all patients with HFrEF with indication to improve survival and outcomes.

P 152. GRACE SCORE IN ACUTE HEART FAILURE PATIENTS: AN ADDITIONAL VALUE?

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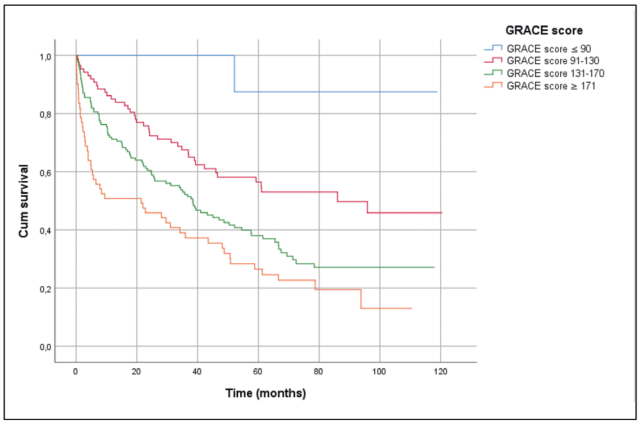
Introduction: GRACE score is a validated and established tool used to stratify and predict mortality risk in non-ST-elevation myocardial infarction patients. However, GRACE score capability to predict mortality in heart failure patients has not been validated.

Figure 1: Mortality rates in *de novo* heart failure patients represented according with GRACE score.



Objectives: Validation of the GRACE score as a predictive tool of mortality in patients admitted with *de novo* acute heart failure in a peripheral centre.
Methods: Single-centre retrospective study, engaging patients hospitalized for *de novo* acute heart failure with reduced ejection fraction between 1/01/2010-31/12/2017. All patients' clinical data were extracted at admission and the follow up occurred in our centre. GRACE score was assessed at admission. Patients were divided in four groups, according to GRACE points: group A ≤ 90 points, B 91-130 points, C 131-170 points and D ≥ 171 points. Chi-square and ANOVA tests were used to compare categorical and continuous variables. Logistic regression was performed to assess the relationship between the GRACE score and mortality. To evaluate the survival rates between groups Kaplan-Meier method was used (log-rank test).
Results: 300 patients were included, 72.7% were male, mean age 67.42 ± 12.57 years with 41.68 ± 34.18 months of follow up, left ventricular ejection fraction (LVEF) of 33.72 ± 12.19 and a mean GRACE score 146.60 ± 29.76. The four groups were similar regarding gender, cardiovascular risk factors, rhythm at admission and LVEF. As expected, the categorization of patients in 4 groups, revealed significant differences between the groups, namely in mean age (37.56 ± 8.56, 59.43 ± 11.29, 69.18 ± 8.52, 78.68 ± 7.54, p < 0.001), GRACE score and survival rates. Logistic regression revealed that GRACE score was associated with mortality (odds ratio (OR) 2.34, p < 0.001, confidence interval (CI) 1.67-2.37), nevertheless it was not associated to readmission for all causes (p = 0.161). Mortality rates significantly increase with the GRACE score (11.1, 46.0, 66.2, 79.47%), with a Kaplan-Meier test of p < 0.001 (Figure).
Conclusions: GRACE score, largely implemented in acute coronary syndromes, proved to be a relevant predictor of mortality in *de novo* heart failure patients with reduced ejection fraction.

P 153. INTRAVENOUS FERRIC CARBOXIMALTOSE IN HEART FAILURE WITH PRESERVED OR INTERMEDIATE EJECTION FRACTION

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Introduction: Iron deficiency (ID), regardless ejection fraction (EF), is prevalent in heart failure (HF) and contributes to the impairment of functional capacity, to poor quality of life and increased mortality in HF patients. ID identification and its correction are currently recommended in the guidelines for the treatment of HF with reduced ejection fraction (HFrEF). However, evidence of ID correction beneficial effects is lacking in patients with HF and preserved EF (HFpEF) or mid-range EF (HFmrEF).
Objectives: Evaluate the influence of iron therapy on NYHA class and NTproBNP in ID symptomatic HFpEF patients.
Methods: Among patients submitted to ID correction with ferric carboximaltose (FCM) between 2015 and 2016, patients with HFpEF and HFmrEF, with and without anemia were identified and compared with patients with HFrEF treated in the same period. Between 2015 and 2018, patient outcome was assessed, namely NYHA class, N-terminal portion of type B natriuretic peptide (NTproBNP), and renal function at three and six months after treatment.
Results: 52 patients with HF and ID were selected: 69% men, 86 ± 5 years. 65.4% had HFpEF and HFmrEF and 34.6% HFrEF. 90.4% of patiens had anemia. Functional ID was present in 13% and 23 of HFrEF and HFpEF/HFmEF, respectively. Patients with HFpEF/HFmrEF had less coronary artery disease (44% and 78%) and less diabetes mellitus (26% and 44%). No differences were observed in the other comorbidities. In the follow-up study of patients undergoing FCM, we identified 56 patients. 83% had absolute ID and 75% anemia. 50% were in NYHA class II and 46% in class III. NTproBNP was 6,492 pg/mL and eGFREPI was 47.8 mL/min/m^2. At three and six months, 59% and 61% patients were in NYHA class II and 39% and 37% in class III. NTproBNP was 5,331pg/mL and 4,000 pg/mL, and eGFREPI was 45.8 mL/min/m^{2}and 45.8 mL/min/m^2.
Conclusions: ID is by itself underestimated in clinical practice. At three and six months after FCM treatment, we found a functional improvement in patients, assessed by NYHA class, as well as a reduction in NTproBNP levels.

P 154. AVALIAÇÃO DA QUALIDADE DE VIDA DE DOENTES SEGUIDOS NUMA CLÍNICA DE INSUFICIÊNCIA CARDÍACA

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Introdução: A insuficiência cardíaca (IC) é uma síndrome com grande impacto na qualidade de vida (QV) dos doentes (dts), afetando os domínios

psicológico, físico e social. O Questionário de Cardiomiopatia de Kansas City (KCCQ) é um questionário internacionalmente validado que quantifica as capacidades sociais, físicas, de autoeficácia e conhecimento, os sintomas de IC (frequência, gravidade e estabilidade) e a QV dos dts nas duas semanas anteriores à realização do questionário.
Objetivos: Avaliar a QV de dts com IC numa clínica de IC (CIC).
Métodos: Análise retrospetiva e unicêntrica de dts acompanhados numa CIC desde 3/2011, com diagnóstico de IC há pelo menos 1 ano e que completaram o KCCQ.
Resultados: A amostra foi constituída por 88 dts, com média de idade de 60 anos. 78,4% do sexo masculino; 65% tinham IC de etiologia isquémica e 68,2% tinham sido internados por IC no ano anterior. Em relação ao questionário: 60% dos dts não apresentavam limitação física nas atividades de autocuidado, 45% não apresentavam limitação significativa na atividade de vida diária e 25% apresentavam limitação moderada nas atividades de esforço médio. 69,3% dos dts não apresentaram sintomas de IC nas duas semanas anteriores, 32% descreviam as queixas como «estáveis» e 13,6% afirmavam «sentir-se melhor». 60% consideravam-se «satisfeitos se tivessem que passar o resto de suas vidas como estavam no momento do questionário»e 45,4% afirmavam que os sintomas de IC «não limitavam as suas vidas». 25,3% dos dts sentiam limitações sociais e apenas 20% sabiam quais fatores poderiam descompensar a IC.
Conclusões: Nesta coorte, a maioria dos dts não considerava apresentar limitação funcional significativa pela sua patologia e afirmava-se «assintomático» ou «estável» nas duas semanas que antecederam o questionário. No entanto, a maior parte dos dts revelou desconhecer os fatores que poderiam descompensar o seu estado de saúde, um achado que poderá alertar para a importância de reforçar este tema nas sessões de ensino de enfermagem da CIC.

P 155. ANTAGONISTAS DOS RECETORES DA NEPRILISINA E ANGIOTENSINA NUMA CONSULTA DE IC

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Introdução: A insuficiência cardíaca (IC) é a uma entidade com significativa morbimortalidade, cuja prevalência tem vindo a aumentar. Os inibidores dos recetores da neprilisina e angiotensina (ARNI) vieram revolucionar o tratamento dos doentes com IC e fração de ejeção reduzida (FER), alterando a história natural da doença.
Objetivos: O estudo pretende avaliar, numa população de doentes com FER seguidos em consulta de IC, qual a subpopulação que seria eletiva para iniciar terapêutica com ARNI, de acordo com as recomendações da sociedade europeia de Cardiologia (ESC) e os critérios de inclusão do estudo PARADIGM-HF.
Métodos: Estudo retrospetivo obervacional realizado através da análise do processo clínico, para obtenção de dados antropométricos, clínicos, laboratoriais e meios auxiliares de diagnóstico, bem como comorbilidades e *follow-up*.
Resultados: O estudo inclui 145 doentes, 107 género masculino (74%), avaliados em consulta nos primeiros seis meses de 2018, com follow-up de 18 meses. Destes, 90 apresentavam fração de ejeção (FE) reduzida e 47 FE intermédia (apenas 8 haviam recuperado a fração de ejeção). Relativamente à etiologia da insuficiência cardíaca, a grande maioria era isquémica (35%), seguido de idiopática (22%), tóxica (16%) e taquimiopatia (15%). Dos 145 doentes, apenas 46 teriam indicação para iniciar o fármaco, de acordo com as recomendações da ESC. No entanto, 29 destes doentes não iniciaram o fármaco por baixo perfil tensional (21%), taxa de filtração glomerular inferior a 30 mL/min/1,73 m² (25%), hiperkalémia (11%) e por má compliance terapêutica (18%). Cerca de 25% não iniciaram por fatores desconhecidos, que provavelmente se prendem com questões económicas. No grupo de doentes que iniciaram o fármaco (12% da amostra total e 37% daqueles eletivos), verificou-se uma melhoria estatisticamente significativa da classe funcional de NYHA (valor p 0,025). Em relação à melhoria da FEÂ ou dos eventos cardiovasculares *major* (MACE), não se evidenciou diferença estatisticamente significativa, embora com tendência a melhoria dessas variáveis nos doentes sob o fármaco. Naqueles que fizeram o fármaco, a análise multivariada de Cox para eventos MACE ajustada as variáveis confundidoras (género, FE, melhoria de NYHA, HTA, diabetes, dislipidemia, tabagismo, doença renal crónica), foram significativos o género e a melhoria de NYHA, respetivamente HR 0,02 (IC 0,05-0,78, p < 0,05) ; HR 5,92 (IC 1,02-34,4; p < 0,05). Na análise de curva de sobrevivência livre de eventos, a melhoria de NYHA associou-se a uma melhor sobrevida (*log rank* 9,07, p < 0,05).
Conclusões: Os doentes sob ARNI apresentaram melhoria da classe funcional associada a uma tendência para uma redução de eventos MACE, demonstrando como é essencial a otimização da terapêutica de IC em consulta, assim como monitorização de possíveis efeitos adversos, com o objetivo de melhorar a qualidade de vida dos doentes.

P 151. IMPACT OF SACUBITRIL-VALSARTAN ON CLINICAL-LABORATORIAL PARAMETERS, LEFT VENTRICULE EJECTION FRACTION AND LOOP DIURETIC DOSES OF PATIENTS WITH CHRONIC HEART FAILURE. BRAZIL AND PORTUGAL EXPERIENCE

Ricardo Mourilhe Rocha[1], Fernanda Costa Ferreira[2], Marta Afonso Nogueira[2], Carla Matias[2], Inês Nabais[2], Élia Baptista[2], Gonçalo Proença[3], Pedro Pimenta de Mello Spineti[1], Marcelo Imbroinise Bittencourt[1], Felipe Neves de Albuquerque[1], Ana Luiza Ferreira Sales[1], Denilson Campos de Albuquerque[1]

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Introduction: Sacubitril-Valsartan (SacVal) was approved to treat heart failure (HF) in Brazil and in Portugal in 2017. Experience with this drug in our countries is still limited. The particularities of the management of these patients (pts) and the interaction with other drugs are also unprecedented for most cardiologists. It's important to report our experience regarding safety and efficacy of this drug.
Objectives: To observe the effect of SacVal on clinical, therapeutic, left ventricule ejection fraction (LVEF) on echocardiogram, hemodynamic and laboratorial parameters of two different outpatients' populations with HF with reduced ejection fraction (HFrEF) followed-up in Brazil and Portugal.
Methods: Observational study of two HFrEF outpatient cohorts. From August 2017 to January 2019, 122 patients with optimal drug therapy were switched from Angiotensin-Converting Enzyme Inhibitor/Angiotensin Receptor Blocker (ACEI-ARB) to SacVal. Pts were reassessed during the follow-up period according to countries protocols. The titration of SacVal respected the clinical-hemodynamic response and individual laboratory parameters.
Results: The median follow-up time was 231 [133,8-323] days, 72.3% male, median age = 69 [58-79] years, 50.9% with ischemic etiology, 63.5% hypertension, 30.4% diabetes, 16.7% COPD, 45.2% dyslipidemia, 22.8% anemia and 34.8% permanent atrial fibrillation. Considering ESC guideline for HF therapy, 97.3% were using betablockers, 93.1% ACEI-ARB, 67.9% mineralocorticoid receptor antagonist, 80.5% loop diuretics, 19.5% ivabradine, 9.6% CRT and 14.1% ICD. The median SacVal daily dose was 200 [100-400] mg. Regarding laboratory parameters post SacVal, the median creatinine was 1.1 mg/dl, potassium 4.7 mEq/L and hemoglobin 13.5 mg/dl. When we compare data before and after SacVal, respectively: the median blood pressure (BP) was 117 × 70 mmHg and 115 × 70 mmHg (p = 0.105); median heart rate (HR) 70 bpm and 64 bpm (p = 0.007); LVEF = 30 [25-34]% and 35 [30-40]% (p < 0,001); median NTproBNP 3,123 [1,386-5,204] and 1,872 [643-3,542] pg/ml (p = 0.007). At the start of SacVal, 5.9% were in NYHA class I, 46.6% in class II, 44.1% in class III and 3.4% in class IV, and after SacVal, 33% were in class I, 53.6% in class II, 10.7% in class III and 2.7% in class IV (p < 0.001). A significant therapeutic finding was a marked reduction in furosemide use pre-SacVal versus post SacVal (80.5% × 66.4%, p = 0,016) and 48% of pts reduced loop diuretic. During follow-up, we noticed 10.6% of hospitalizations, 2.5% of deaths and SacVal discontinuation in 6.7% of pts.
Conclusions: in a cohort with a high severity profile, we observed a good tolerance of SacVal, associated to a low rate of adverse events during follow-up. In addition, we noted the relevant impact in reducing loop diuretic doses needed to compensate HF, as well as LVEF improvement and NTproBNP reduction that may be related to remodeling benefit of the drug.

Painel 3 - Imagiologia Cardiovascular 3

P 160. LEFT ATRIAL STRAIN: HAVE WE FOUND THE MISSING PIECE OF THE PUZZLE?

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Introduction: The 2016 Guidelines for the evaluation of left ventricular (LV) diastolic function opens possibility for the use of new technologies that support the diagnostic process. The persistence of a "gray zone" of values in which DD quantification is not possible, together with an epidemiological increase of conditions predisposing to heart failure with preserved ejection fraction (HFpEF), has led to the search and use of parameters with higher specificity and sensitivity: one of these is left atrial (LA) reservoir phase strain (e_R) assessed with 2D speckle tracking echocardiography (2D-STE). A new parameter is introduced, the dependent strain, which quantifies LA reservoir phase deformation during.
Objectives: To evaluate if e_R can identify subclinical atrial myocardial damage and to study its associaton with DD by standard diagnosis criteria.
Methods: We retrospectively analysed data from 99 patients referred transthoracic echocardiography for arterial hypertension. LA reservoir phase deformation was deformation was evaluated with 2D-STE and LA volumes were calculated with 2D-echocardiography. DD was defined when patients had at least 3 positive parameters of the following (average E/e' > 14, septal e' velocity < 7 cm/s or lateral e' velocity < 10 cm/s, tricuspid regurgitation maximum velocity > 2.8 m/s and LA volume > 34 mL/m^2). Patients satisfying only 2 the parameters were classified as having "indeterminate DD".
Results: In our cohort, 19.2% (n = 19) were deemed to have normal diastolic function, 40.4% (n = 40) were classified as indeterminate DD and 40.4% (n = 40) as having DD. In normal patients the indexed LA volume was lower when compared to indeterminate DD or DD (26.5 ± 3.6 vs 35.9 ± 7.0 vs 42.4 ± 10.5 mL/m^2, p < 0.01, respectively) as well as average E/e' (7.5 ± 1.6 vs 14.8 ± 21.4 vs 17.4 ± 5.1, p = 0.044, respectively) and maximum tricuspid regurgitation velocities (18.3 ± 1.5 vs 22.0 ± 4.2 vs 31.4 ± 8.3 m/s, p < 0.001, respectively). On the other side, e' septal velocities (10 ± 1.5 vs 4.8 ± 1.7 vs 5.2 ± 1.1 cm/s, p < 0.001, respectively) and e' lateral velocities (12 ± 1.7 vs 6.5 ± 1.9 vs 6.3 ± 1.3 cm/s, p < 0.001, respectively) were higher in normal patients when compared to indeterminate DD and DD. e_R was higher in normal patients when compared to indeterminate DD and DD (39.8 ± 10.2 vs 23.9 ± 6.8 vs 18.8 ± 6.5%, p < 0.001, respectively). Receiver operating characteristic curve analysis showed that the under the curve of reservoir phase for diastolic dysfunction according to 2016 guidelines was 0.79 (AUC = 0.79, 95%CI 0.70-0.88, p < 0.001). For a e_R value of 35%, sensitivity was 100% and specificity was 25.4%. On the other side, for a e_R of 15%, sensitivity was 27.5% and specificity was 100%.
Conclusions: LA strain could help re-classify DD in patients falling in the indeterminate range according to 2016 criteria. Further evidence is needed to investigate its role as a lone index for the same purpose.

P 159. HOW TO PREDICT ATRIAL FIBRILLATION IN MITRAL VALVE PROLAPSE PATIENTS?

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Introduction: Development of atrial fibrillation (AF) is a common event in the natural course of mitral valve prolapse (MVP), and it is an established factor of worsening prognosis. The mechanisms leading to the development of atrial fibrillation MVP are still under investigation.
Objectives: To established prognostic risk factors for AF in MVP patients.
Methods: A single-center retrospective study of consecutive patients with MVP documented in transthoracic echocardiogram between January 2014 and October 2019. MVP was defined as systolic displacement of the mitral leaflet into the left atrium ≥ 2 mm from the mitral annular plane. Demographic, clinical, echocardiographic, electrocardiographic data were collected as well as AF development at follow-up. The results were obtained using chi-square and Student-t tests; logistic regression was used to find predictors of death.
Results: 247 patients were included (mean age 62.9 ± 18 years, 61% males), 17,8% with hypertension and 47.4% with significant mitral regurgitation (> moderate). The posterior mitral valve leaflet (PL) was the most frequently involved (49%), followed by involvement of both leaflets (BL) (27%) and the anterior leaflet (AL) (25%). During a mean follow-up of 30 ± 19 months, 27.1% had AF and it was associated with mitral valve intervention and was a predictor of hospitalization (OR = 2.57, 95%CI 1.15-5.75, p = 0.022). Patients with AF were older (72 ± 13 vs 59 ± 19 years, p < 0.001), with high systolic pulmonary artery pressure (SPAP) (p = 0.012), were in higher NYHA functional class (p < 0.001) and had higher mortality (16.1 vs 6%, p < 0.001). In addition, they had higher left ventricle (LV) mass (p < 0.001), posterior wall (p < 0.001) and interventricular septum thicknesses (p = 0.003), but there was no difference in hypertension between groups. All of the previous variables were predictors of AF in univariate analysis. The QRS and cQT interval duration were also associated with AF (p = 0.026 and p = 0.02, respectively) and were predictors of AF in univariate analysis (OR = 1.015, 95%CI 1.001-1.029, p = 0.03 and OR = 1.011, 95%CI 1.002-1.021, p = 0.023, respectively). In multivariate analysis, SPAP (OR = 1.04 95%CI 1.004-1.066, p = 0.009), LV mass (OR = 1.021, 95%CI 1.008-1,035, p = 0.002) and NYHA class > II (OR = 4.742, 95%CI 1.053-21.348, p = 0.043) were independent predictors of AF in our patients. The presence of mitral annulus disjunction and the location of the prolapse had no association with AF in our population.
Conclusions: AF has an important impact in the prognosis of MVP patients namely in intervention and hospitalizations. In our patients SPAP, LV mass and NYHA functional class > II were independent predictors of AF, suggesting that the optimization of hypertension and heart failure treatment in these patients might have a role in MVP natural history.

P 158. MYOCARDIAL FIBROSIS IS A PREDICTOR OF AF IN DILATED CARDIOMYOPATHY-ROLE OF CMR

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Introduction: CMR Late gadolinium enhancement (LGE) has been found in about two-thirds of patients with dilated cardiomyopathy (DCM) and has been associated with ventricular arrhythmia and sudden death. The aim of this study was to assess, in patients (pts) with DCM, the relationship of LGE with the occurrence of atrial fibrillation (AF), which is a frequent complication of DCM.
Methods: 72 consecutive pts (44 ± 11 year-old, 29 men) with DCM were included, after exclusion of ischemic heart disease (coronary angiography or CCT), secondary cardiomyopathies (clinical and laboratory investigation), non-sinus rhythm and contraindications to CMR. Functional class and plasmatic NT-proBNP were assessed. All pts underwent CMR: a) short-axis SSFP for left atrial volume and left ventricle (LV) volumes and ejection fraction (EF); b) LGE presence (segmented inversion-recovery fast gradient-echo sequence); c) Global longitudinal strain using feature tracking (Circle cvi42). Mean follow-up period was 2.8 ± 1.8 years. The occurrence of AF

was registered from the clinical records and from annual Holter monitoring during the follow-up period.
Results: 56 pts were in NYHA class II and 16 in class III. Mean NT-proBNP was 551 ± 380 pg/ml, left atrial volume was 48.5 ± 11.0 ml/m², LV end-diastolic volume was 155 ± 44 mL/m², EF was 34 ± 8%, GLS was 16 ± 2.1. LGE was found in 38 patients (67%) located in midwall, involving a mean of 6 segments per pt (range 3-11). During follow-up, AF episodes occurred in 31 pts. In comparison with pts without AF, pts with AF had higher NT-proBNP (836 ± 110 vs 474 ± 132 pg/ml, p = 0.01), larger atrial volume (56.1 ± 10.1 vs 38.2 ± 9 ml/m², p = 0.002), larger LV end-diastolic volumes (162 ± 31 vs 149 ± 35 ml/m², p = 0.03), lower GLS (14.9 ± 2.1 vs 17.1 ± 1.1) and more frequent LGE (p = 0.0003). No differences were found in EF. Using multivariate analysis, the atrial size and the presence of LGE were independent predictors of AF episodes.
Conclusions: In patients with DCM, both LGE and atrial size were independent predictors of AF, among functional class, LV volumes, GLS and NT-proBNP. These findings should be used for risk assessment and therapeutic decisions for AF prevention.

P 161. RIGHT VENTRICULAR OUTFLOW TRACT PREMATURE VENTRICULAR CONTRACTIONS AND RIGHT VENTRICULAR FUNCTION ASSESSED BY TWO-DIMENSIONAL SPECKLE TRACKING ECHOCARDIOGRAPHY

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Introduction: Premature ventricular contractions (PVCs) originating in the right ventricular outflow tract (RVOT) are considered idiopathic and benign and echocardiographic conventional measurements are typically normal. However, from an electroanatomical mapping perspective, it has recently been demonstrated that patients with PVCs from the RVOT and apparently normal hearts have areas of low voltage electrograms in the RVOT. It is then reasonable to question if in RVOT PVCs patients, along with an apparent electrical remodeling process there is also an anatomical substrate behind the PVCs.
Objectives: To assess whether right ventricle global longitudinal strain (RV-GLS), determined by two-dimensional speckle tracking echocardiography, differ between RVOT PVCs patients and healthy controls.
Methods: We retrospectively selected consecutive patients with PVCs from the RVOT that underwent electrophysiological study and catheter ablation between 2016 and 2019. Patients with documented structural heart disease were excluded. Transthoracic echocardiography was performed after the ablation procedure and RV-GLS was determined (Figure), as well as left ventricle global longitudinal strain (LV-GLS) and conventional ultrasound measurements of RV and LV function.
Results: We studied 21 patients with RVOT PVCs and 13 controls (baseline characteristics are summarized in Table). Median PVCs burden in the RVOT PVCs group prior to ablation was 16197 (Interquartile range: 13,613) PVCs in 24-hour holter monitoring. The acute success rate of the catheter ablation procedure, defined as absence of RVOT PVCs for at least 30 minutes after the procedure, was 86% (n = 18). Patients with PVCs from the RVOT had lower values of RV-GLS compared with the control group (-19% vs -22%, p = 0.041). They also had lower values of LV-GLS compared with the control group, although still within the range of normal values (-19% versus -21%, p = 0.018). Regarding RVOT PVCs patients only, RV-GLS and LV-GLS did not differ between the patients in which the catheter ablation procedure was successful and those in which it was not (-21% versus -19%, p = 0.223 and -19% versus -19%, p = 0.791, respectively). We also observed that the burden of PVCs prior to the catheter ablation procedure had no correlation with the RV-GLS and LV-GLS values obtained (r = -0.046, p = 0.866 and r = -0.165, p = 0.528, respectively). RV-GLS also had a positive correlation with RVOT proximal diameter (r = 0.487, p = 0.025).
Conclusions: In this group of RVOT PVCs patients, we found worse RV-GLS values (and therefore sub-clinical myocardial dysfunction) when compared to healthy controls, irrespective of previous PVCs burden and success of the catheter ablation procedure.

P 156. DIAGNOSTIC POWER OF CARDIAC MAGNETIC RESONANCE IN UNEXPLAINED OR SUSPECTED ARRHYTHMIAS

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Introduction: Etiology of cardiac arrhythmias is often difficult to determine. As the gold standard to anatomical and functional cardiac evaluation, Cardiac Magnetic Resonance (CMR) can be a fundamental technique for accurate assessment of myocardial arrhythmic substrates or for arrhythmias management.
Objectives: The aim of this study is to determine diagnostic and arrhythmic risk stratification impact of CMR performed in patients with suspected or confirmed arrhythmias.
Methods: We performed a six- years prospective study of patients with suspected or confirmed arrhythmias which evaluation with other techniques did not provide a definitive diagnosis. These patients underwent CMR for diagnostic and risk stratification assessment. We applied a protocol to evaluate both ventricles' morphology and functional and late gadolinium enhancement (LGE) presence.
Results: A total of 93 patients were included, of which 66% were male, with a mean age of 45 ± 17 years old. The indications for patients with suspected or confirmed arrhythmias performing CMR evaluation were the following: 33% (n = 31) of the patients had very frequent premature ventricular complexes, 23% (n = 21) had sustained ventricular tachycardia (VT), 5% (n = 5) non-sustained VT, 17% (n = 16) suspected structural heart disease with high arrhythmic potential,10% (n = 9) unexplained recurrent syncope,9%(n = 8) supraventricular tachycardia and 3% (n = 3) aborted sudden cardiac death. Depressed ejection fraction (< 50%) was foundin 10% (n = 9) for LV (mean EF 38 ± 9%) and 15% (n = 14) for RV (mean EF 42 ± 7%). Dilation of LV was found in 25% of patients (n = 23, mean LV volume: 115 ± 7 ml/m²), with RV dilation being present in only 1 patient, who had right ventricle arrhythmogenic dysplasia (RVAD) (RV volume: 152 ml/m²). In total, 16%had interventricular septum hypertrophy (mean 15 ± 4 mm/m²).We found slight anterior leaflet prolapse of mitral valve in 10% (n = 9) of cases and mild mitral regurgitation in 15% (n = 14). Left atrium dilation was observed in 17% (n = 16) of cases (mean area of 18 ± 2 cm²/m²), as right atrium was dilated in only two. In 20% of the patients, CMR contributed to establish a previously unknown diagnosis: 6% (n = 5) have hypertrophic cardiomyopathy, 4% (n = 4) a myocarditis sequelae and 2% (n = 2) had RVAD. LV non-compaction, a silent myocardial infarction scar and non-ischemic dilated cardiomyopathy were diagnosed in 3% of cases each. In 15% (n = 14) we found nonspecific variations, which deserve follow-up. On the remaining patients, CMR was considered normal.
Conclusions: As a high reproducible, accurate and versatile technique, CMR allowed an increase on diagnosis in 20% of the patients with suspected or confirmed arrhythmias. Consequently, it contributed to the risk stratification of our study population with suspected high arrhythmic potential when the first-line complementary exams were inconclusive.

P 157. RIGHT VENTRICLE DEFORMATION IMAGING USE IN BRUGADA SYNDROME PATIENTS: A USEFUL TOOL?

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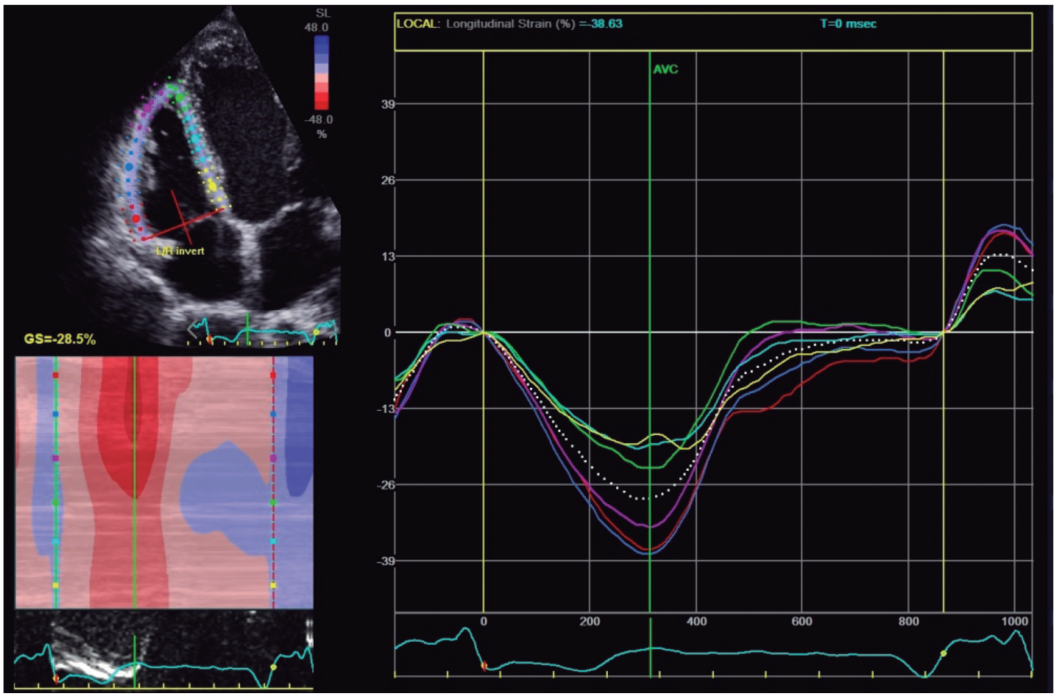
Introduction: In spite Brugada Syndrome (BS) is classically a channelopathy commonly found in apparently normally structural hearts, subtle functional and morphological alterations were previously demonstrated in vivo and post-mortem in BS patients. As deformation imaging is a sensible imaging technique able to show mild alternations in regional and global function of the right and left ventricles, it is unclear whether its use in BS has any diagnostic yield.
Objectives: We aim to evaluate if right ventricle deformation imaging is a useful tool that can be added to the evaluation of patients with Brugada

Table I. Baseline and echocardiographic characteristics in the two groups

	RVOT PVCs (n=21)	Controls (n=13)	P value
Demographic data			
Age in years - mean (SD)	51 (17)	52 (15)	0,871
Male gender – n (%)	13 (62)	9 (69)	0,727
Conventional echocardiographic data			
LVEDV in ml - median (IQR)	88 [48]	86 [23]	0,819
LVESV in ml - median (IQR)	31 [19]	30 [10]	0,458
LVEF in percentage - mean (SD)	60 (6)	62 (6)	0,472
RVOT proximal diameter in mm - mean (SD)	32 (5)	30 (4)	0,287
RVOT distal diameter in mm - mean (SD)	24 (3)	22 (2)	0,061
TAPSE in mm - mean (SD)	23 (4)	23 (4)	0,846
S' RV in cm/s - mean (SD)	13 (3)	14 (4)	0,748
RVEDA in cm^2 - mean (SD)	20 (4)	18 (4)	0,435
RVESA in cm^2 - mean (SD)	11 (3)	10 (3)	0,485
RVFAC in percentage - mean (SD)	45 (6)	45 (6)	0,954
2D Speckle Tracking echocardiographic data			
LV-GLS in percentage - mean (SD)	-19 (3)	-21 (2)	**0,018**
RV-GLS in percentage - mean (SD)	-19 (4)	-22 (2)	**0,041**

Abbreviations: LVEDV (Left ventricle end-diastolic volume), LVES (Left ventricle end-systolic volume), LVEF (Left ventricle ejection fraction), RVOT (Right ventricle outflow tract), TAPSE (Tricuspid annular plane systolic excursion), S' RV (Tricuspid peak systolic velocity), RVEDA (Right ventricle end-diastolic area), RVESA (Right ventricle end-systolic area), RVFAC (Right ventricle fractional area change), LV-GLS (Left ventricle global longitudinal strain), RV-GLS (Right ventricle global longitudinal strain).

Figure 1. Right ventricle global longitudinal strain



P 161.tif

Syndrome, as a proof of concept unveiling a marker of the disease in high risk patients.
Methods: We performed a retrospective study in a high risk Brugada Syndrome cohort with previous ICD implant by standard of care criteria, and prospectively assessed longitudinal strain (LS) of the right ventricle (RV) in the focused apical 4 chamber view including free wall and interventricular septum with a Vivid E95 from GE® and its dedicated EchoPac workstation for offline analysis, as well as RV mechanical dispersion (MD RV) and left ventricle global longitudinal strain. A population of healthy controls was also assessed in order to compare deformation imaging of the RV to BS patients and we further analyzed differences between BS patients who had previously documented life-threatening ventricular arrhythmias.
Results: A cohort of 12 healthy controls and 9 BS patients was included, all of which with ejection fraction in the normal range, with apparently structural normal hearts and in sinus rhythm. BS patients were predominantly male (5, 55.5%), with a mean age of 50 years (IQR 40-61). Of these, 5 patients (55.5%) had ICD implant for primary prevention. Syncope was documented in 5 patients (55.5%), type 1 spontaneous ECG pattern in 7 (77.8%) and an EPS was performed and positive in 4 (44.4%). One patient had an arrhythmic storm and 1 (11.1%) patient had appropriate ICD therapy for VA. Follow up duration was 90.7 months (IQR 28-175). BS patients had a median RV LS of -21.6 (IQR -22.8; -20.3) and MD of RV of 41.9 (IQR 14.3-91.7) and healthy controls a median RV LS of -22.8 (IQR -24; -20.6) and a MD or RV of 39.5 (16.6-50.6) (non-significant) (Table). Among BS, there were no significant differences in RV LS or MD of RV between patients with type 1 or type 2 ECG, previous syncope or in whom ICD was implanted for secondary prevention or had VA treated by ICD, as well as among other parameters of RV function or LV GLS (Table).

	Healthy Cohort (n=12)	Brugada Syndrome Cohort (n=9)	p
RV longitudinal strain	-22,8 (IQR -24; -20,6)	-21,6 (IQR -22,8; -20,3)	0,27
RV mechanical dispersion	39,5 (IQR 16,6-50,6)	41,9 (IQR 14,3-91,7)	0,52
RV TAPSE (mm)	23,7 (IQR 20,1-26,9)	21 (IQR 18-25)	0,34
RV FAC (%)	44,5 (IQR 40,8-46,4)	42,1 (IQR 39,3-45,9)	0,36
RV pRVOT diameter (mm)	30,6 (IQR 26,9-32,9)	29 (IQR 28-31)	0,72
RV dRVOT diameter (mm)	21,9 (IQR 20,1-23,2)	19 (IQR 18-22,5)	0,09
LV GLS	-20,6 (IQR -22,1; -18,9)	-19,2 (IQR -20,1;-17,9)	0,11

Table 1. Differences of the parameter of RV and LV function of the cohort, using Mann-Whitney test.

Conclusions: Among Brugada Syndrome patients, abnormal motion contractility or electrical desynchrony of the right ventricle, as expected to be present with previous studies demonstrating structural alterations in the RV among these patients, are not evident among this cohort when assessed by longitudinal strain and mechanical dispersion.

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P 162. RATIONALE AND DESIGN OF THE "SCREENING OF ATRIAL FIBRILLATION AMONG ELDERLY IN PRIMARY CARE WITH MYDIAGNOSTIK" (SAFEST) STUDY

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Introduction: Previous epidemiologic studies showed a high prevalence of atrial fibrillation (AF) in the elderly Portuguese population, which is frequently underdiagnosed, with suboptimal rates of oral anticoagulation (OAC) and effective control of cardiovascular risk factors. Recent studies have demonstrated that 45% of all AF-related strokes occurred in patients with asymptomatic and unknown AF. Screening and searching for AF may have a potential role preventing complications if adequate treatment is prescribed early.
Objectives: To determine the diagnostic yield (number needed to screen) of an opportunistic screening strategy of AF in elderly with Mydiagnostick, and to assess the impact of screening-based AF diagnosis on the 6-month OAC adherence rate.
Methods: This registry is a prospective multicentric study. We will perform opportunistic screening for atrial fibrillation among the elder population (> 65 years) in 27 Primary Care Health Centers, in Portuguese rural areas. Subjects over 65 years, without previously diagnosed AF, that accept to participate in the study will be performing a non-invasive and quick AF diagnostic test with a hand-held single-lead ECG device (MyDiagnostick) during their routine GP consultation. Subjects with an AF detection by the device will perform an ECG, which will be remotely evaluated by the Investigators in order to confirm the AF diagnosis. After Subject's GP notification, subjects with AF are supposed to be treated according to current medical guidelines. The study has no exclusion criteria. Considering a potential of 1.3% new-cases of AF (according to previous data on AF incidence in this age group), a margin of error of 0.3%, and a CI of 99%, the sample size required for this study is 9411 patients. The recruitment period is estimated to be 6 months. At 6 months follow-up, major adverse cardiovascular and cerebrovascular events will be recorded, along with any-cause and cardiovascular mortality. Analysis of OAC therapy adherence rate is also pre-specified.
Conclusions: To our knowledge, no study using simple devices for opportunistic screening of AF in the elderly, with a particular focus on rural areas, was performed to date. Detecting asymptomatic AF would provide an opportunity to reduce ischaemic stroke incidence in these patients, by instituting appropriate OAC. Also, improving AF diagnosis in rural areas may have a great population-level benefit, by attenuating regional differences in the level of health care, and minimizing the burden of other AF-related complications.

P 163. EFFECT OF ATRIAL FIBRILLATION ON NT-PROBNP LEVELS IN PATIENTS WITHOUT HEART FAILURE

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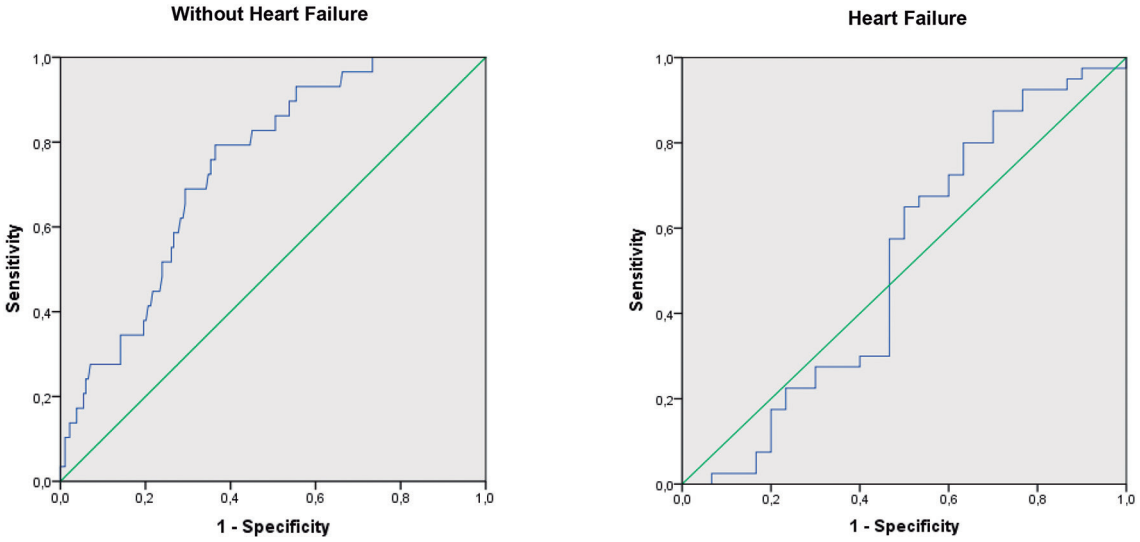
Introduction: Natriuretic peptides are of substantial medical value for the diagnostic evaluation of suspected heart failure (HF). However, there are several factors that influence their levels. Atrial Fibrillation (AF) is thought to be associated with higher levels of NT-proBNP, thereby influencing the diagnostic evaluation of suspected HF.
Objectives: To evaluate the impact and association of the presence of AF in the values of NT-proBNP, in patients with and without diagnosis of HF. To evaluate NT-proBNP as a predictor of AF.
Methods: A 4-month prospective study, including all consecutive patients admitted to one of the medical wards of the Internal Medicine Department in our hospital. Patients were divided into two groups according to the existence of a clinical diagnosis of HF. For each patient, a characterization of demographic data, comorbidities, as well as determination of NT-proBNP, troponin I, haemoglobin and criteria for absolute and functional iron deficiency (ID) were collected. All patients with a diagnosis of heart failure had an echocardiogram performed. The influence of atrial fibrillation on NT-proBNP levels was analysed, on patients with and without a clinical diagnosis of HF.
Results: The study included 284 patients of which 70 had a clinical diagnosis of HF. Patients with and without HF were similar in terms of sex ($p = 0.737$) obstructive sleep apnoea ($p = 0.668$), infection ($p = 0.406$), acute kidney injury ($p = 0.098$), alcoholism ($p = 0.591$), haemoglobin ($p = 0.098$) and functional ID ($p = 0.164$). Within the group without HF, the presence of AF was associated with a 11,197 pg/mL average increase of NT-proBNP levels, adjusted for acute kidney injury, infection and haemoglobin ($p = 0.002$). Such a statistical meaningful association was not found within the group of patients with HF ($p = 0.812$), even when analysing the subgroups with ejection fraction < 50% or ejection fraction ≥ 50% ($p = 0.114$ and $p = 0.075$, respectively). For patients without HF, the AUC of NT-proBNP levels to predict AF was 0.74 ($p < 0.001$).



P 163 Figure

Conclusions: In our study, the presence of AF had an impact on NT-proBNP levels only in patients without HF. In patients with HF, the presence or absence of AF does not have a significant impact in NT-proBNP levels. Moreover, NTpro-BNP levels seem to be a significant preditor of AF.

P 164. CATHETER ABLATION IN ATRIAL FIBRILLATION: COMORBIDITIES AND MORTALITY FROM HIGH-VOLUME CENTERS

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Introduction: Catheter ablation (CA), has gained wider acceptance as an attractive option for treating symptomatic AF. Although traditionally seen as a safe procedure, there is limited and conflicting data on procedure-related early morbimortality, with new evidence suggesting early mortality may be as high as 0.5-1%.
Objectives: We aimed to assess the rates of early and late morbimortality of post-atrial fibrillation (AF) ablation in high-volume centers.
Methods: Prospective registry of 2 high-volume ablation centers, comprising 3,722 consecutive patients (mean age 61.1 ± 11.2, 66.4% male, n = 2471), who underwent AF ablation from 2005 to 2019. Early mortality was defined as death during initial admission or during the first 45 days after ablation. Median follow-up time was 5.4 years.
Results: Most patients were treated with radiofrequency (97%) while 3% were treated with cryoablation. Early mortality was 0.08% (n = 3), with a median time from ablation to death of 22 days. Cumulative mortality at 3, 6 and 12 months was 0.08%, 0.16% and 0.19%, respectively. At 3 and 5 years, mortality remained low at 0.48% and 0.73%, respectively. Early mortality was higher among patients who had suffered procedural complications (fistula and stroke, p < 0.001). Among the latter, pericardial effusion and tamponade were the most frequently found (0.6%, n = 24), only 1 of which required emergent surgical drainage and myocardial repair. Early ischemic stroke occurred in 2 patients (0.1%). Other less frequent complications were atrio-esophageal fistula (0.1%, n = 2), phrenic nerve palsy (0.1%, n = 2), anoxic encephalopathy following cardiac arrest (0.03%, n = 1) and pulmonary vein stenosis (0.03%, n = 1).
Conclusions: Early mortality following ablation is very low (< 0.1%), when performed by an experienced high-volume team. Severe complications are rare (< 1%) and mostly amenable to treatment. Our findings challenge recent evidence and reaffirm the overall safety of AF ablation.

P 165. DE NOVO ATRIAL FIBRILLATION IN ACUTE CORONARY SYNDROMES

Helder Santos[1], Hugo Miranda [1], Inês Almeida [1], Mariana Santos[1], Catarina Sá [1], Joana Chin [1], Samuel Almeida[1], Catarina Sousa[1], Lurdes Almeida[1], João Tavares[1], em nome dos investigadores do Registo Nacional de Síndromes Coronárias Agudas[2]

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Introduction: Acute coronary syndromes (ACS) and atrial fibrillation (AF) are common and in some cases the first episode of AF can occur in the context of an ACS. A stressful event as an ACS can be the trigger for AF, however, not all patients presented AF, being important identified the patients with more risk.
Objectives: Evaluate predictors of *de novo* AF in ACS.
Methods: Multicenter retrospective study including ACS between 1/10/2010-4/09/2019. Patients were divided in two groups: A-patients without AF, and B-patients that presented *de novo* AF. Were excluded patients without a previous cardiovascular history or clinical data. Logistic regression was performed to assess predictors of *de novo* AF in ACS.
Results: 25,727 patients had ACS, 24,660 in group A (95.9%) and 1,067 in group B (4.1%). Both groups were similar regarding smoker status. Group A had more dyslipidemia (61.8 vs 56.3%, p < 0.001), chest pain at admission (92.9 vs 81.9%, p < 0.001) and hemoglobin (Hb) > 12 g/dL (83.4 vs 73.3%, p < 0.001). Group B was elderly (66 ± 14 vs 75 ± 12, p < 0.006), female (27.3 vs 35.8%, p < 0.001), was admitted directly to the cat lab (10.4 vs 18.8%, p < 0.001), had arterial hypertension (70.4 vs 75.6%, p < 0.001), diabetes mellitus (31.4 vs 34.6%, p = 0.029), valvulopathy (3.7 vs 5.7%, p < 0.001), previous heart failure (5.7 vs 11.5%, p < 0.001), stroke (7.0 vs 11.3%, p < 0.001), peripheral artery disease (5.4 vs 8.1%, p < 0.001), ST-segment elevation myocardial infarction (41.9 vs 53.4%, p < 0.001), Killip-Kimball (KK) classification > I (14.3 vs 35.6%, p < 0.001), admission glycemia (33.6 vs 40.4%, p < 0.001), mutivessel disease (51.5 vs 56.0%, p < 0.001), hybrid revascularization (2.1 vs 2.1%, p < 0.001) and left ventricular ejection fraction (LVEF) < 50% (38.2 vs 59.4%, p < 0.001). Logistic regression revealed that age > 75 years old (odds ratio (OR) 2.07, p < 0.001, confidence interval (CI) 1.74-2.47), stroke history (OR 1.40, p = 0.019, CI 1.06-1.85), KK > 1 (OR 2.10, p < 0.001, CI 1.72-.56), Hb < 12 g/dL (OR 1.29, p = 0.018, CI 1.04-1.59), admission glycemia (OR 1.84, p < 0.001, CI 1.52-2.22) and LVEF < 50% (OR 1.91, p < 0.001, CI 1.60-2.27) as predictors of de novo AF in ACS.

Conclusions: Using real life data, older age, LVEF < 50% and KK class at presentation were the most relevant factors predicting *de novo* AF in ACS.

P 166. WHO'S TOO OLD FOR EPICARDIAL FAT VOLUME QUANTIFICATION?

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Introduction: Epicardial adipose tissue has been implicated in the pathophysiology of atrial fibrillation (AF) and was recently shown to be an independent predictor of AF relapse rate and severity after pulmonary vein isolation (PVI). However, its impact in older patients hasn't been analyzed. The aim of this study was to assess the relative importance of pericardial fat in an older population of patients undergoing pulmonary vein isolation (PVI).
Methods: Single-center retrospective study of symptomatic drug-resistant AF patients undergoing PVI from November/2015 to June/2019. Baseline demographics, clinical and imaging data including cardiac CT and clinical outcomes were collected and analyzed. Population was dichotomized according to age above or below 70 years of age and groups were compared. Epicardial fat volume was quantified by contrast-enhanced cardiac CT using a semi-automated method. The study endpoint was symptomatic and/or documented AF recurrence after a 3-month blanking period.
Results: We assessed 575 patients (354 males, mean age 61 ± 11 years, 449 paroxysmal AF), 145 of which were 70 or older. Compared to the younger cohort, these patients had an higher prevalence of women, lower BMI (27 kg/m^2 [IQR 24-30] vs 28 kg/m^2 [IQR 25-30] kg/m^2, p = 0.012), higher CHA_2DS_2-VASc score (3 [IQR 2-4] vs 1 [IQR 1-2], p < 0.001) and larger indexed left atrial volumes (LAVi; 61 mL [IQR 52-84] vs 54 mL [IQR 47-66], p < 0.001). Median pericardial fat volume was 2.96 cm^3/m^2 [IQR 2.99-4.00] in the overall population and was higher in older patients (HR 2.21cm^3/m^2 [IQR 1.44-3.17] vs HR 1.87 cm^3/m^2 [IQR 1.24-2.90]; p = 0.016). During follow-up, 232 patients relapsed (40%), with similar recurrence rates between younger and older patients (40% vs 42%, p = 0.63) according to Kaplan-Meier survival curve analysis (HR 1.10, 95%CI 0.82-1.48; log-rank p = 0.519). Epicardial fat volume remained an independent predictor of AF relapse in this subset of patient (HR 1.06 [95%CI 1.28-2.00]; p < 0.001), as did the presence of non-paroxysmal AF (HR 2.78 [95%CI 1.48-5.21]; p = 0.001).
Conclusions: Patients over 70 years old with drug-refractory symptomatic AF presented with higher epicardial fat volume. Epicardial fat burden showed similar predictive power for AF relapse after PVI in this subset of patients, representing a useful tool for intervention decision across this age spectrum.

P 167. DOES ATRIAL FIBRILLATION HAVE A LONG-TERM PROGNOSTIC IMPACT IN ICD PATIENTS?

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Introduction: Implantable Cardioverter Defibrillators (ICD) may be indicated for secondary prevention of sudden cardiac death (SCD) or for primary prevention in patients with ischaemic (i-CMP) and dilated noni-CMP with low ejection fraction (EF) and in selected patients with other CMP and channelopathies. Atrial fibrillation (AF) is a very common comorbidity in these patients. There is increasing evidence showing that AF may also be associated with higher overall mortality and (in)appropriate shock therapy, however the benefits of ICD in these patients comparing to patients in sinus rhythm are not fully established.
Objectives: To compare the prognostic impact of ICD in patients with and without AF.
Methods: Prospective single-center study of patients who implanted ICD between 2015 and 2019. Clinical characteristics were evaluated at baseline and mortality was assessed using the national registry. We performed univariate and multivariate analysis to compare clinical characteristics of patients with and without AF. Prognostic impact of ICD was evaluated by comparing total mortality using the Cox regression and Kaplan-Meier methods.
Results: From 2015-2019, 414 ICDs were implanted (81% male, 62 ± 12 years old, follow-up duration 23 [11-41] months). Among these patients, 86 patients (21%) had AF (85% males, mean age 76 ± 10 years, 53% ischemic, 58% secondary prevention and 85% with LVEF ≤ 40). The cardiovascular risk factors and comorbidities were similar in both populations (with and without AF), except for diabetes mellitus (45% vs 32%, p = 0.027) which was more frequent in AF patients. After adjusting for diabetes (HR 1.64; 95%CI 0.92-2.91, p = 0.092) and dilated noni-CMP (HR 0.61; 95%CI 0.28-1.33, p = 0.213), we found that all-cause mortality remained similar between both groups (HR 0.93; 95%CI 0.47-1.84, p = 0.832).
Conclusions: In our cohort of patients who underwent ICD implantation, we found that mortality is similar between patients with AF and without AF and that diabetes, dilated noni-CMP and ventricular tachycardia ablation were independent predictor of all-cause mortality. Long-term survival in patients with an ICD was comparable between patients with and without AF.

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P 168. CRT IMPLANTATION IN PATIENTS WITH BORDERLINE CRITERIA-IS IT WORTH IT?

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Introduction: The ESC guidelines support the implantation of Cardiac Ressynchronization Therapy (CRT) in symptomatic patients (pts) with heart failure (HF) with reduced left ventricle ejection fraction (LVEF), left bundle branch block (LBBB) and wide QRS. However, the implantation of CRT in certain pts with only borderline criteria is a reality.
Objectives: To characterize patients (pts) who underwent CRT implantation, identify those who did not meet implantation criteria and analyze their performance over time.
Methods: A retrospective single center study was performed in order to analyze pts submitted to CRT implantation in the last 7 years (2012-2019). Clinical and imaging data were collected, as well as long term outcomes (hospitalization, mortality and response. Pts who did not meet guidelines criteria were considered as having only borderline criteria (LVEF > 35% and QRS < 130). Responders were defined as pts who improved ≥ 1 NYHA class or/and > 10%LVEF.
Results: We analyzed a total of 130 pts, 65% males with a mean age of 71 ± 11 years, with optimized medical treatment. Non-ischemic cardiomyopathy was present in 77% of pts. 70% pts had QRS > 150 and 79% pts had complete LBBB. The mean LVEF was 28 ± 7.5%, mean left ventricular end-diastolic volume index (LVEDVI) was 125 ± 116 ml/m^2 and mean VTI LVOT was 14 ± 5cm. Most of pts were NYHA class 3. By the time of CRT implantation,

23% pts did not meet the full implantation criteria defined by guidelines. Those had mean LVEF of 38 ± 4.2%, mean QRS of 129 ± 2.8 and NYHA class 2.9 ± 0.6. Despite not meeting those criteria, they were considered for CRT implantation as they were highly symptomatic despite optimized medical therapy. After implantation, 68.8% were considered responders, subsequent hospitalizations occurred in 25.4%, and 20 pts died. When analyzing the subpopulation of pts with only borderline criteria we found no differences in what concerns gender, previous medical history or HF etiology. Before implantation, they had higher NYHA class (2.70 ± 0.6 vs 2.45 ± 0.6, p = 0.004) and but higher VTI LVOT (17.3 ± 4.4 cm vs 3.6 ± 4.9 cm, p = 0.018). Mostly CRT-P were implanted (72.4% vs 45% p = 0.009), requiring shorter time of fluoroscopy (11 ± 7 min vs 17 ± 12 min, p = 0.009). In what concerns overall outcomes, they had a higher rate of failure of the target pacing site (10.3% vs 1.1%, p =,014), had more hospital admissions (44.8% vs 20%, p = 0.007), specially HF admissions (37.9% vs 13.1%, p = 0.003), and were considered less responders (46.4% vs 75%, p = 0.004). No differences were found in what concerns mortality due to HF and overall survival (log rank: 0.791, p = 0.37).
Conclusions: CRT therapy has proven to be very effective in improving morbimortality in pts with severe congestive HF. Specific criteria were determined to identify the best candidates. Implantation of CRT in pts with borderline criteria is not harmless, being associated with worse response and more hospital admissions.

P 169. LEAD EXTRACTION WITH THE "PISA TECHNIQUE"-EXPERIENCE OF A PORTUGUESE TERTIARY CARE CENTER

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Introduction: The "Pisa Technique" (PT) is an increasingly used method of lead extraction (LE) that has shown excellent results in terms of clinical (Cs) and radiological success (Rs) associated with the lowest rate of complications reported in ELECTRa Registry.
Objectives: To characterize the adult population submitted to LE with the PT and evaluate its short-term results.
Methods: a single-center prospective study of consecutive procedures (P) of LE using the PT between February 2013 and October 2019. Demographic, clinical, and P related variables, mortality (M) and reimplantation (R) data were assessed.
Results: 320 electrodes (E) were removed in a total of 171 Ps and 159 patients (pts). 80.7% of these P's were due to CIED infection (55.1% due to pocket site infection, 18.8% to occult bacteremia with probable CIED infection and 26.1% due to both local and systemic infection, with 44% of pts presenting with valvular/lead vegetation) and the remainder due to E dysfunction or venous occlusion. Pts averaged 67.7 years of age, 71.9% were male with a mean left ventricular ejection fraction of 47.8%. 19.3% presented coronary artery disease, 42.1% overt heart failure and 43.9% atrial fibrillation. 29 pts had cardiac resynchronization devices, 20 pts implantable cardioverter-defibrillator devices and 110 pts pacemaker systems (mostly DDD). The mean "age" of the extracted E's was 83.2 months, 244 of which were atrial or ventricular pacing, 26 pacing E's via the coronary sinus and 50 shock E's. In 31.0% of the cases, the E's were of active fixation, with 42.7% of the pts being pacing dependent. 14% of pts had a previous attempt of LE, 37.4% had already been submitted to generator replacement and a third to CIED upgrade. In 66.7% of pts, a new contralateral CIED was implanted during the hospital stay-H -(mean time for R of 6 days) and in 19% of R's an antibacterial envelope was used. The Rs and Cs rates were 91.2% and 98.3%, respectively. There was 1 case of cardiac tamponade during LE, which was stabilized by pericardiocentesis and 2 pocket site hematomas requiring surgical drainage. There were no deaths during the P. During a mean follow-up (FU) of 33 months, 11 pts had to undergo a new P, 5 of them due to pocket reinfections. The M rate during FU was 24.2% (37 pts), with 8 pts (5.0%) dying during H, mostly due to septic shock, and 19 pts during the first year post-P.
Conclusions: Our center's experience with the PT confirms the method's high efficacy and safety in the percutaneous extraction of E's in pts with CIED.

P 170. INITIAL EXPERIENCE WITH A NEW QUADRIPOLAR ACTIVE FIXATION LEFT VENTRICULAR LEAD FOR CARDIAC RESYNCHRONIZATION THERAPY

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Introduction: Cardiac resynchronization therapy (CRT) is a highly effective treatment option for selected patients with heart failure, cardiac dyssynchrony and reduced ejection fraction. One of the predictors of response to CRT is LV lead placement. Medtronic® has developed a new LV lead with active fixation, the Attain Stability Quad™ Active Fixation LV Lead (Model 4798), which intends to improve lead positioning and stability. This new design might allow the operator to choose the exact location of the lead in the vein, which is particularly useful for pacing in basal segments and in patients larger veins and/or complex anatomies. Here we report our initial experience with this new active fixation LV lead, regarding to procedural aspects, pacing parameters performance and stability.
Methods: Prospective study of consecutive 32 patients eligible for CRT who were implanted the new LV lead (Model 4798). A single, highly experienced operator performed all procedures. Lead fixation success was confirmed by the *push and pull test*. Lead impedance, sensing and threshold were analysed immediately after implantation and after a median follow-up of 3 months.
Results: Patients mean age was 74 ± 13 years-old and 53% were female. 69% had non-ischemic cardiomyopathy, median LV ejection fraction was 29 ± 7% and the median QRS duration was 163 ± 25 ms (91% had complete left bundle branch block). 22% (n = 7) of the procedures were upgrades from pacemaker or implantable cardiac defibrillator to CRT. Venous access in first implantations (n = 25; 78%) was achieved exclusively through the cephalic vein in 60% of patients: 13 patients received 3 leads (LV, RV, RA) and 2 patients received 2 leads (LV, RV). All leads were implanted through the subclavian vein when the procedure was an upgrade in patients with a previous cardiac device. The LV lead was placed in the lateral or in the postero-lateral tributary veins of the coronary sinus in 53% and 19%, respectively. 31 of 32 patients were successfully implanted at first attempt (success rate: 97%). 1 patient had a small vein dissection but was successful implanted at a 2nd procedure. There were no other complications. The electrode was robust and easy to handle with no technical issues registered. Peri-procedural LV thresholds and impedance were 1.2 ± 0.74 V and 909 ± 331 ohm respectively. At follow-up, LV threshold was 0.94 ± 0.6V and impedance was 600 ± 133 ohm. During follow-up (median: 342 ± 178 days), we observed one lead displacement and one abnormal elevation in LV threshold. Both events happened early after implantation and patients were re-operated with success using the same lead. Lead performance remained stable in all other patients.
Conclusions: Implantation of this new active fixation LV lead was safe and feasible with a success rate of 97%. Follow-up revealed good lead performance.

P 171. CARDIAC RESYNCHRONIZATION THERAPY: LEFT OR NON-LEFT BUNDLE BRANCH BLOCK? THAT IS THE QUESTION

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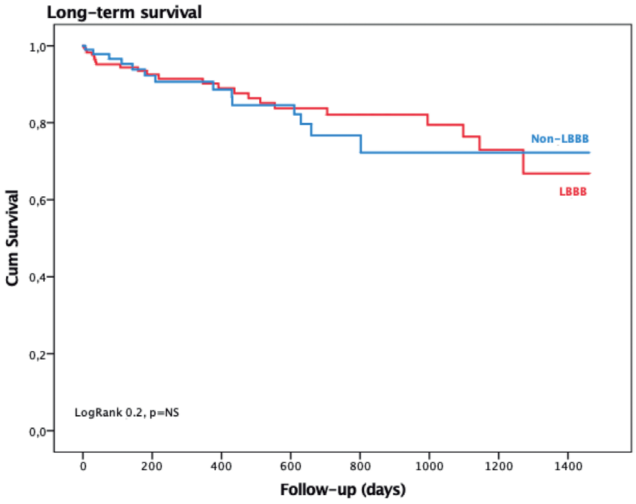
Introduction: Cardiac resynchronization therapy (CRT) is associated with reduced mortality and improved quality of life in patients (pts) with low ejection fraction (EF) and conduction delays. Patients with left bundle branch block (LBBB) seem to be the ones who benefit the most from CRT and there is controversy about its efficacy in patients with non-LBBB.

Objectives: To compare the prognostic impact and the response rate to CRT in patients with LBBB and non-LBBB.



Population Characteristic	LBBB patients 59%	Non-LBBB patients 32.8%	P value
Age, years (mean ± standard deviation)	71.6±10.8	70.5±9.3	NS
Female gender, n (%)	31%	28.4%	NS
Ejection fraction < 30%, n (%)	62 (65.5%)	302 (64%)	NS
Comorbidities			
Hypertension, n (%)	87.0%	87.8%	NS
Dyslipidemia, n (%)	62.2%	60.7%	NS
Diabetes, n (%)	33.3%	50.6%	0.007
CKD (GFR < 60mL/min/1.73m^2), n (%)	18.2%	27.5%	NS
COPD, n (%)	10.4%	8.9%	NS
AF, n (%)	32.5%	26.4%	NS
NYHA Functional Class			
II, n (%)	58.3%	67.2%	NS
III, n (%)	38%	31.1%	
Heart Failure Etiology			
Ischemic cardiopathy, n (%)	34.5%	40.9%	NS
Dilated cardiomyopathy, n (%)	57.6%	54.8%	NS
Device Type			
CRT-P, n (%)	44.5%	38.9%	NS
CRT-D, n (%)	55.9%	61.1%	

Methods: Prospective single-center study of patients who implanted CRT between 2015 and 2019. Clinical, electrocardiographic and echocardiographic evaluations were made before CRT implant and between 6-12 months post-implant. Patients with EF elevation ≥ 10% or LV end-systolic volume (ESV) reduction ≥ 15% were classified as responders. Patients with EF elevation ≥ 20% or LV ESV reduction ≥ 30% were classified as super-responders. All the parameters were compared between patients with or without LBBB. Prognostic impact of resynchronization therapy was evaluated by comparing total mortality using the Cox regression and Kaplan-Meier methods.
Results: From 2015-2019, 566 CRTs were implanted (26.1% female, 72 ± 10.2 years old, follow-up duration 18.9 ± 15.8 months). From these patients, 59% had LBBB (69% males, mean age 71.6 ± 10.8 years, 34.5% ischemic, LVEF < 30% in 65.5%). The cardiovascular risk factors and comorbidities were similar in both populations (with and without LBBB), except for diabetes which was more frequent in non-LBBB patients (33% vs 50.6%, p = 0.007). Mean duration of QRS was similar between LBBB vs non-LBBB patients (163 ± 19ms vs 160 ± 22 ms, p = NS) and baseline ejection fraction was also equivalent (29.8 ± 13.6% vs 27.9 ± 8.9%). The prevalence of complications and surgical revisions were similar in both groups. The response rate according to LV remodelling criteria was higher in LBBB pts (65.9% vs 49.1%, p < 0.05), but the super-responders were similar in both groups (32.5% vs 26.4% p = NS). The 4-year survival rate of patients with LBBB and non-LBBB was similar (86.5% vs 85.3%).
Conclusions: In our population the response rate to CRT was higher in LBBB pts. However, and despite the actual controversy about the efficacy of CRT in non-LBBB, the long-term mortality was similar in patients with or without LBBB.

P 172. LONG-TERM FOLLOW-UP IN PRIMARY AND SECONDARY PREVENTION ICD PATIENTS IN A MODERN COHORT

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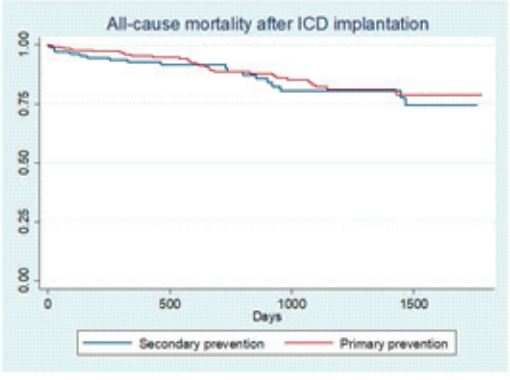
Introduction: Implantable Cardioverter Defibrillators (ICD) may be indicated for secondary prevention of sudden cardiac death (SCD) and for primary prevention in patients with ischaemic (i-CMP) and non-ischaemic dilated CMP with low ejection fraction (EF). Device primary prevention of SCD may also be indicated in selected patients with other CMP and channelopathies. In early secondary prevention cohorts, ICDs seemed to produce an equal reduction of all-cause mortality comparing to primary prevention cohorts. However, evidence on the mortality of primary versus secondary indication is limited in the light of current medicine and devices technology.
Objectives: In a modern cohort, to compare all-cause mortality between patients who implanted an ICD for primary versus secondary prevention of SCD.
Methods: Prospective single-center study of patients who implanted ICD between 2015 and 2019. Clinical characteristics were evaluated at baseline and mortality was assessed using the national registry of citizens. We performed univariate and multivariate analysis by using logistic regressions to compare clinical characteristics of patients who were implanted with an ICD for primary versus secondary prevention. Mortality was assessed by using Cox regression, as well as Kaplan-Meier methods.
Results: From 2015-2019, 414 ICDs were implanted (81% male, 62 ± 12 years-old), 271 (66%) had an indication of primary prevention of SCD and 50 (13%)

	Primary prevention (n=271)	Secondary prevention (n=142)	OR (CI95%)	p-value
Basal clinical characteristics				
Male gender, n(%)	218 (80%)	116 (82%)	0.922 (0.55-1.55)	0.760
Age, mean±standard deviation	63 ± 12	63 ± 13	1.043 (1.02-1.07)	0.002
NYHA class >II, n(%)	121 (50%)	29 (25%)	3.034 (1.86-4.95)	<0.001
Creatinine, median[inter-quartile range]	1.07 [0.86-1.26]	1.04 [0.84-1.36]	0.744 (0.55-1.01)	0.057
Comorbidities				
Atrial fibrillation, n(%)	50 (19%)	36 (26%)	0.649 (0.40-1.06)	0.084
Hypertension, n(%)	200 (76%)	96 (72%)	1.237 (0.77-1.98)	0.375
Diabetes mellitus, n(%)	97 (37%)	42 (31%)	1.272 (0.82-1.98)	0.286
Dislipidemia, n(%)	172 (65%)	69 (51%)	1.272 (0.82-1.98)	0.286
Smoker or ex-smoker, n(%)	135 (52%)	57 (43%)	1.429 (0.94-2.18)	0.096
ICD indication criteria				
Ischaemic CMP, n(%)	172 (65%)	73 (51%)	1.642 (1.09-2.48)	0.018
Dilated CMP, n(%)	77 (28%)	28 (20%)	1.616 (0.99-2.64)	0.055
Other CMP or channelopathies, n (%)	22 (8%)	41 (29%)	0.218 (0.12-0.38)	<0.001
LVEF ≤40%, n(%)	245 (91%)	70 (49%)	10.080 (5.99-17.07)	<0.001
ICD re-implantation after complication/ pacemaker upgrade, n(%)	2 (1%)	8 (6%)	0.125 (0.03-0.59)	0.009
Follow-up events or interventions				
Ventricular tachycardia ablation, n(%)	3 (1%)	23 (16%)	0.058 (0.017-0.197)	<0.001
Need for device surgical revision during follow-up, n(%)	16 (6%)	7 (5%)	1.210 (0.49-3.01)	0.682
Mortality, n(%)	33 (12%)	19 (14%)	0.798 (0.43-1.47)	0.472



P 172 Figure

died after a median follow-up of 23 [11-41] months. Patients who underwent ICD implantation for primary prevention were younger (61 ± 12 vs 63 ± 13, p = 0.002) and were more frequently in NYHA class ≥ II (50% vs 25%, p < 0.001). They also had more i-CMP (63% vs 51%, p = 0.018) and a LVEF ≤ 40% (91% vs 49%, p < 0.001). Patients with a secondary prevention indication experienced more frequently an ICD re-implantation after complication or pacemaker upgrade (6% vs 1%, p = 0.009), and during follow-up they also underwent more ventricular tachycardia (VT) ablation (16% vs 1%, p < 0.001). Despite these differences between groups, the multivariate analysis showed that the NYHA class and etiology of CMP were not independently associated with primary prevention. After adjusting for age, EF ≤ 40%, re-implantation/upgrade and AF or VT ablation, we found that ICD indication was not an independent predictor of all-cause mortality (HR 0.579; 95%CI 0.30-1.00, p = 0.095).
Conclusions: In our cohort of patients who underwent ICD implantation, the majority (66%) had a primary indication for prevention of SCD. During a median follow-up period of almost 2 years, primary and secondary prevention ICD patients exhibited comparable all-cause mortality rates (13%).

P 173. CLINIC AND ECHOCARDIOGRAPHIC PREDICTOR FACTORS TO INCREASE LEADLESS PACEMAKER PROCEDURE TIME

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Introduction: Leadless pacemaker implantation is a therapeutic option in patients that need just ventricular stimulation mainly elderly with persistent atrial fibrilation. In comparison with conventional transvenous pacemaker presents similar complication rate, but emphasize the inferior time of procedure. The aim was to evaluate clinics and echocardiographics factors associated with prolonged implantation time.

Distribution of clinic and echocardiographic variables according the procedure time.

	Cases (n = 7) (mean/%)	Controls (n = 69) (mean/%)	p
Procedure time (min)	91.57	34.05	< 0.0001
Clinic variables			
Mean age (years)	76.57	75.04	0.382
Male sex	5 (71.4)	39 (56.5)	0.719
Arterial hypertension	5 (71.4)	36 (52.1)	0.564
Diabetes mellitus	2 (28.5)	18 (26.0)	0.757
Persistence atrial fibrillation	6 (85.7)	45 (65.2)	0.497
Chronic obstructive lung disease	2 (28.5)	7 (10.1)	0.410
Obesity (CMI > 30 Kg/m²)	2 (28.5)	6 (8.6)	0.324
Hypopneia-apneia sleep	0 (0)	4 (4.3)	NM
Renal failure (Clearance Cr < 60 ml/min)	2 (28.5)	14 (20.2)	0.979
OAPD	2 (28.5)	1 (1.4)	0.012
Liver cirrhosis	1 (14.2)	0 (0)	NA
Ischemic heart disease	4 (57.1)	15 (21.7)	0.108
Congenital cardiopathy	2 (28.5)	2 (2.9)	0.044
Hypertrofic cardiomiopathy	0 (0)	2 (2.9)	NM
Echocardiographic variables			
LVEF ≤ 40%	1 (14.2)	4 (5.8)	0.949
Mitral valvopathy	2 (28.5)	15 (21.7)	0.950
Aortic valvopathy	1 (14.2)	18 (26.0)	0.818
Tricuspid insufficiency (moderate to severe)	3 (42.8)	6 (8.7)	0.040
PSAP > 40 mmHg	3 (42.8)	10 (14.5)	0.169
Septal hypertrophy ≥ 14 mm)	0 (0)	5 (7.2)	NM
RV failure	1 (14.2)	4 (5.8)	0.949

*NM - Not measurable.

Methods: Retrospective observational study of 76 patients that received a leadless pacemaker at the period between June 2015 and August 2019 in a unique center. The procedure time was evaluated since local anesthesia until skin puncture suture ending. Data were analysed by chi-square and t-Student tests with significance level of 5%.
Results: The mean age was 75.1 ± 12.6 years and male sex was 57.8%. The sample was divided in two groups according 60 minutes cut-off (mean plus one standard deviation). Clinic and echocardiographic data are in the Table. Obstructive arterial peripheric disease (OAPD), congenital cardiopathy and moderate to severe tricuspid insufficiency were associated with increase procedure time.
Conclusions: In this work, OPAD, congenital cardiopathy and moderade to severe tricuspid insufficiency were predictors of prolonged procedure time to implant leadless pacemaker.

Painel 6 - Doença Coronária 7

P 174. MODIFIED ZWOLLE SCORE WITH DELTA-CREATININE: ENHANCED SAFETY OF EARLY DISCHARGE AFTER STEMI

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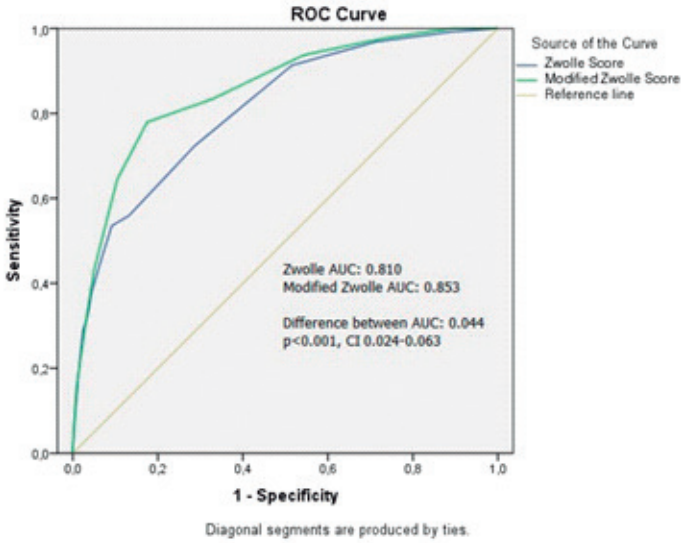
Introduction: The Zwolle score (ZS) is recommended to identify low-risk patients eligible for early discharge after acute ST-segment elevation myocardial infarction (STEMI), but as only one-third of STEMIs have a low ZS, the discharge is often postponed. Creatinine variation (Δ;-Cr) also provide prognostic information after STEMI.
Objectives: The authors intend to test the "modified Zwolle Score" (MZS) model, which encompasses Δ;-Cr as a variable that would enhance the discriminative power of the standard ZS, with the outcome of intra-hospital mortality or 30-day mortality (defined as early mortality).
Methods: This is a retrospective study with data from a national multicentre registry. We have included 3.296 patients with STEMI. Zwolle score was calculated for each patient. It is defined by: Killip 1: 0 points (p); Killip 2: 4p; Killip 3-4: 9p. TIMI 3 flow post: 0p; TIMI 2: 1p; TIMI 0-1: 2p. Age < 60: 0p; ≥ 60: 2p. 3-vessel disease: 1p. Anterior MI: 1p. Ischaemia time > 4h: 1p. Total 16 points. Δ;-Cr was defined as maximum serum creatinine minus admission serum creatinine. A Δ;-Cr ≥ 0.3 was assigned 2 points in the Modified Zwolle Score, after interpretation of odds ratio via multivariate analysis. For prediction quality assessment, we have performed ROC curve analysis (with c-statistic and Youden Index) with both scoring systems versus the outcome early mortality.
Results: The sample mean age is 63 ± 14, and it is composed by 76.8% of males. The majority of patients presented Killip Class I (87.3%). The STEMI was anterior in 49.7% of patients and inferior in 49.8% of patients. The mean admission time was 5 days. Complications are described in the Table. Intrahospital mortality was 3% and 30-day mortality was 4% (cardiovascular and non-cardiovascular death). The mean ZS was 3.1 ± 2.8 points, the mean MZS was 3 ± 2.1 points and the mean Δ;-Cr was 0.2 ± 0.6 mg/dL. The ROC curve analysis between ZS and early mortality revealed a c-statistic of 0.810 (CI 0.796-0.823), whereas the ROC curve between MZS and early mortality revealed a c-statistic of 0.853 (CI 0.841-0.865). The ROC curves comparison showed a statistically significant superiority of the MZS c-statistic, with a difference between AUC of 0.043 (p < 0.001, 95%CI 0.024-0.063). The Youden index for MZS was ≥ 4.5p (optimal cut-off point: specificity 83%, sensitivity 78%, negative predicting value (NPV) 99%, positive predicting value 16% and accuracy 83%).
Conclusions: We conclude that by adding Δ;-Cr to the standard ZS, a renal function parameter that was lacking in the ZS, its predicting capacity regarding early mortality in patients admitted with STEMI was increased. This is shown by its very high NPV at optimal cut-off point (99%), which make MZS a very good test to rule-out early mortality, which may lead to better distinction of patients who will benefit from early discharge.

Variables	N=3.296
Age (years)	63 ± 14
Males, n(%)	2531 (77)
Hypertension, n(%)	1928 (60)
Diabetes, n(%)	776 (24)
Dislipidemia, n(%)	1644 (53)
Smoking, n(%)	1264 (39)
Family history of CHD, n(%)	223 (8)
Past history of ACS, n(%)	324 (10)
Killip-Kimbal	
Killip I	2877 (87)
Killip II	250 (8)
Killip III	57 (2)
Killip IV	112 (3)
Anterior MI, n(%)	1637 (50)
Culprit TIMI flow 3 post-PCI, n(%)	3230 (98)
Creatinine, mg/dL	0,9 (0,8;1,1)
Δ-creatinine, mg/dL	0,6
3-vessel disease, n(%)	461 (14)
Normal systolic function, n(%)	1752 (55)
Ischaemia time, min	250 (171;395)
Zwolle (points)	3.1 ±2,8
Modified Zwolle (points)	3 ±2,1
Hospital stay, days	3 (3;5)
Reinfarction, n(%)	19 (1)
Heart failure, n(%)	575 (18)
Shock, n(%)	185 (6)
Mechanical complication, n(%)	33 (1)
Sustained VT, n(%)	79 (2)
Ressuscitaded cardiac arrest, n(%)	199 (6)
Intrahospital mortality, n(%)	111 (3)
30-day mortality, n(%)	127 (4)



P 174 Figure

P 175. GLOBAL LONGITUDINAL STRAIN: THE BEST AT PREDICTING NT-PROBNP LEVELS IN ACUTE CORONARY SYNDROME?

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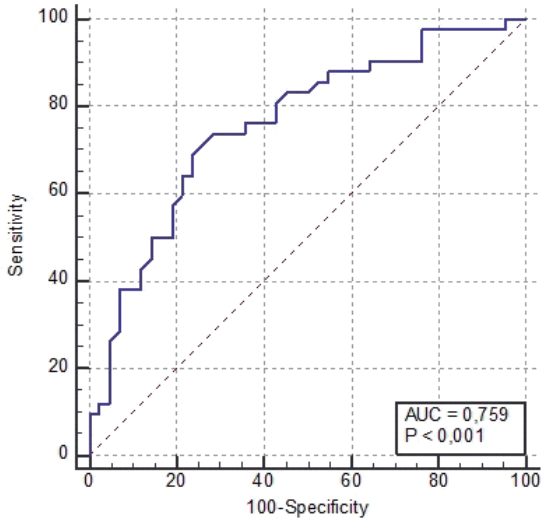
Introduction: The levels of NT-proBNP are inversely related to left ventricular ejection fraction (LVEF) in acute coronary syndrome (ACS). Global left ventricular longitudinal strain (GLS) reflects deformation properties of the myocardium. Limited data exists on the association between NT-proBNP levels and GLS.

Methods: Retrospective analysis of 106 consecutive patients admitted with an ACS to a single Intensive Coronary Unit between 2013 and 2016. Two-dimensional speckle tracking of the left ventricle was assessed and average GLS was calculated using 2, 3 and 4-chamber views. NT-proBNP levels were measured upon patients' admission and were logarithmically transformed (log_{10}). Median levels of log(NT-proBNP) were used to divide patients into two groups. A linear regression analysis was performed to determine the correlation between NT-proBNP levels and GLS.

Results: Mean age was 67.1 ± 12.3 years old and 78.3% of patients were male. LVEF mean was 49.4 ± 9.8% and average GLS was -16.0 ± 4.0%. NT-proBNP ranged from 12.8 to 106,000.0 pg/mL, with a median of 850 ± 3,318.3 pg/mL. About a third (36.8%) had Killip-Kimball (KK) class ≥ II. Patients with worse GLS had higher levels of NT-proBNP ($p < 0.001$). Correlation between GLS and log(NT-proBNP) was significant ($p < 0.001$, $R = 0.49$), explaining 24% of its variation. Linear relationship between log(NT-proBNP) and LVEF was significant but with lower Beta coefficient and R^2. In multiple regression analysis (including GLS, KK class ≥ II, age and troponin I), GLS emerged as an independent predictor of log(NT-proBNP) (Beta = 0.65, $p < 0.001$, overall $R^2 = 0.42$). No significant explanatory value for KK class ≥ II and troponin I emerged. The AUC of GLS to predict log(NT-proBNP) above the median was 0.76 ($p < 0.001$, sensitivity 71.4% and specificity 73.8%). A GLS ≤ |-16.1|% was the cutoff value associated with higher levels of NT-proBNP.

ROC curve of Global Longitudinal Strain as NT-proBNP predictor



Conclusions: An impaired GLS of the left ventricle was an independent predictor of NT-proBNP levels in ACS patients, being superior to LVEF.

P 176. IMPACT OF PRE-TREATMENT WITH ACETYLSALICYLIC ACID ON THE SEVERITY OF A FIRST MYOCARDIAL INFARCTION IN DIABETIC PATIENTS

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Introduction: Diabetes Mellitus (DM) is one of the main risk factors for cardiovascular disease (CVD). Guidelines on the use of acetylsalicylic acid (ASA) for primary prevention of CVD in this population are conflicting. A potential reduction in the severity of a first episode of Acute Myocardial Infarction (AMI) could be seen has an additional argument for the use of ASA in primary prevention.
Objectives: To evaluate the impact of prior intake of ASA on the presentation, severity and short-term prognosis of AMI in diabetic patients without history of CVD.
Methods: Retrospective analysis of diabetic patients without previous evidence of CVD diagnosed with type 1 AMI between January 2002 and December 2018, inserted in a multicentric registry of acute coronary syndromes. Patients were dichotomized according to whether or not they were taking ASA prior to the index event. Groups were compared according to clinical, analytical and imaging endpoints.
Results: A total of 2,596 patients were included, predominantly men (66.4%), with a mean age of 68 ± 12 years old. Patients on ASA (19.7%) were significantly older (71 ± 10 vs 67 ± 12, p < 0.001) and had a higher prevalence of hypertension (89.2% vs 77.9%, p < 0.001), dyslipidaemia (69.8% vs 61.1%, p < 0.001) and chronic kidney disease (10.6% vs 4.9%, p < 0.001). Overall, there was a lower prevalence of AMI with ST-segment elevation (36.5% vs 50.8%, p < 0.001) in patients on ASA. However, the same group of patients had a significantly higher probability of evolution in Killip class > I (25.4% vs 17.0%, p < 0.001), a higher median BNP elevation (315 [126-623] vs 166 [64-431], p < 0.001); and a lower average ejection fraction upon discharge (49.0 ± 12 vs 51 ± 12, p = 0.011). Patients on prior regular intake of ASA also had a higher prevalence of multivessel disease (38.4% vs 28.9%, p < 0.001) and multiple significant stenosis (70.2% vs 61.7%, p < 0.001). There was no significant difference regarding the percentage of electrical complications (2.3% vs 1.2%, p = 0.06), use of intra-aortic balloon pump (1.0 vs 0.9%, p = 0.74) and in-hospital death (3.0% vs 2.4%, p = 0.46). In a logistic regression model adjusted for age, sex, comorbidities and previous medication as variates, prior ASA intake was an independent predictor of a lower rate of AMI with ST-segment elevation (ExpB -0.34; 95%CI, 0.57-0.89; p = 0.003). On the contrary, when adjusted to these variables, prior ASA intake was not an independent predictor of higher BNP (p = 0.13) or higher probability of multivessel disease (p = 0.22) or presence of ≥ 1 significant stenosis (p = 0.31).
Conclusions: In this population of diabetic patients with a first episode of ACS, prior use of ASA in the context of primary prevention was associated with a significant lower rate of ST-segment elevation myocardial infarction.

P 177. DISCRIMINATORY POWER OF GRACE SCORE IN NSTEMI IN THE REAL-WORLD: RESULTS FROM THE PORTUGUESE REGISTRY ON ACUTE CORONARY SYNDROMES

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Introduction: Current clinical practice guidelines recommend risk stratification in patients with acute coronary syndrome upon admission to the hospital. The Global Registry of Acute Coronary Events (GRACE) risk score was developed in a large multinational registry to predict both mortality and the combined events of death or reinfarction during hospital stay and 6 months after discharge. Given the substantial regional variation and temporal changes in patient characteristics and management, specially in non-ST segment elevation myocardial infarction (NSTEMI) patients, we sought to validate this risk score in a contemporary Portuguese population.
Objectives: To assess the discriminatory power of the GRACE risk score in a Portuguese contemporary cohort of patients with NSTEMI submitted to invasive strategy, regarding cardiovascular events.
Methods: We included patients with NSTEMI submitted to coronary angiography from the Portuguese Registry on Acute Coronary Syndrome (ProACS). For each patient, we calculated the GRACE risk score and classified them in low, intermediate or high risk, according to the cut-offs recommended in the guidelines. The discriminatory capacity of the GRACE risk score was evaluated by the area under the receiver operating characteristic [ROC] curve. The primary endpoint was defined as the occurrence of reinfarction and/or in-hospital mortality, and the secondary endpoint was in-hospital mortality. A model with an AUC-ROC between 0.8 and 0.9 was considered to have a good discriminatory capacity.
Results: Among the 19,430 patients included in the ProACS between October 2010 and January 2019, we identified 7304 patients with NSTEMI submitted to coronary angiography and with information regarding the GRACE risk score. Patients were divided in three groups according to the GRACE score (group 1: 1-108; group 2: 109-140; group 3: 141-372), with 24.9% included in group 1, 33.0% in group 2, and 42.1% in group 3. Most patients were male (73%), with a mean age of 66 ± 12 years, and 48% were admitted to non-percutaneous coronary intervention centers. In-hospital mortality was different according to the stratification by GRACE score (group 1: 0.1%; group 2: 0.3%; group 3: 2.1%; p < 0.001). In our population the discriminatory capacity of the GRACE score for the primary end-point was reasonable; the area under the ROC curve was 0.70 (95%CI 0.65-0.75), and the best cut-off was 164. Regarding in-hospital mortality the discriminatory capacity was good; the area under the ROC curve was 0.83 (95% confidence interval [CI], 0.78-0.88), with the best cut-off of 148.
Conclusions: The GRACE risk score was validated in our population and has a good discriminatory power regarding in-hospital mortality and a moderate discriminatory capacity for the occurrence of reinfarction and/or in-hospital mortality for patients with NSTEMI submitted to an invasive strategy.

P 178. PROGNOSTIC IMPACT OF INTRAVENTRICULAR CONDUCTION DEFECTS IN PATIENTS WITH STEMI

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Introduction: Patients with a clinical suspicion of ongoing myocardial ischaemia and left bundle branch block (LBBB) should be managed in a way similar to ST-segment elevation myocardial infarction (STEMI) patients. Left and right bundle branch block (RBBB) are now considered equal for recommending urgent angiography if ischaemic symptoms are present.
Objectives: To assess, in patients with STEMI, the impact on in-hospital outcomes according to the presence or absence of bundle branch block (BBB).
Methods: From a consecutive series of patients included in the National Registry of Acute Coronary Syndrome between 10/1/2010 and 9/1/2019, were selected patients with STEMI or undetermined acute myocardial infarction (MI) undergoing coronary angiography, with baseline electrocardiogram information. Three groups were defined: group 1- with LBBB, group 2-with RBBB and group 3-no BBB. All data about baseline characteristics, in hospital management and procedures and coronary anatomy were collected. The 3 groups were compared in a univariate way (with vs without BBB; RBBB vs LBBB). A Logistic regression analysis was done to assess the independent association of RBBB with in-hospital mortality.
Results: 7,805 patients were included: group 1- 461 (5.9%); group 2- 374 (4.8%); group 3- 6970 (89.3%). By definition, the diagnosis of STEMI was

Table 1	Group 1 (LBBB)	Group 2 (RBBB)	Group 3 (No BBB)	P value	1 vs 2	1 vs 3	2 vs 3
N=7805	461	374	6970				
Mean age (y)	73 ± 11	69 ± 12	63 ± 13	<0.001	<0.001	<0.001	<0.001
Males	64%	79%	76%	<0.001	<0.001	<0.001	0.311
Diabetes	44%	32%	23%	<0.001	<0.001	<0.001	<0.001
Previous MI	24%	14%	10%	<0.001	<0.001	<0.001	0.051
Admission KK II	21%	11%	8%	<0.001	<0.001	<0.001	0.040
Admission KK III	14%	3.5%	1.9%	<0.001	<0.001	<0.001	0.034
Admission KK IV	3.5%	9.7%	3.1%	<0.001	<0.001	<0.001	<0.001
BNP (pg/ml)	433±826	261±439	143±290	<0.001	<0.001	<0.001	<0.001
Aspirin	98.9%	97.9%	98.5%	0.449			
Clopidogrel	87.9%	79.4%	80.7%	<0.001	<0.001	<0.001	0.535
Ticagrelor	10%	30%	29%	<0.001	<0.001	<0.001	0.698
UFN	27%	48%	48%	<0.001	<0.001	<0.001	0.989
Enoxaparin	69%	41%	45%	<0.001	<0.001	<0.001	0.122
Culprit – LMCA	3.4%	2.3%	0.7%	<0.001	0.414	<0.001	0.005
Culprit – LAD	32%	57%	45%	<0.001	<0.001	<0.001	<0.001
Multivessel	60%	50%	48%	<0.001	0.003	<0.001	0.551
PCI	64%	95%	93%	<0.001	<0.001	<0.001	0.120
CABG	10.2%	2.7%	2.9%	<0.001	<0.001	<0.001	0.830
LVEF (%)	42± 13	46± 13	50± 12	<0.001	<0.001	<0.001	<0.001
Heart Failure	34.5%	34.6%	16%	<0.001	0.977	<0.001	<0.001
AV Block	4.3%	10.5%	4.7%	<0.001	<0.001	0.709	<0.001
Cardiogenic Shock	8.1%	14.1%	5.3%	<0.001	0.006	0.012	<0.001
IH Mortality	5%	12.8%	3.1%	<0.001	<0.001	0.031	<0.001

Table 1- Baseline characteristics and comparisons between the groups. AV, atrioventricular; BBB, bundle branch block; BNP, B-type natriuretic peptide, CABG, coronary artery bypass grafting; IH, in-hospital; KK, Killip class; LAD, left anterior descending; LBBB, left bundle branch block; LCX, Left circumflex artery; LMCA, left main coronary artery; LVEF, left ventricular ejection fraction; MI, myocardial infarction; PCI, percutaneous coronary intervention; RBBB, right bundle branch block; RCA, right coronary artery; UFH, unfractionated heparin.

P 178 Figure

established more often in groups 2 and 3 (29.3% vs 99.5% vs 98.2%, p < 0.001), while patients with in group 1 had more undetermined acute MI (71% vs 0.5% vs 1.8%, p < 0.001). Baseline characteristics and comparisons between the groups are shown in the Table. Group 1 presented lower left ventricular ejection fraction (42 ± 13% vs 46 ± 13% vs 50 ± 12%, p < 0.001) and BBB (right or left) doubled the risk of in-hospital heart failure (35% vs 35% vs 16%, p < 0.001). Major complications were more frequent in group 2 namely: atrioventricular block (4.3% vs 10.5% vs 4.7%, p < 0.001), cardiogenic shock (8.1% vs 14.1% vs 5.3%, p < 0.001) and in-hospital mortality (5% vs 12.8% vs 3.1%, p < 0.001). After multivariate analysis, RBBB remained an independent predictor of in-hospital mortality (OR 1.91, 95%CI 1.04-3.50, p = 0.038). The model showed good calibration (Hosmer & Lemeshow test p = 0.846) and discrimination (AUC 0.931).

Conclusions: In the current series the presence of BBB is associated with worse in-hospital outcomes. Specially RBBB doubles the risk of death in STEMI patients and is an independent predictor of in-hospital mortality.

P 179. PARENTAL ANTICOAGULATION IN NON-ST ELEVATION ACUTE CORONARY SYNDROMES: ENOXAPARIN VS FONDAPARINUX

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[1]Centro Hospitalar de Lisboa Ocidental, EPE/Hospital de Santa Cruz. [2]Centro Hospitalar e Universitário de Coimbra. [3]Centro Hospitalar e Universitário do Algarve. [4]Centro Hospitalar e Universitário de Coimbra/ Hospitais da Universidade de Coimbra. [5]CNCDC-Centro Nacional de Coleção de Dados em Cardiologia.

Introduction: According to the 2015 ESC Non-ST Elevation Acute Coronary Syndrome (NSTE-ACS) guidelines, fondaparinux is the parenteral anticoagulant with the most favorable efficacy-safety profile and is recommended over enoxaparin. Although, its use in a contemporary Portuguese cohort is not clear. The aim of this study was to assess the fondaparinux utilization rate and to compare its in-hospital efficacy and safety profile versus enoxaparin, in a contemporary Portuguese cohort of NSTE-ACS.

Methods: Patients admitted with NSTE-ACS between October 2010 and January 2019 were retrospectively identified from a national registry of acute coronary syndromes and were divided in two groups as per anticoagulation strategy (fondaparinux vs enoxaparin). Key exclusion criteria were contraindications to low-molecular-weight-heparins, recent hemorrhagic stroke or indications for anticoagulation other than ACS. The primary efficacy endpoint was a composite of in-hospital reinfarction and mortality, and the primary safety endpoint was a composite of major bleeding, blood transfusion or hemoglobin drop of > 3 g/dL.

Results: A total of 5,843 patients admitted with NSTE-ACS (mean age 65 ± 13 years-old, 72.4% males) were included, of whom 89.2% had non-ST elevation myocardial infarction and 10.8% unstable angina. The most frequent comorbidities were: hypertension (71.3%), dyslipidemia (63.0%) and diabetes (31.7%). Fondaparinux was the anticoagulant of choice in 27.5% of patients while the remainder received enoxaparin. Invasive revascularization was the chosen strategy in 87.7% of the cohort (79.1% in the fondaparinux group vs 90.9%, p-value < 0.001). The primary efficacy and safety endpoints occurred in 2.4% and 4.7% of patients, respectively. Compared to patients receiving enoxaparin, those in the fondaparinux group were younger, had less hypertension or diabetes and had a less severe presentation; nonetheless, they had more often a previous history of coronary artery disease or hemorrhagic events. After adjustment for relevant covariates, the use of fondaparinux was independently associated with lower risk of occurrence of the primary efficacy (OR 0.56 [0.32-0.95], p-value 0.034) and safety endpoints (OR 0.37 [0.23-0.59], p-value < 0.001).

Conclusions: In a Portuguese cohort of NSTE-ACS patients, fondaparinux was independently associated with lower risk of in-hospital reinfarction or mortality and decreased risk of significant hemorrhagic events. Despite the inherent limitations, our findings unveil the underuse of fondaparinux, despite being guidelines-recommended and having a better efficacy-safety profile in our population.

Painel 7 - Doença Coronária 8

P 180. PREDICTORS OF BLEEDING IN ELDERLY PATIENTS WITH MYOCARDIAL INFARCTION: DATA FROM THE REAL WORLD

Sofia Alegria[1], Ana Marques[2], Ana Rita Pereira[2], Daniel Sebaiti[2], Alexandra Briosa[2], João Grade Santos[2], Ana Catarina Gomes[2], Gonçalo Morgado[2], Rita Calé[2], Cristina Martins[2], Inês Rangel[2], Hélder Pereira[1], em nome dos Investigadores do Registo Nacional das Síndromes Coronárias Agudas[3]

[1]Hospital Garcia de Orta. [2]Hospital Garcia de Orta, EPE. [3]Centro Nacional de Colecção de Dados em Cardiologia. CNCDC).

Introduction: Elderly patients are clearly underrepresented in contemporary clinical trials of acute myocardial infarction (MI). This population presents a higher risk of both cardiovascular and bleeding events, making the decision of the antithrombotic strategy particularly challenging.
Objectives: To characterize the antithrombotic therapy used in elderly patients with MI, and to identify predictors of bleeding in this population.
Methods: Retrospective analysis of patients with a diagnosis of MI and age ≥ 75 years included in the Portuguese Registry of Acute Coronary Syndromes (ProACS) between October 2010 and January 2018. Logistic regression analysis was used to identify predictors of major bleeding.
Results: The analysis included 17,868 patients with MI, of which 30.1% with age ≥ 75 years. This population had a mean age of 82 ± 5 years, 57% were male and 36% had a diagnosis of ST-segment elevation MI. On admission, 10% presented with Killip-Kimball class III or IV, 14% were on atrial fibrillation, and the mean hemoglobin and creatinine levels were 13 ± 2 g/dl, and 1.6 ± 1.2 mg/dl, respectively. In comparison with younger patients, the elderly population had higher Grace and Crusade scores (178 vs 139, and 41 vs 24, respectively). Most elderly patients (74%) underwent coronary angiography, of which 85% were submitted to revascularization (percutaneous in 75%, surgical in 9%, and hybrid in 1%). Regarding antiplatelet therapy, aspirin was used in 96% of patients, clopidogrel in 82%, ticagrelor in 13% (vs 25% of younger patients; p < 0.001), and glycoprotein IIb/IIIa inhibitors (GPI) in 11%. Most elderly patients were anticoagulated with enoxaparin (68 vs 56% in younger patients), 22% with unfractionated heparin (vs 30%), and 13% with fondaparinux (vs 14%; p < 0.05 for all). Complications were more common in the elderly population, including mechanical complications (1.3 vs 0.5%), atrioventricular block (5 vs 3%), and stroke (1.1 vs 0.6%; p < 0.001 for all). Elderly patients had a higher rate of major bleeding events (3 vs 1%), in-hospital death (8 vs 2%), and reinfarction (2 vs1%; p < 0.001 for all). In multivariate logistic regression analysis including all the population, age ≥ 75 years was an independent predictor of in-hospital major bleeding (OR 2.57). In the eldery patients the independent predictors of major bleeding were diastolic blood pressure on admission < 50 mmHg (OR 6.02), maximum creatinine ≥ 2 mg/dl (OR 3.88), and the use of GPI (OR 6.33; p < 0.05 for all). There was no association between the use of ticagrelor or previous anticoagulant therapy and the occurrence of major bleeding.
Conclusions: This study reflects the contemporary national reality of the management of elderly patients with MI. Overall, this population has a high risk of major bleeding, but several characteristics are associated with an even higher risk, such as the hemodynamic profile, renal function, and the use of GPI.

P 181. PROGNOSTIC VALUE OF THE CHA2DS2VASC SCORE IN ACUTE CORONARY SYNDROME WITHOUT ATRIAL FIBRILLATION

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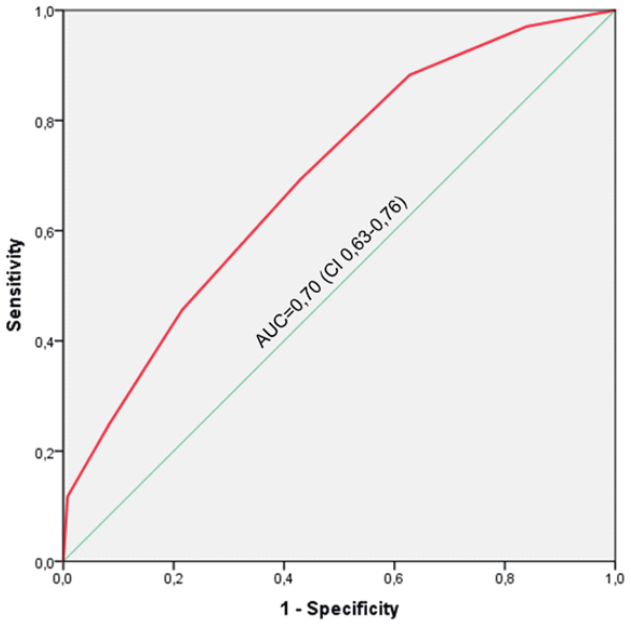
Introduction: The CHA_2DS_2VASc score has been widely used as a predictor of stroke in patients with atrial fibrillation (AF). This study aimed to evaluate the long-term cardiovascular prognostic impact of this score in patients with an acute coronary syndrome (ACS) and without AF.
Methods: This was a retrospective study of patients hospitalized at one center for nonfatal ACS, who were periodically included in a national registry between October 2010 and November 2017. Patients with past history of AF or *de novo* AF were excluded. The events evaluated during a median follow-up of 42 (24; 59) months were a composite endpoint of acute myocardial infarction (MI)/stroke/death (MACE), MI, stroke, death and major bleeding according to the ISTH criteria. After ROC curve analysis, patients with a score ≥ 4 were considered high risk and < 4 low risk.
Results: Out of a total of 449 patients, 14% had a CHA_2DS_2VASc score of 1, 19.4% a score of 2, 19.8% a score of 3, 21.6% a score of 4, 14.3% a score of 5, 8.5% a score of 6 and 2.4% a score of 7. High-risk patients had less history of smoking (6.7% vs 37.2%, p < 0.001), but more history of cancer (6.7% vs 2.5%, p = 0.032) and major bleeding (4.3% vs 0%, p = 0.001). These patients were most often admitted for a non-ST elevation ACS (51% vs 44.4%, p < 0.001), were associated with a higher presence of multivessel coronary disease or involving the left main artery (68.6% vs 56.9%, p = 0.011) and were less likely to have an angioplasty performed (71.9% vs 83.7%, p = 0.003). Both during hospitalization and at discharge, they were more frequently medicated with diuretics, aldosterone antagonists, ivabradine and nitrates. In the ROC curve analysis, the CHA_2DS_2VASc score showed an AUC for MACE of 0.70 (95% Confidence Interval (CI) 0.63-0.76), for MI of 0.66 (CI 0.56-0.76), for stroke of 0.65 (CI 0.56-0.73), for death of 0.75 (CI 0.68-0.81) and for major bleeding of 0.71 (CI 0.63-0.78). In a multivariate analysis, the presence of a score ≥ 4 was associated with a significant increase in MACE (HR 2.51 (CI 1.10-5.76)), in MI (HR 2.83 (CI 1.1-7.2)), in stroke (HR 2.74 (CI 1.09-6.90)), in death (HR 2.73 (CI 1.28-5.85)) and major bleeding (HR 2.62 (CI 1.05-6.58)).

ROC curve analysis of CHA_2DS_2VASc score for MACE



Cox regression analysis for CHA_2DS_2VASc score ≥4

Outcomes	% (=4 vs <4 score)	HR	CI
MACE	22,4% vs 8,8%	2,51	1,10-5,76
MI	10,5% vs 4,6%	2,83	1,10-7,20
Stroke	7,6% vs 3,3%	2,74	1,09-6,90
Death	19,0% vs 5,0%	2,73	1,28-5,85
Major bleeding	14,8% vs 3,8%	2,62	1,05-6,58

Conclusions: In this study, higher CHA_2DS_2VASc scores were associated with more complex coronary disease and therefore fewer angioplasties. In any

case, the score was able to independently and significantly predict long-term cardiovascular events.

P 182. TICAGRELOR PRETREATMENT IN INVASIVELY MANAGED PATIENTS WITH NON-ST ELEVATION ACUTE CORONARY SYNDROME

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Introduction: Dual antiplatelet therapy is recommended in non-ST elevation acute coronary syndrome (NSTACS), regardless of the treatment strategy (invasive vs conservative). Although prasugrel pretreatment is not recommended due to safety concerns, the timing of ticagrelor administration is still debated.
Objectives: To investigate the clinical effects of ticagrelor pretreatment in NSTACS patients (pts) undergoing percutaneous coronary intervention.
Methods: Retrospective multicentre study of 5213 NSTACS pts who underwent percutaneous coronary intervention (PCI) up to 72 hours following hospital admission, between January 2013 and December 2018. Patients with prior chronic exposure to oral antithrombotics (except acetylsalicylic acid), not acutely managed with ticagrelor, and those with missing data were excluded. A total of 415 pts were included for analysis: 256 (61.6%) received ticagrelor pretreatment (Group 1) and 159 (38.3%) were treated with ticagrelor only in the catheterization laboratory (Group 2). The primary safety endpoint was a composite of in-hospital major bleeding, need for red blood cell transfusion or haemoglobin drop ≥ 2 g/dL and the secondary endpoint of periprocedural events was a composite of PCI failure, bailout use of GPIIb/IIIa inhibitors and in-hospital re-infarction. Multivariate analysis was performed to determine the correlates of ticagrelor pretreatment and each of the endpoints. One-year follow up was achieved in 103 pts (24.8%).
Results: Overall, mean age was 62 ± 11 years and 20.7% were female. Crude event rates did not differ regarding primary endpoint (16.5 vs 11.5%; p = 0.17), while secondary endpoint was more frequent among group 2 (2.1% vs 7.1%; p = 0.01). Multivariate analysis showed no association between the timing of ticagrelor administration and the primary safety endpoint, while periprocedural events were less frequent in pretreated pts (Figure 1A). At the Kaplan-Meier analysis, one-year cumulative event-free (all-cause death, stroke or re-infarction) rates did not differ (Figure 1B).
Conclusions: In this cohort of NSTACS pts undergoing PCI in the first 72 hours after hospital admission, ticagrelor pretreatment was associated with less periprocedural events with no compromise regarding safety, compared to treatment only in the catheterization laboratory. Additional data is still needed to clarify these findings.

P 183. EARLY AND LATE ONSET DE NOVO ATRIAL FIBRILLATION IN ACUTE CORONARY SYNDROME

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Introduction: Atrial Fibrillation (AF) complicates approximately 10% of acute coronary syndromes (ACS) and it is, therefore, important to access its impact on prognosis and identify patients with higher risk of AF.
Objectives: To evaluate predictors of early onset (< 48h) and late onset (≥ 48h) *de novo* atrial fibrillation (AF).
Methods: Based on a multicenter retrospective study, data collected from admissions between 1/10/2010 and 8/01/2019. Patients were divided in two groups: A-patients that presented early onset *de novo* AF (EOAF), and B-patients that presented late onset *de novo* AF (LOAF). Patients without data on previous cardiovascular history or uncompleted clinical data were excluded. Logistic regression was performed to assess predictors of *de novo* AF in ACS. Survival analysis was evaluated through Kaplan Meier curve.
Results: Population-257,272 patients (pts) with ACS. Group A (GA)-584 pts (2.3%); group B (GB)-360 pts (1.4%). GA were younger (73 ± 13 vs 77 ± 10, p < 0.001) with a higher prevalence of smokers (21.3% vs 12.1%, p < 0.001). GB had higher rates of diabetes mellitus (40.1% vs 30.2%, p < 0.001), angina (30.8% vs 21.4%, p < 0.001), previous ACS (22.5% vs 15.4%, p = 0.006), previous revascularization (percutaneous coronary intervention 14% vs 9.5%, p = 0.032; coronary artery bypass surgery 8.4% vs 3.9%, p = 0.004). GA had more chest pain (76.1% vs 67.3%, p = 0.001), more ST-segment elevation myocardial infarction (56.8% vs 46.9%, p = 0.003) and were admitted directly to the cath lab more often (21.7% vs 13.4%, p = 0.001). Normal QRS at admission was more common in GA (80% vs 70.2%, p < 0.001) and complete right branch block (CRBB) was more frequent in GB (13.5% vs 6.7%, p < 0.001).GB had lower hemoglobin (Hb) levels at admission (12.9 ± 2 vs 13.4 ± 1.9, p <.001), first medical evaluation > 120 minutes after symptoms onset (FME > 120m) more often (71.6% vs 57.8%, p < 0.001) and more in-hospital diuretics usage (72.8% vs 54.3%, p < 0.001). Logistic regression confirmed that FME > 120m (OR 1.6, p = 0.005, CI 1.15-2.22), Hb ≤ 12 g/dL (OR 1.53, p = 0.018, CI 1.02-2.18), CRBB (OR 1.72, p = 0.043, CI 11.02-2.92) and diuretics usage (OR 2.18, p < 0.001, CI 1.57-3.01) were predictors of late onset AF. 140 LOAF patients and 236 EOAF patients had 1 year of follow up. Event-free survival was higher in EOAF than LOAF (80.3% vs 5.9%; p = 0.002, OR 2.072) (Figure).
Conclusions: LOAF patients seem to have a poorer prognosis compared to EOAF.

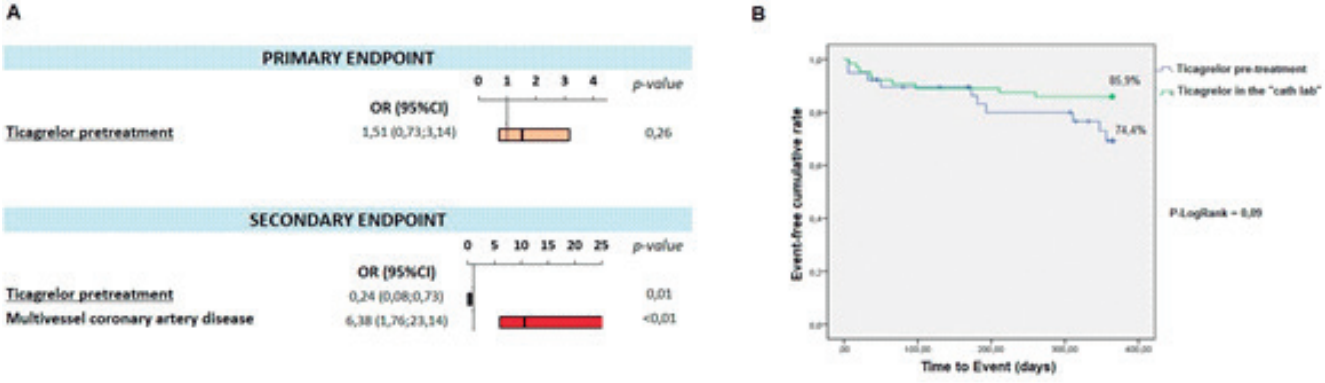
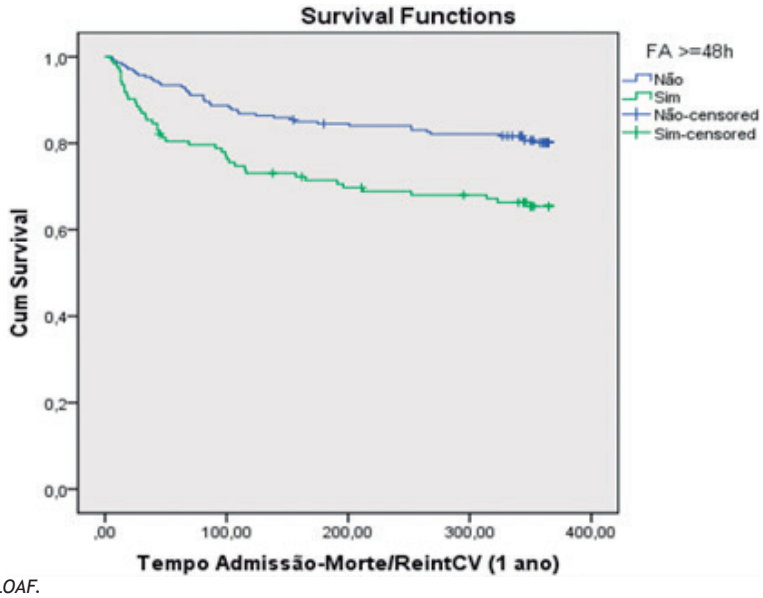


Figure 1. Multivariate analysis for primary and secondary endpoints (A); Kaplan-Meier analysis - freedom from events at one-year follow-up (B)
OR: odds ratio; 95%CI: 95% cofidence interval; "cath lab": catheterization laboratory

P 182 Figure



Event-free survival in EOAF and LOAF.

P 183 Figure

P 184. IMPACT OF PRO-THROMBOTIC, ANTIOXIDANT PLASMA STATUS ON PROGNOSIS AFTER ACUTE CORONARY SYNDROME (ACS)

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Introduction: Free radicals have an important role in tissue lesions pathogenesis, including in atherosclerotic plaque formation and thrombus formation, which may have a central role in developing acute coronary syndrome in young. In a previous study, the group of patients that had ACS in young age, presented a significantly lower total value of antioxidant plasma status compared with the control group and reference values.
Objectives: Analysis of long-term influence of pro-thrombotic, atherogenic and total antioxidant states factors in patients that had an acute coronary syndrome in young age.
Methods: The study population included 23 patients admitted for acute coronary syndrome between January 1995 and June 1998. The male/female ratio was 87%/13% and mean age was 35 years. None of the patients had diabetes or diagnosis of familial hypercholesterolemia. Blood samples were collected 16,5 (± 10,7) months after ACS. Laboratory tests: plasma antioxidant status (PAS) (colorimetric method measured in Trolox equivalent), Lipoprotein (a), Apolipoprotein A and Apoliproprotein B (Nephelometry technique), Apolipoprotein E (immune-electro-diffusion method), factors VII e VIII activity. None of the patients were lost on follow-up.
Results: Mean Follow-up period 13.7 years; 3 deaths. Fifteen patients presented major cardiovascular events: heart failure 4 patients; new ACS 11 patients; 6 patients underwent percutaneous coronary intervention for stable coronary artery disease. PAS: 1.21 (0.1) mmol/L, Apo B 1.28 (0.37) g/L, Apo E 45.6 (17.3) mg/L, Homocistein 10.9 (2.87) μmol/L, Lip (a) 0.24 (0.81) g/L, Apo A 1.14 (0.22) g/L, VII 114 (109)%, VIII 50 (42)%, vWF 99(40)%. Patients that had major cardiovascular events had significantly higher levels of Lip (a) e vWF (Mann-Whitney Test $p < 0.05$). The ROC analysis of this parameters presented an AUC of 0.84 and 0.79 respectively, with a cut-off for Lp (a) of 0.195 (73% sensitivity, 75% specificity) and vWF 90% (73% sensitivity, 75% specificity).
Conclusions: Total plasma antioxidant status was lower in the ACS patients compared with the control group. Occurrence of MACE wasn't associated with a lower level of antioxidant activity. Higher values of pro-thrombotic and atherogenic factors such as Lip (a) e vWF were associated with a worst prognosis after the first ACS.

P 185. MULTIVESSEL VS. CULPRIT-ONLY REVASCULARIZATION IN NON-ST SEGMENT ELEVATION ACUTE CORONARY SYNDROME

Cátia Ferreira [1], Rui Baptista[2], André Azul Freitas[1], James Milner[2], João André Ferreira[1], Sofia Martinho[1], José Almeida[2], Valdirene Gonçalves[2], Gustavo Campos[2], João Rosa[2], Silvia Monteiro[2], Francisco Gonçalves[2], Pedro Monteiro[2], Lino Gonçalves[2]

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Introduction: In non-ST elevation acute coronary syndrome (NSTE-ACS), the benefits of a strategy based in a complete revascularization (CR) of multivessel disease (MVD) by percutaneous coronary intervention (PCI) besides culprit vessel-only PCI is not clear. We examined the long-term mortality of NSTE-ACS patients with MVD submitted to culprit vessel-only (incomplete revascularization, IR) compared to CR for multivessel PCI.
Methods: After excluding patients with left main disease, single-vessel disease, subjected to CABG or patients with an emergency indication for angiography at admission, we identified 460 NSTE-ACS patients from a database of 3,782 ACS patients consecutively admitted to and discharged alive from a coronary care unit. Outcomes included all-cause mortality at 6 months, 1, and 3 years. A propensity score matching (PSM) methodology was used. Finally, a subgroup analysis focused on predetermined higher risk groups was conducted.
Results: CR was performed in 128 (28%) patients. Cardiovascular risk factors prevalence was similar between groups (Table 1). Patients undergoing CR had lower GRACE risk scores, higher systolic blood pressure and left ventricular ejection fraction (LVEF), and less severe anatomic disease (Table 1). Although numerically lower in CR patients, no significant differences were detected in 6-month (0.7 vs 2.2%), 1-year (0.9 vs 4.1%) and 3-year (2-0 vs 7.0%) all-cause mortality, compared to IR patients (Table 2; Figure 1). After PSM with 1:1 matching, again no significant difference on mortality was identified (Figure 2). We also explored the impact of a CR-based strategy in five high-risk subgroups in the original dataset with 460 patients [patients over and under 75 years, LVEF (under 40% vs over 40%), creatinine under vs over 1.5 $mg.dL^{-1}$, presence or not of diabetes mellitus type 2; and type of NSTE-ACS (unstable angina vs non-ST elevation myocardial infarction, NSTEMI)]. A beneficial effect of CR in comparison with IR was detected in NSTEMI patients, regarding 3-year mortality (*P* for interaction = 0.008) (Table 3, Figure 3).
Conclusions: In this selected population of NSTE-ACS patients, a multivessel, anatomically-guided CR strategy was not associated with a better long-term survival, compared with a culprit-vessel only strategy. Nonetheless, the NSTEMI subgroup patients seem to benefit more from a CR-based strategy.

Table 1. Baseline characteristics before and after PS matching.

	Before PS Matching			After PS Matching		
	CV PCI (n=332)	MV PCI (n=128)	*p*	CV PCI (n=90)	MV PCI (n=90)	*p*
Age, years	65.7±11.6	65.9±11.6	0.869	65.6±12.3	64.5±11.5	0.536
Males, n, (%)	267 (80)	97 (76)	0.272	73(81)	67(74)	0.282
ICU lenght, days	5±4	4±3	0.067*	4.0±3.0	4.0±3.0	0.988
Body mass index (kg.m-2)	27.9±3.9	28.2±4.4	0.481	28.0±4.4	28.2±4.5	0.763
Cardiovascular Risk Factors n, (%)						
Smoking	56 (17)	22 (17)	0.935	18(20)	15(17)	0.563
Hypertension	256 (77)	108 (84)	0.086	71(79)	75(83)	0.446
Dyslipidemia	256 (77)	96 (75)	0.633	68(76)	67(74)	0.863
Diabetes mellitus	137 (41)	41 (32)	0.068	31(34)	35(39)	0.536
PVD	25 (8)	4 (3)	0.081	3(3)	1(1)	0.312
CAD	250 (75)	95 (74)	0.810	68(76)	68(76)	1.000
Prior MI	115 (35)	35 (27)	0.135	27(30)	26(29)	0.870
Stroke/TIA	22 (7)	11 (9)	0.464	3(3)	6(7)	0.305
Prior PCI	26.8	24.2	0.571	26.7	25.6	0.865
Riskprofilers						
GRACE risk score	124.2±32.1	117.0±27.7	**0.026**	118.2±27.2	116.4±28.7	0.663
Killip-Kimbal class 1	294 (89)	123 (96)	**0.029**	83(92)	85(94)	0.163
TIMI risk score	2.74 (0.13)	2.84 (0.09)	0.275	2.70 (0.15)	2.56 (0.16)	0.746
Clinical findings						
Systolic BP, mmHg	141.1±22.9	145.9±20.5	**0.039**	144.2±23.3	145.8±20.0	0.615
Diastolic BP, mmHg	75.6±12.7	77.7±12.0	0.106	76.4±12.2	77.6±12.4	0.506
Heart rate, bpm	75.4±14.8	74.6±14.2	0.580	73.1±12.7	74.4±13.5	0.500
Laboratory testing						
Hemoglobin, g/dL	13.6±1.9	13.8±1.8	0.304	13.8±1.8	13.7±1.9	0.839
Platelets, k/L	210.9±54.5	219.1±67.3	0.178	211.0±54.2	221.3±69.5	0.270
Glycemia, mg/dL	120.5±67	119±67	0.924*	120.5±64	117.5±66	0.796
Creatinine, mg/dL	0.9±0.4	0.9 ±0.3	0.436*	0.9±0.3	1.0±0.3	0.660
CK, U/L	53.0±146.7	44.0±176.2	0.779*	63.5±212.1	47±205.2	0.497
CK-MB mass, U/L	3.8±17.6	4.9±34.2	0.130*	3.1±20.2	5.1±28.7	0.038
Troponin T, ng/uL	0.6±4.1	0.5±4.7	0.841*	0.4±3.2	0.8±4.7	0.313
CRP, mg/dL	0.5±1.3	0.5±0.8	0.247*	0.5±0.9	0.5±1.1	0.797
Electrocardiogram						
Atrial fibrillation	17 (5)	6 (5)	0.849	2(2)	2(2)	1.000
LBBB	5 (2)	8(6)	**0.006**	2(2)	5(6)	0.247
LV ejection fraction - echo (%)	55.0±13.0	57.5±11.0	**0.047***	55.0±10.0	56.0±11.0	0.798
Angiography			**<0.001**			1.000
Two-vessel disease	90 (27)	104 (81)		66(73)	66(73)	
Three-vessel disease	242 (73)	24 (19)		24(27)	24(27)	
Diagnosis			0.807			0.357
Unstable Angina	105 (32)	42 (33)		32(36)	25(28)	
NSTEMI	227 (68)	86 (67)		52(58)	62(69)	

Values are presented as n (%) ormean±SD (or median±IQR if asymmetrically distributed). The p values refer to independent Student t test for continuous data (or Mann-Whitney for asymmetrically distributed samples, marker with an *) and Qui-square test for dichotomous and ordinal data. **BP**: blood pressure;**CAD**: coronary artery disease; **CK**: creatine kinase; **CRP**: C-reactive protein; **CV**: culprit vessel; **GRACE**: Global Registry of Acute Coronary Events; **ICU**: intensive care unit; **LBBB**: left bundle branch block; **LV**: left ventricular; **MI**: myocardial infarction; **MV**: multivessel; **NSTEMI**: non-ST segment elevation myocardial infarction; **PCI**: percutaneous coronary intervention; **PS**: propensity scores; **PVD**: peripheral vascular disease; **TIA**: transient ischemic attack; **TIMI**: Thrombolysis in Myocardial Infarction.

P 185 Figure 1

Table 2.Population outcomes before and after PS matching.

Global population				
All-cause mortality	Total population (n = 460)	Incomplete revascularization (n = 128)	Complete revascularization (n = 332)	Log-rank p-value
6-month	13 (2.8%)	10 (2.2%)	3 (0.7%)	0.683
1-year	23 (5.0%)	19 (4.1%)	4 (0.9%)	0.258
3-years	41 (8.9%)	32 (7.0%)	9 (2.0%)	0.365

Propensity score matched sample				
All-cause mortality	Total population (n = 180)	Incomplete revascularization (n = 90)	Complete revascularization (n = 90)	Log-rank p-value
6-month	0 (0%)	0 (0%)	0 (0%)	--
1-year	2 (1.1%)	1 (1.1%)	1 (1.1%)	0.982
3-years	12 (6.7%)	8 (8.9%)	4 (4.4%)	0.244

P 185 Figure 2

Table 3. Interaction between ACS subtype and revascularization strategy.

Outcome	Complete revascularization (n = 128)			Incomplete revascularization (n = 332)			Exact p for interaction
	NSTEMI (n = 86)	UA (n=42)	HR (Exact 95% CI)	NSTEMI (n = 227)	UA (n=105)	HR (Exact 95% CI)	
3y - all cause mortality (%)	3 (3.5)	6 (14.3)	0.231 (0.057-0.925)	26 (11.5)	6 (5.7)	2.174 (0.895-5.283)	0.008

P 185 Figure 3

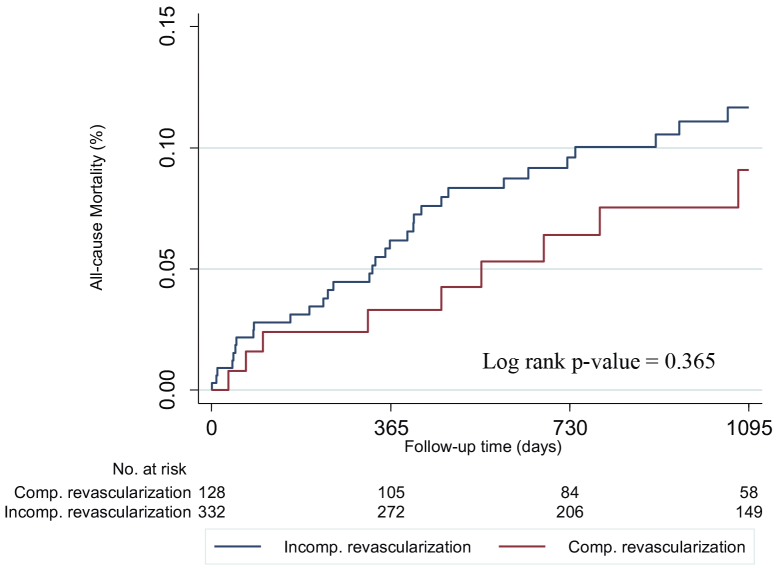

Figure 1. Kaplan-Meier survival curves for all-cause mortality after a NSTE-ACS by revascularization strategy before propensity score matching (Incomp: incomplete; Comp: complete).

P 185 Figure 4

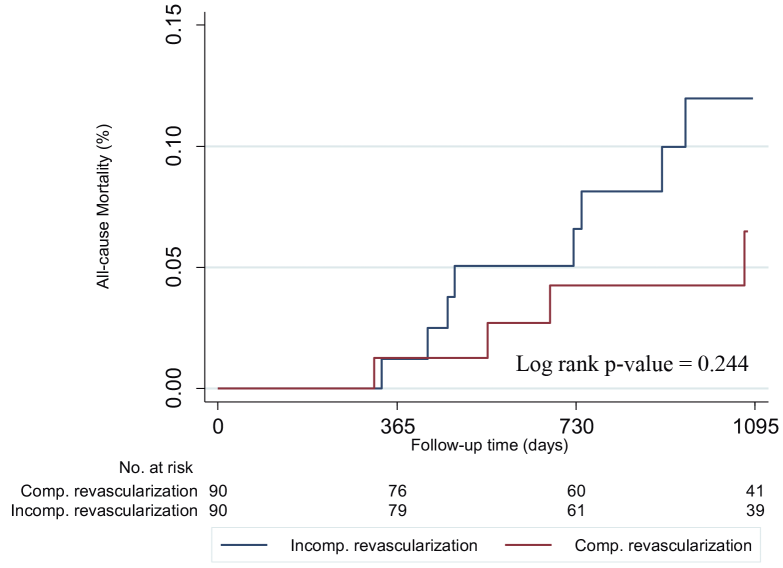

Figure 2. Kaplan-Meier survival curves for all-cause mortality after a NSTE-ACS by revascularization strategy after propensity score matching (Incomp: incomplete; Comp: complete).

P 185 Figure 5

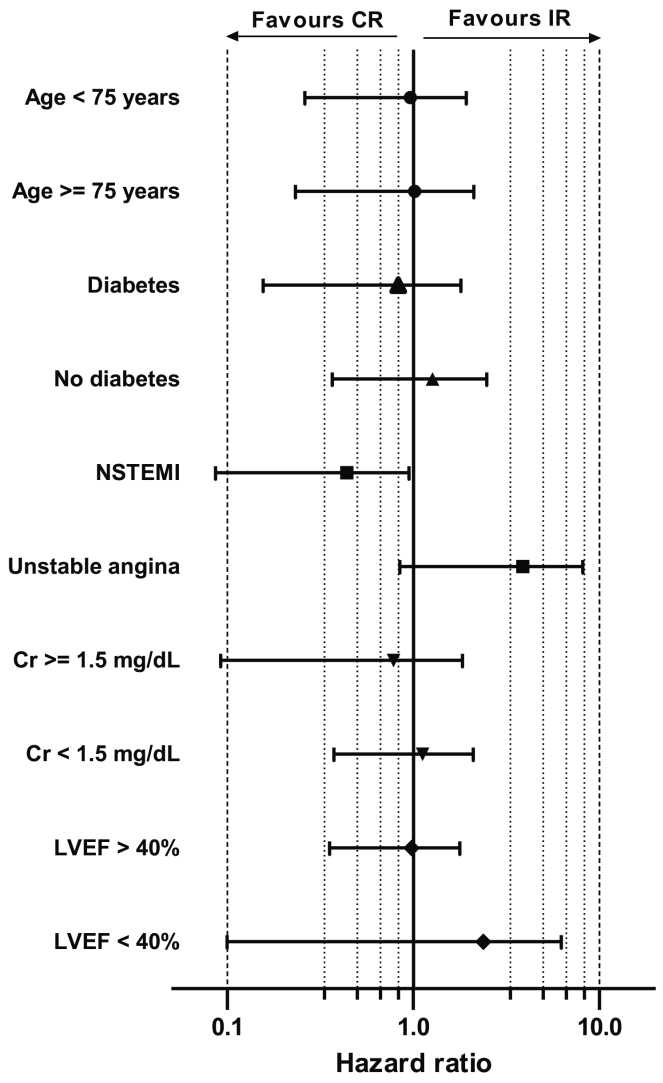

Figure 3.Forest-plot for the five subgroups. All p-values non-significant except for ACS subtype, were p = 0.008. Cr – serum creatinine; LVEF – left ventricular ejection fraction. CR – complete revascularization. IR – incomplete revascularization.

P 185 Figure 6

Painel 8 - Doença Coronária 9

P 186. LEFT VENTRICULAR DYSFUNCTION IN EARLY PRIMARY ANGIOPLASTY: CHARACTERIZATION AND PREDICTORS

Bruno Piçarra[1], Ana Rita Santos[1], João Pais[1], Mafalda Carrington[1], Diogo Bras[1], Ana Rita Rocha[1], Rui Guerreiro[1], David Neves[1], José Aguiar[1], em nome dos investigadores do RNSCA[2]

[1]Hospital do Espírito Santo, EPE, Évora. [2]CNCDC.

Introduction: According to ST elevation acute myocardial infarction (STEMI) guidelines the earlier reperfusion the better the prognosis of the patients and this is a quality marker. However, some patients (pts) develop left ventricular dysfunction (LV) even performing primary angioplasty in first two hours (PCI < 2h) of STEMI symptoms.

Objectives: To characterize the population of pts with LV dusfunction (defined as ejection fraction (EF) < 40%) submitted to PCI < 2h of symptoms and to identified predictors of LV dysfunction.

Methods: We evaluated 6484 pts with STEMI submitted to primary angioplasty. From this we studied all submitted to PCI < 2h (475 pts). We considered 2 groups: Group 1-Pts who developed EF < 40% and Group 2-Pts with EF > 40%. We registered age, gender, cardiovascular and non-cardiovascular co-morbidities, electrocardiographic presentation, hospital admission and coronary anatomy. We also evaluated the following in-hospital complications: Re-Infarction, heart failure (HF), cardiogenic shock (CS), mechanical complications, high-grade atrial ventricular block, sustained ventricular tachycardia (VT) atrial fibrillation (AF) and stroke. We compared the in-hospital mortality. Multivariate analysis was performed to identify predictors of LV dysfunction.

Results: Only 7.3% of pts with STEMI are submitted to PCI < 2h and the presence of LV dysfunction was registered in 14.5% of these pts. With the exception of previous heart failure more prevalent in group 1 (7.2 vs 0.5%, p < 0.001), no differences were observed in age, gender, cardiovascular and non-cardiovascular co-morbidities between the two groups. Group 1 pts had more hospital admissions in the emergency department (47.8 vs 33.9%, p = 0.029) and less admissions in cardiac care units (11.9% vs 25.9%, p = 0.013) and less admissions performed by the pre-hospital emergency units (INEM) (22.2 vs 42.3%, p = 0.004). No differences were observed in the symptoms-

reperfusion between the two groups. Group 1 pts had more anterior STEMI (85.5 vs 45.6%, p < 0.001), left main disease (6.8 vs 1.6%, p = 0.036), left anterior descending disease (89.6 vs 65.6%, p < 0.001). Group 1 pts had more in-hospital complications: HF (31.9 vs 5.2%, p < 0.001), CS (11.6 vs 1.5%, p < 0.001), AF (8.7 vs 3.0%, p = 0.034). In-hospital mortality was also higher in Group 1 pts (8.8 vs 0.7%, p < 0.001). By multivariate analysis, admission in the emergency department [OR: 2.16 (IC: 1.20-3.88), p = 0.010] were a predictor LV dysfunction instead inferior STEMI was a protector factor [OR: 0.09 (IC: 0.04-0.21), p < 0.001] comparing with anterior STEMI.
Conclusions: Even when primary angioplasty is performed within two hours of symptoms LV dysfunction is present of 14.5% of pts. These patients are more frequently admitted in the emergency department and not in cardiac care units, had more anterior STEMI and more disease of the left main and left descending artery.

P 187. PREDICTORS OF ADVERSE PROGNOSIS AT FOLLOW-UP IN NSTEMI WITH RBBB

Mariana Saraiva[1], Ana Rita Moura[1], Nuno Craveiro[1], Maria João Vieira[1], Kevin Domingues[1], M. Luz Pitta[1], Vítor Martins[1], em nome dos investigadores do Registo Nacional de Síndromes Coronárias Agudas[2]

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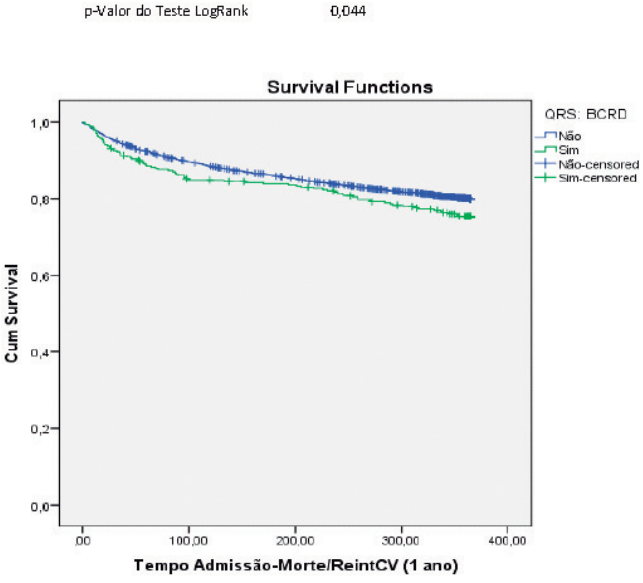
Introduction: Recent myocardial infarction (MI) recommendations underline the adverse prognosis associated with right bundle branch block (RBBB). However, it is uncertain if RBBB itself or the clinical severity inherent to these patients (pts) encloses a worse outcome at follow-up (FU).
Objectives: To characterize a population with non-ST segment elevation MI (NSTEMI) and RBBB and find predictors of worse outcome at FU.
Methods: Retrospective analysis of pts included in a multicentric registry of Acute Coronary Syndromes, discharged after NSTEMI, comparing pts with RBBB (group A) and pts without RBBB (group B), regarding clinical and demographic variables, diagnostic and therapeutic approaches. Primary endpoint was all-cause death or hospital admissions due to cardiovascular causes (HACV) during FU (1 year).



Results: We included 4,663 pts, 359 in group A and 4,304 in group B. Pts in group A were more likely to be male (Odds ratio-OR-1.65, p < 0.001) and > 75 years old (OR 2.73, p < 0.001). Also, they were more prone to have cardiovascular (CV) risk factors (hypertension-OR 1.71, p < 0.001, diabetes-OR 1,31, p = 0.017), history of coronary artery disease (stable angina OR 1.29, p = 0.024, previous MI OR 1.28, p = 0.038 and surgical revascularization OR 1.88, p < 0.001), stroke (OR 1.6, p = 0.004), chronic kidney disease (OR 2.03, p < 0.001) and dementia (OR 2.33, p = 0.003). There were no differences between time from onset of symptoms and first medical contact or hospital admission. Upon admission, pts from group A presented more frequently with hypotension (p = 0.017), Killip class ≥ II (p < 0.001) and atrial fibrillation (p < 0.001). The use of non-invasive (p = 0.002) and invasive ventilation (p = 0.025) and temporary pacing (p = 0.001) was significantly more frequent in group A. Pts with RBBB were less likely to undergo coronary angiography (OR 0.67, p = 0.001). However, among those who did, three-vessel disease (OR 1.5, p = 0.005) and the decision of no revascularization (OR 1.42, p = 0.031) were both more prevalent. Moreover, left ventricular systolic dysfunction was more common in group A (OR 1.53, p < 0.001). At FU, rates of all-cause death, all-cause hospital readmissions and HACV were 7.93%, 22.89% and 15.56%, respectively. Death (p = 0.001) and hospital readmissions (p = 0.003) were more common in pts in group A, which were also more likely to reach the endpoint (hazard ratio 1.27, p = 0.044). In a multivariate regression analysis, including variables such as gender, age, CV risk factors, previous evidence of CV disease, clinical, echocardiographic and coronary anatomy data, RBBB was not an independent predictor of the primary endpoint (p = 0.219).
Conclusions: While pts with NSTEMI and RBBB had worse in-hospital evolution and a poorer prognosis at FU, this is probably related with their greater clinical complexity (older age, comorbidities and complex coronary anatomy) and not the presentation with RBBB itself.

P 188. LEFT MAIN DISEASE ANGIOPLASTY: A REAL-LIFE EXPERIENCE

Alexandra Briosa[1], Catarina Gomes[1], Inês Rangel[1], João Santos[1], Ana Rita Pereira[1], Ana Marques[1], Daniel Sebaiti[1], Sofia Alegria[2], Gonçalo Morgado[1], Rita Calé[1], Cristina Martins[1], Hélder Pereira[2], on behalf of the investigators of the Portuguese Registry of Acute Coronary Syndromes[3]

[1]Hospital Garcia de Orta, EPE. [2]Hospital Garcia de Orta. [3]Sociedade Portuguesa de Cardiologia.

Introduction: Left main disease (LMD) is a major cause of morbimortality in patients (pts) with acute coronary syndromes (ACS). The best therapeutic strategy is still a topic of great debate. Although coronary artery bypass surgery (CABG) remains the gold standard treatment, percutaneous coronary intervention (PCI) has gained importance, being a valid and safe strategy in terms of mortality.
Objectives: To characterize the Portuguese population submitted to LM PCI, as well as to determine their long-term morbidity and mortality.
Methods: A multicenter observational retrospective study was performed (2010-2019), including consecutive pts with non-ST elevation ACS and LM lesion of ≥ 50%. Clinical, imaging, long term complications and mortality data were collected. An univariate analysis was used to compare pts submitted vs not submitted to LM PCI during hospitalization.
Results: 305 pts included, 52.1% (n = 159) of which submitted to LMD PCI. Concerning baseline characteristics, LMD PCI group with a mean age of 72 ± 11 years and a trend to have more women (28% vs 19%, p = 0.058), although less dyslipidemia (63.2% vs 80.2% p = 0.001), history of previous ACS (29.5% vs 52.5% p = 0.001) or previous revascularization strategy (PCI-16.6% vs 31.5% p = 0.002 or CABG- 20.9 vs 54.8%, p < 0.001). They had higher rates of undertreatment with statin (55.1% vs 72.3% p = 0.002), clopidogrel (24.4% vs 35.2% p = 0.041) and beta-blocker (36.1% vs 61.9% p < 0.001). At admission they had less typical chest pain (54.9% vs 68.9% p = 0.021) and higher Killip Kimbal (KK) class (KK > 2: 35.7% vs 22.4% p = 0.012), intra-aortic balloon pump or non-invasive ventilation (5.7% vs 0% p = 0.004 and 6.3% vs 0.7% p = 0-009, respectively). Angiographically, they had less multivessel disease (37% vs 65.9% p < 0.001) and the LMD was the culprit lesion in the majority of the pts (47.8% vs 1.5% p < 0.001). DES implantation was the main choice (83.6% vs 0% p < 0.001), with 98.7% successful cases. Regarding morbidity, the LMD PCI group had higher rates of cardiogenic shock (10.3% vs 4.2% p = 0.043) and cardiac arrest (7.1% vs 1.4% p = 0.016), as well as a trend higher atrioventricular block (3.2% vs 0% p = 0.06). However, there were no differences between both groups concerning intra-hospital mortality or cardiovascular mortality/readmission during follow-up. Finally, when analyzing the trend for total LMD PCI procedures in Portuguese hospitals over the recent years, there was no statistically significant difference.

Conclusions: LMD PCI is nowadays a worldwide reality in the treatment of ACS pts. National experience show us that, despite being associated with high morbidity rates, it seems to be a safe procedure with regard to mortality.

P 189. DAY VS NIGHT SHIFT DIFFERENCES IN ACUTE CORONARY SYNDROME OUTCOMES

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Introduction: Outcomes in acute coronary syndrome (ACS) depend on prompt diagnosis and interventions aiming early and effective revascularization of a nearly or totally occluded coronary artery. Unsuccessful or late revascularization is associated with arrhythmic, heart failure (HF) and mechanical complications. Emergency department (ED) organization between day and night shifts may influence the quality of care of ACS patients.
Objectives: To analyse outcome differences between day and night shift presentation in an ACS population from a district hospital.
Methods: We analised a district hospital database of ACS patients, admitted from 2011 to 2018, divided in two groups: Group 1-patients presenting to the ED from 9 am to 9 pm (day shift) and Group 2-patients presenting to the ED from 9 pm to 9 am (night shift). Arrival-to-ECG times, demographic, analytic, therapeutic and outcome data were analysed.
Results: There was a total of 1,333 patients included in this study. 818 patients (61%) presented to the ED during the day shift and 515 (39%) during the night shift. There were no significant differences between group characteristics apart from age (70 ± 13 years vs 68 ± 13 years; p = 0.002). Arrival-to-ECG time was statistically different between the 2 groups (p = 0.043). There were no significant differences in the percentage of patients who underwent coronary angiography (CAG), number of occluded arteries at CAG or rates of revascularization (either by PCI or planned CABG) between groups as well as no differences in troponin elevation or BNP values. Reduced left ventricle ejection fraction (LVEF < 40%) measured by transthoracic echocardiography was significantly lower in Group II (24.3% vs 19.2% p = 0.045), which also had higher rates of in-hospital worsening of heart failure (8.2% vs 2.7% p < 0.001) and urgent hospitalization at 1-year follow-up (20.5% vs 14.3% p = 0.034). There were no significant differences of in-hospital or one-year mortality between groups. In multivariate analysis, presentation to the ED during the night shift was an independent predictor of LVEF < 40% (OR 1.38, CI 1.01-1.88, p = 0.045) and in-hospital worsening of HF (OR 3.03 CI 1.69-5.43, p < 0.001).
Conclusions: Patient presentation to the ED during the night shift (9 pm to 9 am) is associated with lower LVEF at discharge as well as worse heart-failure related outcomes. Measures must be taken to lessen the day-night shift differences in ACS patients care delivery.

P 190. REPERFUSION AFTER STEMI: IS THERE A TREATMENT DELAY IN WOMEN OR ELDERLY AFTER THE DIAGNOSTIC ECG?

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Introduction: It is known that some subgroups (e.g. women or elderly) may experience a delay in diagnosis of acute myocardial infarction (AMI). This may be due to atypical symptoms that don't trigger further evaluation as promptly as typical symptoms or due to underestimation of patient's complaints. However, we don't know if there is any delay in treatment after the diagnostic electrocardiogram (ECG).
Objectives: To evaluate the association between patients' gender and age and reperfusion (by percutaneous coronary intervention-PCI) time after ECG.
Methods: Single-center retrospective study of individuals that underwent primary PCI between June 2011 and December 2017. We included patients aged ≥ 18, with time registry of the first ECG with ST segment elevation (or equivalent) and time of PCI. No patients were excluded. We defined the time between the first ECG and reperfusion as the ECG-PCI time.
Results: A total of 1,679 patients were included; 78% male (n = 1,317) and 22% female (n = 362); 59% were younger than 65 (n = 985) and 41% were 65 or older (n = 694). Median ECG-PCI time was higher in females [109 minutes (IQR = 65)] than in males [100 minutes (IQR = 59)]; this association was statistically significant (U = 206,654, p < 0.001). Median ECG-PCI time was also higher in older (≥ 65 years) patients (106 minutes (IQR = 66.5)] than in younger patients [99 minutes (IQR = 57)], with statistical significance (U = 302,964, p < 0.001). After stratifying patients' gender by age, we observed that, in male patients, median ECG-PCI time was lower in younger patients [97 minutes (IQR = 56)] than in older patients [105 minutes (IQR = 68)]; this association was also significant (U = 170,359, p < 0.001). On the other hand, the same analysis in female patients found no significant association between younger and older patients (U = 13,684, p = 0.445). We posteriorly assessed the effect of comorbidities in ECG-PCI time.
Conclusions: Despite a median ECG-PCI time difference of only 9 minutes between males and females, this difference was found to be significant. Factors delaying evaluation after onset of symptoms in women may also delay PCI after diagnostic ECG; borderline ECG criteria may be devalued in women. Older patients may take longer to PCI due to the higher incidence of comorbidities, specially diabetes mellitus, which can mask typical AMI symptoms. Survival impact of these differences should be further studied.

P 191. CARDIOGENIC SHOCK DUE TO ACUTE CORONARY SYNDROME: CHARACTERISTICS AND OUTCOMES

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Introduction: Among patients admitted to a catheterization laboratory with acute coronary syndrome (ACS), a minority present with cardiogenic shock (CS). Evidence for the best way to manage these patients are needed.
Objectives: We aimed to assess patients' characteristics and short and long-term outcomes of ACS presenting with CS.
Methods: We analysed all ACS cases with CS admitted during a ten-year period in a tertiary care centre. We defined CS as systolic blood pressure < 90 mmHg and signs of impaired organ perfusion with need for catecholamine therapy or presenting with cardiac arrest. At discharge, a standardized registry was performed in all cases, including clinical, electrocardiographic, echocardiographic and angiographic characteristics, and percutaneous coronary intervention (PCI) results. All patients were followed-up for two years for the occurrence of mortality (total and cardiovascular (CV)), CV hospitalizations and revascularization procedures.
Results: From 3,283 patients admitted with ACS, 92 (2.8%) presented with CS. Mean age was 66.0 ± 12.8 years, with 64 (69.6%) males, and 60 (65.2%) presenting with ST-segment elevation myocardial infarction. These patients presented previous ACS in 12.0%, were smokers in 28.3% and had diabetes, dyslipidemia and hypertension in 23.9%, 37.0% and 45.7%, respectively. Angiographic characteristics are described in the table. Index-PCI was successful in 83.7% cases. Multivessel coronary artery disease (CAD) was presented in 56 patients (60.9%), of which 20 (21.7%) had 3-vessel disease. Of these 56 patients, complete revascularization in the index-procedure was attempted in 11 patients (19.6%), 10 of which successfully. Mean hospitalization duration of 16.4 ± 9.5 days with in-hospital mortality of 50.0%. Unsuccessful index-PCI (p = 0.002), culprit left main coronary artery (LCMA) (p = 0.044) and reduced left ventricular ejection fraction (LVEF) (p < 0,001) were significant in-hospital mortality predictors. At 12 and 24 months, survival after hospital release was 95.7% and 91.3%, respectively. At 24 months of follow-up, 40.0% had at least one CV hospitalization, 17.4% being related to a revascularization procedure (PCI 13.0%, coronary artery bypass surgery 4.4%).
Conclusions: CS was uncommon among ACS patients. Unsuccessful PCI, culprit LMCA and reduced LVEF were independent predictors of in-hospital

Coronary anatomy	Culprit vessel		CAD: Stenosis ≥ 70% (≥ 50% LMCA) – Culprit or not	
	n (%)	In-hospital mortality (%)	n (%)	In-hospital mortality (%)
Left main coronary artery (LMCA)	10 (10.9%)	**80.0%**	15 (16.3%)	**73.3%**
Left anterior descending artery	36 (39.1%)	52.8%	**59 (64.1%)**	47.4%
Left circumflex artery	8 (8.7%)	42.1%	42 (45.7%)	40.5%
Right coronary artery	**38 (41.3%)**	37.5%	57 (62.0%)	47.4%

P 191 Figure

mortality. Despite a very high in-hospital mortality, long-term outcome was favourable.

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P 193. PREDICTORS OF HEART FAILURE IN LEFT VENTRICULAR NONCOMPACTION

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Introduction: Left ventricular noncompaction (LVNC) is a rare cardiomyopathy. Heart failure (HF), arrhythmias and thromboembolic events (TE) are the main complications of LVNC.
Objectives: To identify predictors of HF development in LVNC patients.
Methods: Multicentric, retrospective study with 120 patients diagnosed with LVNC. Clinical, genetic, imaging and electrocardiographic parameters were collected. It was evaluated which are associated with the development of HF during the follow-up.
Results: In this study, the patients were predominantly male (58.3%) and had a mean age at diagnosis of 47 ± 18 years. Patients had a follow-up lasting, on average, 3.7 ± 2.6 years. About 46% of LVNC patients had HF during follow-up, more frequently in Class II of New York Heart Association (55.4%), and 10.7% presented in class IV. Patients with LVNC and HF were predominantly males (67.3% vs 32.7%, p = 0.041), complained more frequently of dyspnea at clinical presentation (88.9% vs 7.5%, p < 0.001). On echocardiography, had significantly higher values of end-diastolic volume (EDV) of the left ventricle (LV) (60.4 ± 8.8 vs 50.8 ± 7.1 ml/mm^2; t(111) = 6.4, p < 0.001), LV mass (138.4 ± 92.9 vs 100.0 ± 47.8 g/m^2; t(77) = 2.2, p = 0.024), and left atrial volume (LA) (36.1 ± 14.8 vs 27.1 ± 8.1 ml/mm^2; t(55) = 2.8, p = 0.007). As well this patients have higher frequency of diastolic dysfunction (DD) (75.0% vs 28.8%; p < 0.001), mitral valve disease (73.1% vs 31.6%, p < 0.001), aortic valve disease (26.5% vs 10.9%, p = 0.040), and disease of the tricuspid valve (27.3% vs 0%, p = 0.027). On MRI, patients with HF had a higher LV mass (126.3 ± 76.6 vs 77.9 ± 33.4 g/m^2, t (45) = 2.8, p < 0.001), higher LV end-systolic volume (86.4 ± 50.8 vs 51.0 ± 30.5 (43.3) = 2.8, p = 0.008) and higher frequency of late septal enhancement (14.3% vs 0%, p = 0.015). On electrocardiography, patients with LVNC and HF presented more frequently atrial fibrillation (AF) (19.1% vs 0%, p = 0.001), complete left bundle branch block (LBBB) (23.3 vs 8.0%, p = 0.040) and non-sustained ventricular tachycardia (nsVT) (34.1% vs 13.7%, p = 0.020). Multivariate regression identified, as statistically significant predictors of HF development during follow-up, the presence of dyspnea at clinical presentation (p < 0.001), DD (p = 0.048) and presence of AF (p = 0.013).
Conclusions: Dyspnea at clinical presentation, DD, and AF were independent predictors of HF development in patients with LVNC.

P 194. SURGICAL MYECTOMY FOR HYPERTROFIC OBSTRUCTIVE CARDIOMYOPATHY

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Introduction: Septal myectomy is the gold standard treatment for hypertrophic obstructive cardiomyopathy. This study aimed to evaluate the results from patients with hypertrophic obstructive cardiomyopathy who underwent to septal myectomy at our institution.
Methods: A retrospective study was performed evaluating all consecutive 38 patients with hypertrophic obstructive cardiomyopathy who underwent septal myectomy at our institution from January 2000 to October 2019. All patients were submmited to septal myectomy by transaortic approach. Were excluded all patients with concomitant aortic valve repair or replacement.
Results: The mean age was 58 years (10-79) and 53.3% were male. Most of the patients were in NYHA class III/IV preoperatively (76%), and 18% had a cardiodesfibrilator implantation in primary prevention context. 79% of patients had moderate to severe mitral regurgitation. 32% of patients needed a concomitant mitral valve apparatus intervention. The mean cardiopulmonary bypass time was 43 min and the mean aortic clamp time was 21 min. The mean ICU stay was 2 days (1-4) and the mean in-hospital stay was 6 days. Six patients (40%) needed inotropic support. There was no intra-operative mortality neither in-hospital mortality. The mean interventricular septal size reduced from 19 mm (14-33) preoperative to 11 mm (10-15) after myectomy. The mean resting left ventricular outflow tract gradients reduced from 81.5 ± 24.4 mmHg preoperatively to 18.4 ± 8.9 mmHg at discharge. There was 1 patient with conduction disorders that needed pacemaker implantation. There were no iatrogenic ventricular septal defects. Thirty-five patients (92%) were categorised as NYHA class I or II. Late survival rates at 5 and 15 years were 97.1 ± 2.8 and 51.1 ± 2.1% respectively.
Conclusions: At our centre, septal myectomy is associated with low operative and early mortality rates, a low risk of early adverse events, and good clinical and haemodynamic outcomes.

P 192. PROGNOSTIC IMPACT OF SUSPECTED CARDIAC AMYLOIDOSIS IN AORTIC STENOSIS PATIENTS REFERRED FOR TRANSCATHETER AORTIC VALVE IMPLANTATION

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Introduction: Cardiac amyloidosis (CA) and aortic stenosis (AS) both increase with age and presenting with concentric left ventricular hypertrophy. Transcatheter aortic valve implantation (TAVI) expands the number of patients (P) eligible for treatment of AS, emphasizing the need

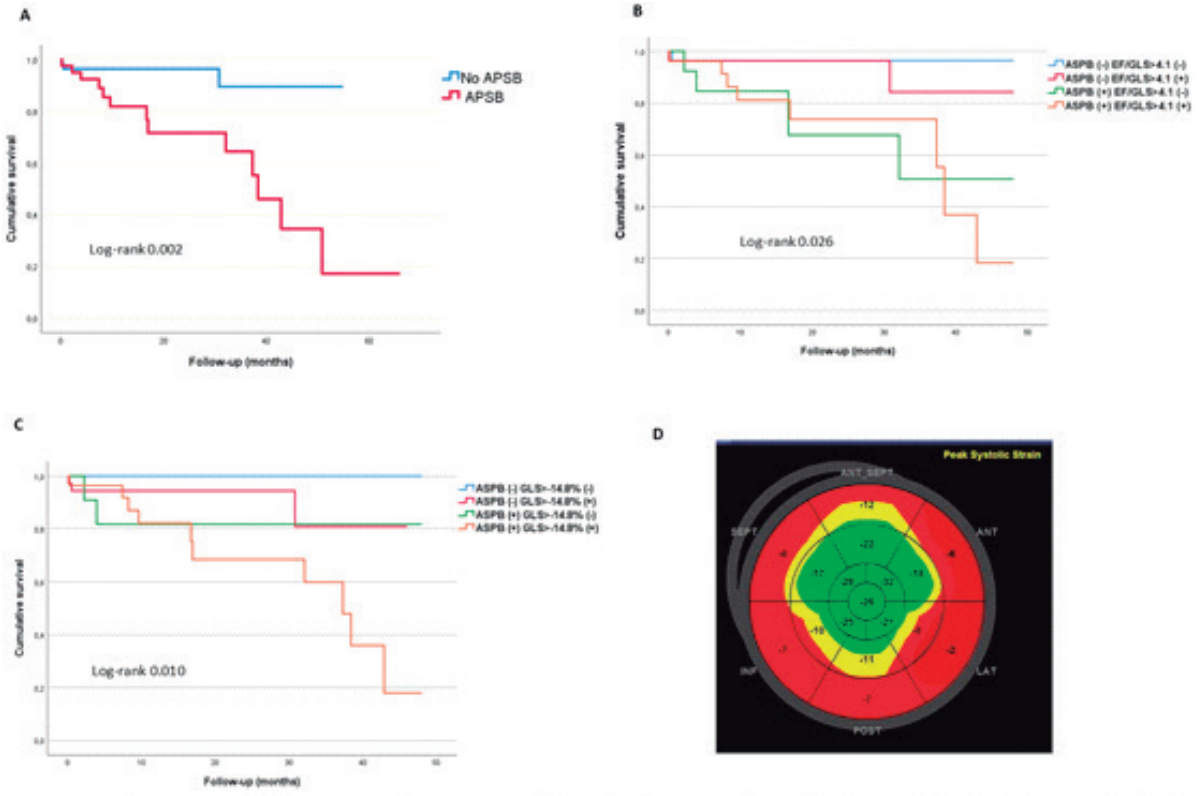

Fig. 1 – Kaplan–Meier curves for long term survival in patients stratified according the presence of APSB (A), EF/GLS ratio (B) and GLS (C). An example of apical sparing pattern in bull's eye plot (D).

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to understand the prevalence of CA in AS and its prognostic associations. Echocardiography with speckle tracking imaging has emerged as a useful tool to enhance the clinical suspicion and provide prognostic information.
Objectives: To estimate the prevalence of CA in P with severe AS referred for TAVI and to evaluate the impact of concomitant CA in prognosis.
Methods: 94 consecutive AS P who underwent TAVI with maximum left ventricular wall thickness (LVWT) > 12 mm were retrospectively identified. Clinical data, pre TAVI echocardiographic parameters and follow up (FU) data regarding all-cause mortality and MACE (including all-cause mortality, admission for heart failure, pacemaker implantation and stroke) were analysed. We registered apical sparing pattern in bull's eye plots (ASPB), calculated relative apical longitudinal strain formula (RALS) [average apical LS/(average basal LS + mid-LS)] and ejection fraction/global longitudinal strain (EF/GLS) ratio.
Results: Mean age was 82.2 ± 5.8 years (Y), with 43 men (45.7%). 27.7% were in NYHA functional class II, 64.9% in functional class III and 7.4% in functional class IV. Median EF was 57 ± 15% and 26.6% presented EF < 50%. Suspected CA evaluated by ASPB was found in 39 P (41.5%) and RALS > 1 was identified in 22 P (23.4%). An EF/GLS ratio > 4.1 was obtained in 53 P (56.4%). Over a median follow-up of 13.4 ± 25.8 months, 28 deaths (29.8%) and 31 MACEs (33.0%) occurred. The presence of ASPB was associated with increased all-cause mortality (33.3% vs 5.6%, p = 0.002) and MACE (48.7% vs 22.2%, p = 0.01). RALS > 1 correlated also with all-cause mortality (31.8% vs 12.5%, p = 0.04) and with new bundle branch block and indication for pacemaker implantation (46.2% vs 37.0%, p = 0.05). P with GLS > -14.8% and ASPB had significantly worse prognosis regarding all-cause mortality (p = 0.003) and MACE (p = 0.007). Kaplan-Meier survival analysis showed that survival was significantly worse for P with ASPB (log-rank 0.002). With multivariate Cox regression analysis, ASPB was independently associated with all-cause mortality (HR = 4.49, p = 0.039).
Conclusions: Suspected CA appears prevalent among patients with AS and associated with all-cause mortality. The importance of screening for CA in older AS patients and optimal treatment strategies in those with CA warrant further investigation, especially in the era of transcatheter aortic valve implantation.

P 195. MEASUREMENT OF MAXIMUM LV WALL THICKNESS BY CMR AND ECHOCARDIOGRAPHY AND ITS IMPACT IN HCM RISK-SCD

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Introduction: The HCM Risk-SCD estimates the risk of sudden cardiac death at 5 years in patients (pts) with hypertrophic cardiomyopathy (HCM). Implantable cardioverter defibrillator (ICD) indication is decided according to risk stratification, as stated by ESC Guidelines. The association between the degree of left ventricular hypertrophy (LVH) and sudden cardiac death has been based on measurements of maximum left ventricular wall thickness (LVWT) by echocardiography which is part of HCM Risk-SCD score. However, cardiac magnetic resonance (CMR) has shown a superior resolution in characterization of cardiac structures, with additional role in SCD risk stratification. Whether measurements of LVWT by echocardiography and CMR are interchangeable has been brought to question.
Objectives: We sought to evaluate the incidence of discrepant measurements of maximal LVWT between echocardiography and CMR and determine its implication in HCM Risk-SCD score and ICD indication.
Methods: Unicentric, retrospective analysis of pts submitted to CMR who had HCM as definitive diagnosis, between 1/2013 and 9/2019. CMR and echocardiographic measures were compared, as well as HCM Risk-SCD score calculated with these values (maximum LVWT was the only variable that differed between measures). Subsequently, pts were divided in three groups according to HCM Risk-SCD score: pts with a 5-year risk of SCD < 4% (G1), risk of 4 to less than 6% (G2) and risk ≥ 6% (G3).
Results: Out of the 781 CMR studies evaluated, 59 pts were found to have HCM (7.6%). Mean age of 62 ± 11years, female predominance (50.8%). 12 pts had obstructive phenotype (20.3%). Mean LVWT was 20.0 ± 4.6 mm when measured by CMR and 18.8 ± 4.6 mm by echo; when comparing the

measures by echo with CMR, there was a positive correlation between them (p < 0.001; r 0.719). Mean HCM Risk-SCD was 2.80 ± 1.51% when measured by CMR and 2.69 ± 1.53% by echo; there was a positive correlation between these measures too (p < 0.001; r 0.963). Only 1pt changed risk group with CMR measurement of maximum LVWT (from G1 to G2).
Conclusions: In this cohort, there was a positive, linear relationship between maximum LVWT and HCM Risk-SCD score measured by CMR and echocardiogram. Only 1 pt changed risk stratification group (5-year risk of SCD < 4% to 4 to less than 6%). Although CMR measurements, when interpreted correctly, are more precise compared with echocardiography, in this cohort there was no impact in patient's future clinical orientation regarding ICD implantation.

P 196. BONE SCINTIGRAPHY IN THE DIAGNOSIS OF MTTR AMYLOIDOSIS: DIFFERENT PERFORMANCE IN PORTUGUESE VARIANT?

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Introduction: Bone scintigraphy using radioactive technetium-99m and 3,3-diphosphono-1,2-propanodicarboxylic acid (DPD) has been increasingly used to diagnose myocardial involvement of mutated(m) or wild-type (wt) transthyretin amyloidosis (ATTR). However, most studies that proved a high sensitivity and specificity of the technique were not in patients with the "Portuguese variant" (Val30Met) mutation in transthyretin (TTR).
Methods: Observational study of patients referred to Cardiology clinic with suspicion of ATTR cardiomyopathy. We only included patients with data from echocardiogram and DPD scan.
Results: Of 273 patients with suspicion of cardiac ATTR, we studied 97 patients that did an echocardiogram and a DPD scan. Among the 75 cases with Val30Met mATTR, median age was 36 (IQR 34) and 60% were males. 60 had increased ventricular wall thickness (IVWT) ≥ 12 mm, but only 24 had a positive DPD (defined as a visual score ≥ 2). Although a higher VWT was associated with a positive DPD (p = 0.004), 18 patients with a negative scan had IVWT ≥ 14 mm. The DPD results was significantly associated with prior liver transplantation (LT)- p < 0.001-and age at first symptoms-p < 0.001; 66.7 ± 10.5 versus 34.8 ± 10.2 years-old for those with and without a positive scan, respectively. Interestingly, fewer patients with a positive scan had neurologic symptoms (74% versus 96%, p = 0.009), ophthalmologic, urologic or renal involvement, even though creatinine clearance was on average lower (p = 0.01). We found no significant association between DPD result and sex, conduction disorders, biomarkers or tafamidis treatment. 4 patients with negative DPD did an endomyocardial biopsy, that was positive for amyloid in 3 cases. In comparison, in the 22 cases with wtATTR, there were significantly more males (86%) and patients were older (median age was 81 (IQR 9)). All patients had IVWT (that was significantly higher than in mATTR) and DPD scan was negative in only 2 patients (that had a visual score of 1). Systolic dysfunction was significantly more frequent (59% versus 8%), as were death or hospitalization for heart failure.
Conclusions: DPD-scintigraphy seems more sensitive in patients with late onset mutated ATTR or with wild-type ATTR. It is less accurate in early onset patients with Val30Met mutation and particularly if they underwent LT. In those patients, further investigation is needed before excluding myocardial involvement.

P 197. ECHOCARDIOGRAPHY PARAMETERS FOR DIFFERENTIAL DIAGNOSIS IN PATIENTS WITH SUSPECTED CARDIAC AMYLOIDOSIS

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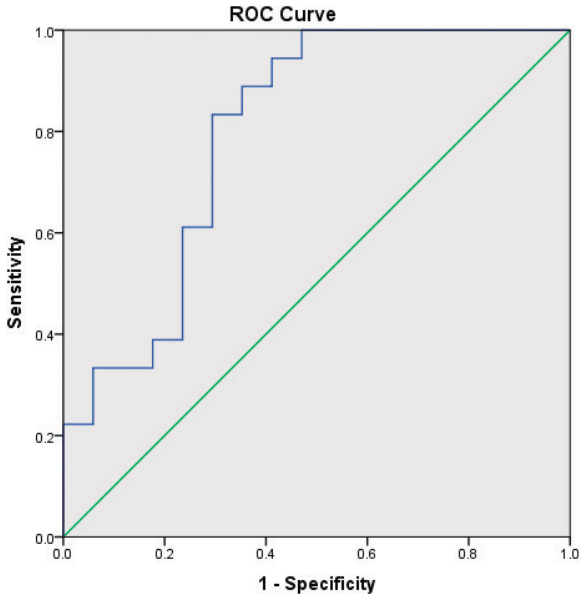
Introduction: Although a lot of studies validating echo parameters to distinguishing cardiac amyloidosis (CA) from other causes of myocardial thickening have been published, most of these were extrapolated by comparing CA patients data with reference values. Recently a study was carried out using a head-to-head comparison between CA and other causes of cardiac hypertrophy but it followed case-control design. This study aimed at comparing the diagnostic accuracy of various echo parameters in differentiating CA from other diagnosis, in a cohort of patients with a very high clinical suspicion of CA.
Methods: We retrospectively analyzed 48 patients referred between 2018 and 2019 to perform 99mTc-DPD scintigraphy due to a clinical suspicion of CA. We compared quantifiable conventional morphological and functional echocardiographic parameters along with deformation (strain) indices, previously suggested to diagnose CA, of patients with a positive CA diagnosis (by either DPD scan, a positive monoclonal component on serum immunofixation, urine immunofixation or serum free light chain assay or biopsy) (n = 28) with the rest of the population (n = 20). We used receiver operating characteristic curves (ROC) analysis for different echocardiographic parameters for prediction of the correct diagnosis.
Results: The studied population was predominantly old (77 ± 12 years) and male (54%). Echocardiographic features were typical of a restrictive cardiomyopathy phenotype with dilated atria (mean Left Atrial Volume Index (mL/m^2) = 54.66 ± 25.99, mean Left Atrial Volume Index (mL/m^2) = 37.82 ± 18.77) and thickened ventricular walls (Interventricular septum thickness at end-diastole (IVSd) (mm) = 14.73 ± 3.64, posterior wall thickness at end-diastole (PWTd) (mm) = 12.08 ± 3.10). Of the 28 patients with a diagnosis of amyloidosis, 17 had senile (ATTR wild type) amyloidosis, 7 primary (AL) amyloidosis and 4 had familial amyloid neuropathies. Among traditional echo indices, Left Ventricular Mass Index (LVMI) show the best discriminatory power with the highest area under the curve (AUC = 0.797, p = 003, 95%CI 0.644 to 0.950) [Figure] followed by IVSd (AUC = 0.733, p =.011, 95%IC 0.582 to 0.884) and PWTd (AUC = 0.703, p = 0.028, 95% IC 0.542 to 0.865). Strain parameters, including right and left global longitundinal strain and atrial strain, and diastolic parameters, including E/E' and mitral deceleration time time were not statistically different between groups.



Conclusions: In a population of patients with a high suspicion of amyloidosis and echocardiographic characteristics suggestive of a restrictive cardiomyopathy, LVMI, IVST and PWT have the best discrimination power for an accurate diagnosis of CA.

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P 216. I-JOURNEY: PORTUGUESE DATA FROM AN ELECTRONIC SURVEY REGARDING HFPEF

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Introduction: Data regarding how Portuguese clinicians diagnose, treat and follow-up patients with heart failure with preserved ejection fraction (HFpEF) are lacking.
Objectives: This survey aimed to obtain exploratory data about Portuguese clinicians perceptions regarding HFpEF.
Methods: A structured electronic survey (i-JOURNEY) was answered by medical specialists that follow-up HFpEF patients in Portugal.
Results: Eighty nine Portuguese clinicians answered the survey: 50.6% cardiologists, 41.6% internists, 6.7% general practitioners and 1.1% from other specialties. Diagnosis: 34.9% clinicians estimated that more than 50% of the total patients with HF had HFpEF and more than half reported that more that 40% of patients with HFpEF were diagnosed by themselves. Diagnosis was performed based on signs and symptoms by 97.9% of clinicians, whereas echocardiogram and biomarkers were used by 95.3% and 81.4% of respondents. In most cases, HFpEF was diagnosed following an acute decompensation (54.7%), during a hospitalization (50%) or due to persistent signs and symptoms (47.7%). The main suspicious symptoms were dyspnea (81.4%), fatigue (68.6%), orthopnea and paroxysmal nocturnal dyspnea (both 64.0%) and edema (59.3%). The most common comorbidities of patients with HFpEF were hypertension (97.7%), diabetes mellitus (93%), atrial fibrillation (96.5%), obesity (68.6%), and renal chronic disease (72.1%). Treatment: Relief of signs and symptoms (86%), avoidance of acute decompensation/hospitalization (86%), and improvement of quality of life (83.7%) were the main goals for HFpEF treatment. Risk factors associated with worse prognosis were lower glomerular filtration rate (76.5%), advanced age (68.2%), and high levels of BNP/NTproBNP (62.4%). Follow-up: Only 8.2% of clinicians see their HFpEF patients more than 5 times/year while 41.3% see their patients 3 times/year. Only 20% of clinicians reported their Institution had an integrated plan of discharge for patients with HFpEF. Finally, after hospital discharge, 23.5% of clinicians follow-up their patients in the first two weeks and 4.7% after more than 90 days. The remaining clinicians follow-up their patients between 15 and 90 days.
Conclusions: This exploratory analysis shows that there are several unmet needs, both in diagnosis and monitoring of Portuguese patients with HFpEF that need to be addressed for a better management and outcomes of these patients.

P 217. THYROID HORMONE LEVELS ARE NEGATIVELY ASSOCIATED WITH CLINICAL SEVERITY IN HEART FAILURE WITH PRESERVED EJECTION FRACTION

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Introduction: Heart failure (HF) is a leading cause of morbidity and mortality. Thyroid hormones (TH) are essential in cardiovascular homeostasis and may have a role in the pathogenesis of HF. However, in HF with preserved ejection fraction (HFpEF), the role of thyroid function in the clinical and functional domains of this syndrome has been poorly studied.
Objectives: To evaluate the association of TH levels with clinical, laboratorial and echocardiographic parameters acquired during a stable phase in patients with HFpEF.
Methods: We used a single centre and prospective cohort study including stable HFpEF patients from ambulatory care. Participants with history of thyroid disease were excluded. The associations between TH [thyroid-stimulating hormone (TSH), free triiodothyronine (FT3) and free thyroxine (FT4)] and NYHA class, BNP levels and echocardiographic measurements of cardiac structure and function were performed using linear regression models unadjusted and adjusted for age and sex (model 1), and for age, sex and body mass index (BMI) (model 2).
Results: We included 71 participants with mean age of 73.1 ± 8.4 years and 64.8% were male. 98.6% of the subjects had hypertension, 91.5% had dyslipidaemia and 53.5% had diabetes. The mean BMI was 29.4 ± 5.1 kg/m^2. The median (interquartile range) of TSH, FT4 and FT3 were 1.51(1.00-1.97) μIU/mL, 1.03 (0.92-1.14) ng/dL and 2.67 (2.40-2.87) pg/mL, respectively. A negative association was observed between FT3 levels and NYHA class in model 1 (b = -0.52 [-0.93, -0.11]; p = 0.01) and a trend for a negative association after additional adjustment for BMI (b = -0.40 [-0.80, 0.01], p = 0.054). FT3 was also negatively associated with BNP levels (b = -0.91 [-1.54, -0.27]; p < 0.01 in model 2). In systolic function, FT3 was positively associated with ejection fraction (b = 5.23 [1.81, 8.66]; p < 0.01 in model 2]. In diastolic function, FT4 was positively associated with E velocity (b = 35.08 [4.46, 65.71]; p = 0.03 in model 2) and FT3 was positively associated with E' (b = 2.06 [0.54, 3.57]; p < 0.01 in model 2). TSH was not significantly associated with any parameter of cardiac structure or function.
Conclusions: TH levels are consistently associated with several markers of HFpEF severity. Higher FT3 levels are associated with a less severe phenotype of HFpEF, characterized by lower NYHA class and BNP levels and a higher E' velocity. Our results support a role for TH in the pathogenesis and clinical progression of HFpEF.

P 218. PREDISPONENT FACTORS TO GOOD RESPONSE TO EXERCISE

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Introduction: Exercise training (ET) is an excellent tool to promote functional capacity in chronic heart failure (HF) patients. Although its benefits, it needs to be demonstrated in decompensated HF patients. A way to optimize an intervention is to evaluate who are the good responders and understand the causes of no response. Knowing the determinants of good response is also important to emphasize the feasibility of an intervention.
Objectives: To identify the factors of good response to an aerobic ET program for decompensated HF inpatients-ERIC-HF (early rehabilitation in cardiology-heart failure).
Methods: 50 patients who performed ERIC-HF were evaluated in terms of sociodemographic, functional and physiological characteristics. The main variables used to understand the performance of the patients were 1) best Barthel index variation, 2) best LCADL score variation and 3) best variation in the distance walked in the 6-minute walking test (6MWT). It was used the Paired sample T test to compare the 6MWT distance in the beginning and at discharge and Pearson correlation test to correlate different variables and the variation of the result in the 6MWT test. It was assumed a significance level at p < 0.05. Also univariate and multivariate regression was used to analyze the 25% percentile of the best patients.
Results: Patient's average age was 71 (± 11) years old, 34 are male, 80% are in NYHA class III, 18 have diabetes and 6 have resynchronization therapy. Patients performed a global amount of 684 sessions of exercise, with an average of 14 sessions each, for 16 (± 9) days of hospitalization. The mean distance walked in the 6MWTinicial was 199.9 (± 115.9) meters and 287.6 (± 128.9) meters at 6MWTdischarge, representing a 87.7 (± 170.6) meters difference, which is statistically and clinically significant to a 99% confidence interval (p = 0.001). The distance in the 6MWTinicial do not correlates with any variables. Therefore, the initial ability to perform the test cannot be predicted by any variable. The difference distance, correlates positively with the initial and final Barthel index (72 vs 98). The patients who demonstrated greater heart rate variation during ET had the most significant improvement in the 6MWTdischarge. The 6MWTdischarge distance, correlates negatively with the final and initial LCADL, but not with

the 6MWTinicial. 6MWTdischarge correlates negatively with Borg modified perceived exertion in the test (3 ± 2). The age of the patient correlates negatively only with the 6MWTdischarge.
Conclusions: Apparently, the great functional capacity the patients have, the great improvement they will achieve. To a lower functional capacity corresponds more days of hospitalization. ERIC-HF seems to be more effective to patients that are more conditioned prior to the cardiac event. Other exercise programs need to be designed to better establish the response of deconditioned patients during stabilization phase.

P 219. PULMONARY ARTERY SYSTOLIC PRESSURE: PROGNOSTIC FACTOR IN HEART FAILURE

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Introduction: Pulmonary hypertension, which precedes right heart failure (HF), is associated with an adverse prognosis. Pulmonary artery pressure (PSAP) estimation by Transthoracic Echocardiogram (TTE) seems to be an acceptable alternative to right ventricular catheterization when diagnosing this condition. The main objective of this paper was to analyze the predictive value of PSAP for the combined endpoint of mortality and readmission (D/R) at 6, 12 and 24 months after discharge in patients with HF.
Methods: A retrospective study of patients admitted in the cardiology service with acute HF was conducted. The sample was divided into 2 groups: group A (GA) with PSAp < 40 mmHg vs group B (GB) with PSAP > 40 mmHg. Clinical, analytical and ultrassonagraphic parameters were evaluated in a 24-month follow-up in both groups. Statistical analysis was conducted in SPSS in order to predict the predictive value of PSAP for the combined endpoint D/R at 6, 12 and 24 months after discharge.
Results: 742 patients were included in the study; 51.3% were male and the mean age was 77.66 ± 9.926 years old. The mean ejection fraction (EF) was 49 ± 16.35%. The mean PSAP was 47 ± 15.5 mmHg. 71 (9.57%) patients had a previous diagnosis of chronic obstructive pulmonary disease (COPD). 25 of the patients (3.37%) died during the hospital stay. 48.95% and 54.81% of the patients achieved the combined endpoint D/R, respectively, at 12 months and 24 months after discharge. The following Kaplan-Meier survival curves were determined for the combinated endpoint D/R for GA and GB: 6 months-χ^2 6.119 (p =.013); 12 months-χ^2 8.293(p =.004); 24 months-χ^2 9.457(p =.002). The PSAP value demonstrated to be an independent variable in predicting the 24-month combinated endpoint (HR:1.015 p =.05) after adjusting for other prognostic variables such as age, diabetes melittus, chronic kidney disease, COPD, systolic blood pressure, BNP value and EF.
Conclusions: In this sample, higher PSAP values demonstrated to be associated with worse prognosis, with a significant correlation in both short and long-term mortality, since GB had a worse outcome. PSAP value proved to be an useful indicator for the combined endpoint of D/R at 6, 12 and 24 months after discharge.

P 220. HEART FAILURE-PROGNOSTIC EVALUATION OF THE RETURN TO BASELINE NTPROBNP VALUE AT DISCHARGE

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Introduction: The natural history of chronic heart failure is associated with progressive increase in hospitalization rates, worsening of quality of life and prognosis, with an incomplete return to patient previous baseline status. The association between natriuretic peptides (NP) plasma levels at discharge for acute heart failure (AHF) and patient prognosis is well established. An in-hospital NT proBNP reduction > 30% showed to be predictive of a reduced mortality. NP values in AHF hospitalizations have been interpreted independently from the previous patient baseline value.
Objectives: To assess the prognostic value of the return of serum NP concentration to previous baseline value at the time of discharge, after an admission for heart failure (HF) decompensation.
Methods: A retrospective study using data from patients hospitalized with AHF 2016 to 2018 in a single hospital. We considered baseline NTproBNP as the lowest value in a stable, euvolemic, outpatient in the 12 months previous to the hospital admission for HF decompensation. Patients that lacked NT-pro BNP values at admission and discharge day were excluded as well as patients lacking a baseline NTproBNP value before worsening of HF symptoms. Kaplan-Meier survival curves were used to evaluate mortality at 1 year.
Results: A total of 107 patients were included(median age 77.91 ± 9.15 years; 52.3%(n = 56) male; 42.1%(n = 45) heart failure with reduced ejection fraction(HFrEF); 34.5%(n = 37) ischemic etiology). Patients were divided by groups based on in-hospital 30% NTproBNP reduction and return to the previous NTproBNP baseline level. 40.2% didn't reach a 30% reduction in their NTproBNP level from admission to discharge nor attained their baseline NTproBNP value; 17.8% reached a 30% NTproBNP reduction from admission to discharge but didn't reach their baseline value; 17.8% reached their baseline NTproBNP concentration without 30% NTproBNP reduction. The remaining 24.3% decreased their in-hospital NTproBNP by 30% and reached their previous baseline NTproBNP value. Patients discharged at baseline NTproBNP value (17.8 ± 24.3%) had a lower mortality at 1 year follow-up (p = 0.001), independently of a 30% in-hospital NTproBNP reduction. In an univariable analysis, the attainment of baseline NT proBNP values at discharge (B-BNP-D) for AHF hospitalizations correlates with lower mortality in the follow-up. This is statistically significant in a multivariable analysis even after adjustment for age, ejection fraction, in-hospital NTproBNP reduction, serum ureia concentration at admission and serum creatinine at discharge (Table).
Conclusions: In AHF hospitalizations, the evaluation of the return to baseline NTproBNP value at discharge adds prognostic value to the in-hospital NTproBNP reduction.

Table P 220
Multivariate Cox Regression to Predict Time to Death

							95.0% CI for Exp(B)	Coluna2
Coluna1	B	SE	Wald	df	Sig.	Exp(B)	Lower	Upper
creat_alta	-0.268	0.276	0.939	1	0.332	0.765	0.445	1.315
Hb_alta	-0.307	0.115	7.168	1	0.007	0.736	0.587	0.921
Delta_BNP_adm_alta_percent	-0.001	0.003	0.053	1	0.818	0.999	0.994	1.005
Idade	0.013	0.023	0.320	1	0.572	1.013	0.969	1.059
ureia_adm	0.008	0.004	3.708	1	0.054	1.008	1.000	1.016
FEVE_Bi	0.113	0.375	0.091	1	0.763	1.119	0.537	2.333
Delta_BNP_basal_alta_por_100	0.019	0.006	11.535	1	0.001	1.019	1.008	1.031

P 221. LIMITING FACTORS FOR ACHIEVING MAXIMUM DOSE THERAPY IN HEART FAILURE WITH REDUCED EJECTION FRACTION

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Introduction: Neurohormonal antagonist therapy (NHA) is crucial in the management of heart failure with reduced ejection fraction (HFrEF). One ongoing challenge is to ensure that proven heart failure therapies are used at tolerated target doses. This is mainly limited due to side effects as hyperkalemia, non-cardiac organ dysfunction and symptoms. New therapeutic options to treat hyperkalemia could be an attractive therapeutic complement in the management of some of these pts.
Objectives: Evaluate patients (pts) with HFrEF concerning NHA therapy in order to identify the main reasons for suboptimal dosage use.
Methods: Unicentric, retrospective analysis of pts followed in a HFC since 3/2011 until 11/2019. Included pts with HFrEF (ejection fraction < 40%). Pts were evaluated regarding NHA therapy (Angiotensin-Converting Enzyme inhibitors (ACEi) or Angiotensin Receptor Blockers (ARB), Angiotensin Receptor-Neprilysin inhibitors (ARNi) and Mineralocorticoid Receptor Antagonists (MRA)). Reasons for underdosage were examined.
Results: A total of 345 pts were included (77.4% male, mean age 60.5 ± 12.8 years). 263 pts (76%) had suboptimal dosage of NHA; major reasons for underdosing/no-prescription were hyperkalemia (38.8%), hypotension (20.2%) and worsening renal function (WRF) (14.4%). Only 1.9% had both WRF and associated hyperkalemia as reason. Regarding each therapeutic option individually: ACEi underdosage was due to hiperkalemia in 31.1%, hypotension in 29.5%, WRF in 24.2%. 5.3% had both WRF and associated hiperkalemia as reason. Concerning ARNi, the main reasons were: hypotension (22.7%), WRF (7.6%) and hiperkalemia (7.6%). As for MRAs, hiperkalemia was the reason for underdosing in 41.1%, followed by hypotension (10.1%) and WRF (9.3%). WRF and associated hiperkalemia was present in 8.9%. Chronic kidney disease (CKD) was present in 31.3% pts. No significant association was found between hiperkalemia and CKD, all-cause or cardiovascular mortality and HF hospitalizations.
Conclusions: A significant number of pts did not have optimal dosage of HF medication. Hiperkalemia was the most common limiting factor in ACEi and MRA prescription/uptitration. ARNi target-dose attainment was more frequently conditioned by hypotension. Although CKD is a well known common comorbidity in HF that may limit medication updosage, hiperkalemia was not related to WRF in most pts and had no correlation with CKD.

Painel 10 - Doença Valvular 8

P 273. AVALIAÇÃO DA RESPOSTA AO ESFORÇO NA HIPERTENSÃO PULMONAR TROMBOEMBÓLICA CRÓNICA APÓS-TRATAMENTO

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Introdução: O tratamento de eleição da hipertensão Pulmonar Tromboembólica Crónica (HPTEC) é a cirurgia de tromboendarterectomia pulmonar (PEA). No entanto, para os doentes inoperáveis ou com doença residual ou recorrente é possível oferecer angioplastia de balão (BPA) e terapêutica médica. Estes tratamentos podem ser combinados entre si de forma a otimizar o resultado. Foi demonstrado que permanece comprometida a ventilação e a resposta vascular nas provas de esforço cardiorrespiratórias (PECR).
Objetivos: Caracterizar os parâmetros de reconhecido valor prognóstico da PECR em dts com HPTEC com tratamento otimizado, subdividindo os doentes de acordo com normalização hemodinâmica, segundo a nova definição de HP e avaliar se existe correlação entre o resultado hemodinâmico e os parâmetros da PECR selecionados.
Métodos: Estudo restrospetivo, quantitativo e transversal de todos os dts com o diagnóstico de HPTEC que realizaram cateterismo cardíaco direito e PECR 6 meses após otimização terapêutica (PEA, BPA e/ou Tx), definindo 2 grupos: Grupo 1-pressão média na artéria pulmonar (PAPm) ≤ 20 mmHg e resistências vasculares pulmonares (RVP) ≤ 3 Uw; Grupo 2-PAPm 20 mmHg e RVP?3 Uw.
Resultados: Foram incluídos 29 dts, idade média 62 anos, 59% sexo feminino, 62% CF WHO I. 24 (82,8%) dts submetidos a PEA, 7 (24%) concluíram programa BPA e 14 (48%) sob Tx. A normalização hemodinâmica de acordo com a nova definição foi conseguida em 9 (31%) dts. Verificou-se uma forte correlação entre as RVP e a PAPm com consumo oxigénio (VO2) no pico, eficiência ventilatória (declive VE/VCO2) e pressão parcial de CO2 no final da expiração (PET CO2) de pico. Não se verificou normalização dos parâmetros da PECR avaliados no Grupo 1: VO2 pico- 20,2 mL/Kg/min; VO2 pico (%)-79,5; declive VE/VCO2-33,7; PET CO2 pico 34,3 mmHg. Não se verificou diferença quando comparados com o grupo que não cumpriu critérios de normalização hemodinâmica (Grupo 2): VO2 pico-19,8 mL/Kg/min, p = 0,72; VO2 pico (%)-74,2, p = 0,36; Declive VE/VCO2-35,9, p = 0,31; PET CO2 pico 33,7 mmHg, p = 0,65.
Conclusões: Verificou-se uma forte correlação entre a hemodinâmica e os principais parâmetros da PECR. No entanto, mesmo os dts com normalização hemodinâmica de acordo com nova definição, mantêm alteração dos parâmetros de PECR. Terão que ser realizados mais estudos com mais dts e *follow-up* mais longo para saber as implicações prognósticas deste achado.

P 272. PREDICTORS OF SURVIVAL IN PATIENTS WITH PRECAPILLARY PULMONARY HYPERTENSION

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Introduction: Although the perceived prognosis of patients with precapillary pulmonary hypertension (PH) is poor, the natural history of this condition is very heterogeneous. In this study we sought to identify predictors of poor outcomes which could help refine prognosis.
Methods: We studied consecutive patients referred to our centre from 12/2016 to 11/2018 with confirmed precapillary PH. A range of clinical, laboratory, echocardiographic and right heart catheterization (RHC) data variables were collected to assess predictors of survival. Outcome was defined as mortality from any cause.
Results: Of the 80 included patients, 51 (64%) were female and mean age was 60.5 ± 16.0 years. The majority of patients (45%) had pulmonary arterial hypertension (group 1) and 41% were chronic thromboembolic pulmonary hypertensive disease patients (group 4). During a median follow-up of 18.7 [IQR 12.3-26.7] months, 10 patients (12.5%) died. New York Heart Association (NYHA) functional class (HR 19.4 [95%CI 2.56-147.5], p = 0.004) was the strongest predictor of mortality, whereas higher haemoglobin (HR 0.70 [0.49-0.99], p = 0.047) and 6-minute walking distance (6MWD) expressed as percentage of predicted (HR 0.96 [0.93-0.99], p = 0.004) were associated with better survival overall. Echocardiographic parameters such as eccentricity index (HR 3.35 (95%CI 1.11-10.0), p = 0.031), short pulmonary acceleration time (HR 0.98 [95%CI 0.96-0.99], p = 0.008), the presence of moderate to severe tricuspid regurgitation (HR 6.46 [95%CI 1.67-25.0], p = 0.007) and pericardial effusion (HR 3.86 [95%CI 1.12-13.4], p = 0.033) were also associated with death. Traditional right ventricular function parameters such as fractional area change, tricuspid annular plane systolic excursion (TAPSE) and S velocity of the lateral annular tricuspid annulus did not predict mortality in these patients. Invasive pressures and pulmonary vascular resistance measured by RHC were also not associated with mortality. In multivariable analysis, NYHA functional class was the only independent predictor of mortality in patients with precapillary PH (HR 14.5 [95%CI 2.3-146.8], p = 0.006).
Conclusions: Eccentricity index, short pulmonary acceleration time, moderate to severe tricuspid regurgitation and pericardial effusion

were associated with poor survival. Functional class was the strongest independent predictor of mortality in precapillary PH patients. These parameters may help stratify the risk of death in this heterogenous population.

P 271. EFEITO DA ANGIOPLASTIA PULMONAR DE BALÃO NA FUNÇÃO RESPIRATÓRIA EM DOENTES COM HIPERTENSÃO PULMONAR

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Introdução: Recentemente a angioplastia pulmonar de balão (BPA) destacou-se como uma opção terapêutica para os doentes com Hipertensão Pulmonar Tromboembolica Crónica (HPTEC) inoperável, residual ou recorrente e demonstrou melhoria da hemodinâmica e da capacidade de exercício. No entanto o seu efeito na função respiratória está menos estudado e os poucos estudos publicados têm sido controversos.
Objetivos: Avaliar o efeito da BPA na função respiratória dos doentes com HPTEC que cumpriram o programa de angioplastia pulmonar no nosso centro.
Métodos: Estudo prospetivo, quantitativo e longitudinal de todos os doentes (dts) submetidos a BPA entre 2017 e 2019 que completaram o programa à data de envio deste *abstract*. Foram realizados em todos os dts teste de marcha, espirometria e capacidade de difusão de monóxido de carbono (DLCO) antes da primeira sessão e 6 meses depois da última sessão.
Resultados: Foram realizadas 60 sessões em 12 dts, 8 sexo feminino, idade média 66 anos. 4 dts tinham sido submetidos a tromboendarterectomia pulmonar e 7 estavam sob terapêutica médica. Após conclusão das sessões de BPA, todos os doentes atingiram resistências vasculares pulmonares (RVP) 5 Unidades Wood (UW) e 58% apresentavam RVP 3 UW. No teste de marcha, verificou-se melhoria da capacidade funcional, embora sem significado estatístico (411m vs 455m, p = 0,400). No entanto, a saturação no pico de esforço melhorou significativamente (88,4% vs 95,4%, p = 0,008), assim como a dessaturação com o esforço (-9,41 vs -1,25, p = 0,003). Os parâmetros das provas de função respiratória como a capacidade vital forçada e capacidade difusão do monóxido de carbono (DLCO) não melhoraram (90,4 vs 91,6, p = 0,65 e 73,0 vs 72,0, p = 0,60, respectivamente).
Conclusões: A melhoria da função respiratória dos doentes incluídos num programa de BPA em doentes com HPTEC, verificou-se sobretudo ao nível de dessaturação durante o teste de marcha e como consequência na saturação no pico de esforço. Os parâmetros avaliados nas PFR não mostraram alterações significativas, nomeadamente na DLCO à semelhança do demostrado em estudos anteriores.

P 274. PREDICTING ADVERSE EVENTS IN PATIENTS WITH PULMONARY ARTERIAL HYPERTENSION: THE REVEAL RISK SCORE 2.0 AND ESC/ERS-BASED RISK ASSESSMENT STRATEGIES

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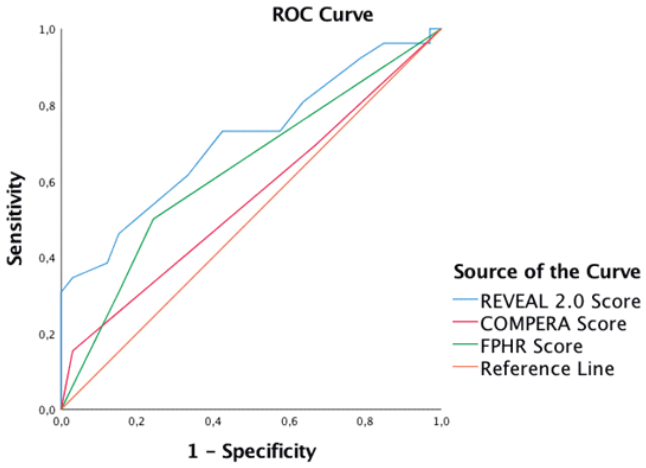
Introduction: Pulmonary arterial hypertension (PAH) is a progressive, fatal disease. Current guidelines recommend patient assessment with the goal of achieving or maintaining low-risk status. Various strategies are validated to determine it. The most recently published was REVEAL 2.0 risk score (Chest. 2019;156:323-37).
Objectives: To assess the predictive value of the available risk scores in a Portuguese population with PAH.
Methods: Retrospective study including consecutive treatment-naïve patients (pts) newly diagnosed with PAH in a referral centre from 2007 to 2019. Clinical, echocardiographic and haemodynamic data at baseline were collected. Risk stratification was obtained using the REVEAL 2.0 score and ESC/ERS-based risk strategies: COMPERA score (Eur Respir J. 2017;50:17000740) and FPHR score (Eur Respir J. 2017;50:1700889). Adverse events were a composite of cardiovascular (CV) death and unplanned heart failure (HF) admission. Receiver operating characteristic (ROC) curves and area under curve (AUC) were used to compare scores.
Results: 60 pts were included: mean age 45.5 ± 7.8 years, 73.7% female. Idiopathic (28.3%) and congenital heart disease (30%) were the most common subtypes. At diagnosis, 95% of pts had limitation in daily physical activities (WHO functional class ≥ II), mean pulmonary arterial pressure was 46.5 ± 2.1 mmHg and pulmonary vascular resistance 9.9 ± 2.5 uWood. Clinical follow-up was complete in 95% of pts (median time 97.3 months). Adverse events occurred in 43.3% of cases: CV death rate 23.3%, unplanned HF admission rate 41.7%. Pts experiencing adverse events had lower cardiac index (2.1 ± 0.5 versus 2.5 ± 0.7 L/min/m^2, p = 0.04), higher values of NTproBNP (3,052.8 versus 747 pg/mL, p < 0.01) and lower walked distance in 6-minute walking test (315.6 ± 121.9 versus 401.6 ± 113.9 meters, p = 0.01) at baseline. Multivariate logistic regression identified 2 independent predictors (both protective) of adverse events: baseline low-risk status assessed by REVEAL 2.0 (OR 0.27, 95%CI 0.1-0.8, p = 0.02) or by FPHR scores (OR 0.32, 95%CI 0.1-0.9, p = 0.04). According ROC curves (Figure), the REVEAL 2.0 score had significantly greater discrimination power (AUC 0.71, p < 0.01) than COMPERA (AUC 0.55, p = 048) and FPHR (AUC 0.62, p = 0.09).



Conclusions: This study helped to validate the multidimensional approach to risk assessment in pts with PAH. Low-risk status at baseline was predictive of better long-term prognosis. Recently published REVEAL 2.0 score demonstrated greater risk discrimination and have potential to become a fundamental tool in treatment decision of PAH pts.

P 270. RIGHT CATHETERIZATION PARAMETERS PREDICTION IN THE FIRST YEAR AFTER HEART TRANSPLANT USING BNP

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Introduction: Despite being the gold-standard for hemodynamic assessment, right heart catheterization (RHC) was overcome by plasma B-Type Natriuretic Peptide (BNP) levels in daily clinical routine. However, in the first year after heart transplantation (HT), the relationship between BNP and adverse hemodynamics have yielded conflicting results.
Objectives: The aim of this study was to evaluate whether BNP values can be used to estimate adverse hemodynamics in the first year after HT.
Methods: Prospective study of consecutive RHC performed in the first year after HT (according to the endomyocardial biopsies program). Plasma BNP was measured at the same day. The area under the curve (AUC) was analysed to find the BNP values with higher sensitivity and specificity to detect adverse hemodynamics. Linear regression was made to study the association between BNP and pulmonary capillary wedge pressure (PCWP).

Table 1 Prediction of adverse hemodynamics by AUC results with BNP

HEMODYNAMIC PARAMETERS	AUC values AUC	p	95% CI	Best BNP value	Sensitivity	Specificity
Pulmonary capillary wedge pressure (PCWP) > 12mmHg	0.798	<0.001	0.671-0.925	> 500pg/ml	78.3%	76.0%
Mean pulmonary artery pressure (mPAP) ≥ 25mmHg	0.830	<0.001	0.714-0.946	> 500pg/ml	87.5%	67.7%
Cardiac output < 4L/min	0.833	0.002	0.667-1.000	> 1500pg/ml	77.8%	87.5%
Cardiac index (CI) < 2.5L/min/m^2	0.810	0.001	0.663-0.957	> 1150pg/ml	76.9%	86.1%
Pulmonary vascular resistance (PVR) > 1,5WU	0.678	0.044	0.509-0.848	> 200pg/ml	83.3%	47.1%
Right atrial pressure (RAP) > 5mmHg	0.744	0.003	0.607-0.880	> 500pg/ml	70.8%	65.4%

P 270 Figure

Results: From 2017 to 2018, 50 RHC were performed. Mean age was 49 ± 8 years, with mean BNP value of 964 ± 1,115 pg/ml. Prediction of adverse hemodynamics by AUC results are represented in the table 1. BNP values were significantly increased in patients with PCWP > 12 mmHg (p < 0.001), cardiac index < 2.5 L/min/m^2 (p = 0.001), mean pulmonary artery pressure (mPAP) ≥ 25 mmHg (p < 0.001), pulmonary vascular resistance > 1.5 WU (p = 0.044) and right atrial pressure > 5 mmHg (p = 0.003). BNP > 500 pg/ml had a sensitivity of 78% and 88% and a specificity of 76% and 68% to detect PCWP > 12 mmHg and mPAP ≥ 25 mmHg, respectively. Linear regression analysis revealed that BNP could significantly predict PCWP (PCWp = 10.2 + BNP × 0.04; p < 0.001) with a R^2 of 0.32.
Conclusions: Significant associations were found between BNP values and adverse hemodynamics in RHC, supporting the clinical utility of BNP in the first year after HT.

P 275. HAEMODYNAMIC ASSESSMENT OF RIGHT VENTRICULAR OVERLOAD IN PULMONARY HYPERTENSION: IS IT TIME FOR NEW PREDICTORS?

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Introduction: Right ventricular (RV) adaptation to the increased pulmonary load is a key determinant of outcomes in pulmonary hypertension (PH). Pulmonary vascular resistance (PVR) is widely recognized as haemodynamic measure of RV overload. Pulmonary artery pulsitility index (PAPi) is a novel index shown to predict RV failure in acute inferior myocardial infarction and after left ventricular assist device implantation, but its prognostic value is less known in PH.
Objectives: To assess predictive value of PAPi in PH and to compare it with standard haemodynamic parameters.
Methods: Retrospective study including consecutive right heart catheterizations (RHC) performed from April/2009 to October/2019 in a PH referral centre. Procedures presenting PH were selected [mean pulmonary arterial pressure (mPAP) ≥ 25 mmHg, according European guidelines]. PAPi was calculated as [(systolic pulmonary arterial pressure-diastolic pulmonary arterial pressure)/mean right atrial pressure (RAP)], value < 1.85 had been associated with RV failure. Multivariate logistic regression was used to identify predictors of all-cause mortality. Receiver operating characteristic (ROC) curves and area under curve (AUC) were used to assess discrimination power.
Results: From a total of 569 procedures, 372 fulfilled PH criteria: mean age 57.7 ± 16.1 years, 68.3% female, 34.1% performed under pulmonary vasodilator therapy. Pre-capillary PH was diagnosed in 66.9% of cases. Chronic thromboembolic PH was the most common subtype (34.7%). Concerning haemodynamic parameters: mPAP was 41.8 ± 12.0 mmHg, mean RAP 8.1 ± 5.2 mmHg, mean RVP 8.3 ± 5.0 uWood, CI 2.5 ± 0.8 L/min/m^2 and median PAPi 6 (IQR 5.5). Mean value of mixed venous oxygen saturation was 66.8 ± 8.9%. All-cause mortality rate was 24.2% (mean time to death 1.9 years). Pts experiencing adverse events had lower cardiac index (2.3 ± 0.6 versus 2.5 ± 0.8 L/min/m^2, p < 0.01), higher values of PVR (10.1 ± 5.4 versus 7.6 ± 4.6 uWood, p < 0.01) and mean RAP (10.8 ± 6.1 versus 7.8 ± 4.6, p < 0.01). Multivariate logistic regression identified 2 independent predictors of adverse events: mean RAP (OR 1.10, 95%CI 1.03-1.18, p < 0.01) and PVR (OR 1.09, 95%CI 1.02-1.16, p = 0.04). According ROC curves, PAPi did not have discrimination power (AUC 0.4, p < 0.59) to adverse events occurrence.
Conclusions: In this study, PAPi was not an independent predictor of adverse events in PH as opposite to standard haemodynamic parameters as PVR. Further studies are needed to clarify PAPi predictive value, as it has major implications for understanding of the arterial load in diseases of the pulmonary circulation.

Painel 11 - Cardiologia Intervenção 4

P 276. REDUCER, THE NEW KID ON THE BLOCK FOR REFRACTORY ANGINA THERAPY-A SINGLE CENTER EXPERIENCE

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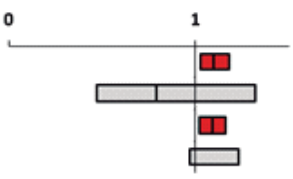
Introduction: The coronary sinus Reducer emerged as a complementary therapy in patients with severe angina symptoms refractory to optimal medical therapy and not amenable to revascularization. The aim of this study was to assess the safety and efficacy of the Reducer in a real-world cohort of patientsÂ presenting with refractory angina.
Methods: Thirteen patients with refractory angina, objective evidence of myocardial ischemia attributable to the left coronary artery and deemed

Multivariate Analysis	OR	CI 95% Lower	CI 95% Upper	p-value
Mean right atrial pressure	1.10	1.03	1.18	< 0.01
Cardiac index	0.79	0.47	1.32	0.37
Pulmonary vascular resistance	1.09	1.02	1.16	0.01
Pulmonary artery pulsatility index	0.78	0.97	1.04	0.78



P 275 Figure

unsuitable for revascularization were treated with Reducer at a single center between April 2018 and June 2019. Safety endpoints were procedural success and complications. Efficacy endpoints, assessed at 6-month follow-up, were reduction in Canadian Cardiovascular Society angina (CCS) class, improvement in quality of life assessed by the Seattle Angina Questionnaire (SAQ) and reduction in pharmacological antianginal therapy.
Results: Ten patients (77%) had end-stage coronary artery disease without revascularization targets (previous CABG ± PCI in 8 and previous PCI in 2) and 3 patients had microvascular disease without epicardial stenosis. Procedural success was achieved in all patients, with no device related complications. There was one cardiac tamponade, promptly treated with pericardiocentesis. Regarding the efficacy endpoint, 10 patients (77%) had a reduction of at least one CCS class, 7 patients (54%) at least two classes, and 4 patients (31%) became asymptomatic, with a significant CCS class reduction from 3 [IQR 2-3] to 1 [IQR 0-2] (p = 0.004) at 6-month follow-up. Concerning SAQ, there was a significant improvement in ability to perform physical activities (p = 0.04), angina frequency (p = 0.003), satisfaction with current angina treatment (p = 0.004) and enjoyment of life (p = 002). Seven patients (54%) had at least 1 antianginal drug reduction. There was no significant change in symptom status between 6 months and 1 year for those patients who completed 1-year follow-up.
Conclusions: In this real-world, single-center experience, implantation of Reducer was safe and associated with improvement of angina and quality of life in patients with refractory angina unsuitable for revascularization.

P 277. FEASIBILITY AND SAFETY OF THE ANTECUBITAL VENOUS ACCESS FOR RIGHT HEART CATHETERIZATION IN PATIENTS WITH PULMONARY HYPERTENSION

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Introduction: Right heart catheterization (RHC) via proximal venous access (PVA) like internal jugular, femoral or subclavian is generally a low risk procedure; however, complications may occur and are usually access site related. RHC via antecubital vein access (AVA) gained increased popularity given the lower complications rate.
Objectives: Our aim was to determine the feasibility and safety of AVA to perform RHC as compared to PVA in patients with confirmed or suspected pulmonary hypertension in an expert centre.
Methods: We performed a 9 year retrospective analysis of all patients undergoing right heart catheterization with confirmed or suspected pulmonary hypertension in a single expert centre. Medical records were analysed for demographic and procedural data.
Results: Five hundred and sixty nine (564) patients with a RHC procedures were analysed. The mean age was 58 ± 16 years, with female predominance (68.4%). The access site for the all cohort was PVA in 75.4% of patients (femoral access in 29.9% and a jugular access in 45.4%) and AVA in 24.6%. From 2010 until 2014 the access site was a PVA in 100% of cases. As of 2015 AVA was the preferred site and was obtained in all eligible patients. In the data from 2015 onwards, PVA was obtained in 229 patients (62.7%) and AVA in 136 (37.2%). In 2019, PVA was obtained in 43 patients (57.3%) and AVA in 32 (42.7%). The median time needed for completion of RHC was significantly lower in the AVA group (73 min vs 42 min; Mann Whitney U test p < 0.001). Fluoroscopy time was similar in the group of patients who underwent the procedure via antecubital access (3.45 min vs 3.57 min; Mann Whitney U test p = 0.16) The complications rate was 1.1% (6 events) in the PVA group compared with 0.4% (2 events) in the AVA group, without statistical difference. Patients could be discharged in one hour after the procedure in the antecubital approach, opposing to 3 hours after jugular approach and 6 hours after femoral approach as by protocol in our institution.
Conclusions: The feasibility of RHC performed by AVA is dependent on the volume of the centre. Our experience demonstrates a learning curve with increasing success rate (currently with a feasibility of about 40%) and support the use of this approach due to less procedural time and a faster resumption of ambulation without any serious adverse event.

P 278. IMPACT OF THE IFR CO-REGISTRATION PULLBACK SYSTEM ON REVASCULARIZATION

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Introduction: Since the publication of the DEFINE-FLAIR and the IFR-SWEDHEART trials, the use of iFR has grown. In addition to that, a co-registration system which displays the angiogram and the iFR values while doing a wire pullback has been developed. It has been hypothesized that this system enables precise identification of the lesion(s) which contribute the most to the ischemia burden, potentially reducing the number and/or length of stents used during PCI by avoiding deployment in less relevant segments.
Objectives: To assess the impact in revascularization decisions of the IFR pullback and co-registration systems.
Methods: Prospective single center study of patients submitted to functional lesion assessment with IFR since May 2017 until November 2019. The threshold for revascularization was an IFR ≤ 0.89. Demographic, clinical and procedural characteristics were collected. Cases were divided in two groups: those where pullback and co-registration was undertaken (co-registration group) and those where it was not (reference group). The decision to revascularize, mean iFR value, total number of stents and total stent length was compared between the 2 groups. For statistical analysis of association, we used t-tests (quantitative variables) and chi-square test (qualitative variables).
Results: IFR assessment was performed in 387 lesions (332 patients, mean age 67 ± 11 years, 70% men). Pullback and co-registration were performed in 133 lesions (30.8%). The iFR mean value was 0.86 ± 0.12 in the co-registration group, significantly lower when compared with the reference group-0.90 ± 0.11 (p = 0.002). This resulted in statistically significant (p = 0.009) greater number of revascularization in the former group-40.6% (35.3% with PCI and 5.3% with CABG) vs 27.6% (24.4% with PCI and 3.1% with CABG). In patients undergoing PCI, there was a relatively higher number of stents (1.35 vs 1.22) and total stent length (32.42 vs 27.80 mm) implanted in the co-registration group vs the reference group. Still, these differences had no statistical significance (number of stents p = 0.214 and stent length p = 0.166).
Conclusions: In our center, performing IFR pullback with co-registration resulted in a higher revascularization rate than simple iFR appreciation alone. However, in patients undergoing PCI, there was no difference in stent number or total length between groups. This may be the result of a mixed effect in the co-registration group: the system identifies very focal ischemia in some cases (leading to fewer/shorter stents), but also diffuse ischemia even when not clearly apparent on the angiogram (leading to more/longer stents) therefore balancing the overall effect on stent number and length.

P 279. TEMPORAL TRENDS IN PHYSIOLOGY CORONARY INDEXES AND THEIR IMPACT ON REVASCULARIZATION

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Introduction: Physiological measurements obtained during invasive procedures remain one of the most important diagnostic techniques available in the cathlab. FFR was the only technique widely available and validated for several years. iFR was introduced later and its non-inferiority to FFR established in 2017 with the publication of the DEFINE FLAIR and iFR SWEDEHEART trials. However, these trials suggested that the use of iFR is associated with fewer revascularization procedures when compared to FFR.
Objectives: To evaluate the experience with FFR or iFR at a high-volume center and assess their impact on revascularization decisions.
Methods: Prospective single center study of patients submitted to functional lesion assessment with iFR or FFR between 2012 and 2019. Demographic, clinical and procedural characteristics were collected. For statistical analysis of association, we used t-tests (quantitative variables) and chi-square test (qualitative variables). For the purpose of assessing the specific impact of iFR or FFR on decisions, only cases in which one of the indexes were measured were analysed (i.e. hybrid strategy cases were excluded). The threshold for revascularization in these cases was an iFR ≤ 0.89 or FFR ≤ 0.80.
Results: Measurements using only FFR or iFR were performed in 710 lesions (585 patients, mean age 67 ± 11 years, 70% men). iFR was performed in 451 lesions (63.5%) and FFR in 259 lesions (36.5%). Revascularization was performed in 258 cases (36.3%)-226 (31.8%) with PCI and 32 (4.5%) with CABG; 452 (63.7%) patients were kept on medical therapy only. In those cases where the lesions were assessed by iFR, the decision of revascularization was lower when compared with those assessed by FFR (32.2% vs 43.6%)-this difference was highly significant (p = 0.002). In patients undergoing PCI, there was no difference with regards to the number or total length of stents used between the iFR-only and FFR-only groups.
Conclusions: In our center, the incidence of revascularization in lesions submitted to physiological assessment was higher in patients assessed with FFR-only when compared with those assessed with iFR-only. This is in accordance with published data. The wide adoption of iFR-only as a coronary physiological assessment strategy may therefore lead to fewer revascularizations.

P 280. CONDUCTION DISTURBANCES IN VERY OLD PATIENTS AFTER TAVI

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[1]Centro Hospitalar Universitário de São João. [2]Centro Hospitalar de S. João, EPE.

Introduction: Transcatheter aortic valve implantation (TAVI) is an established procedure to treat intermediate and high-risk patients with symptomatic severe aortic stenosis. The occurrence of conduction disturbances remains the most frequent complication. The advanced age of most patients is associated with an increased risk of conduction disturbances independent from TAVI. Thus, some relevant conduction issues may be present before TAVI but remain silent and are detected only after the procedure because of the systematic postprocedural ECG monitoring.
Objectives: To evaluate a subgroup of very old patients who underwent TAVI and compare rhythm characteristics with younger one.
Methods: We retrospectively analyzed a subgroup of very old patients who underwent TAVI at a tertiary center from October 2014 to November 2019 (n = 371); patients with a previous pacemaker (PM) was excluded (n = 30). Clinical and electrocardiographic data was collected at presentation and up to 1 year after. This group was compared with younger group. Very old patients were defined has being 85 years or older.
Results: Of our total population of 341 patients, 99 patients were selected for this subgroup analyses, having a mean age of 87.4 ± 2.5 year-old. The main valve used was the CoreValve Evolut R (40.4%) and 29.3% of patients underwent balloon valve pre-dilation before implantation. Comparing to the subgroup of younger, older patients had more previous RBBB (13.1% vs 4.5%), newer conduction disturbances (58.6% vs 47.1%) and less conduction disturbance reversion (47.7% vs 51.2%), although not statistically significant. Even with more previous conduction disturbances, older patients maintained temporary pacemaker for the same time as younger ones (median time of 48 hours) without higher rhythm complications post pacemaker removal. Older patients had more PM implantation after-TAVI and more previous PM (19.0% vs 16.1%, 14.7 vs 5.1%, respectively; p = 0.004). As in younger group, the main cause to implant PM was advanced atrioventricular block (59.1% vs 65.9%). Curiously, percentage of ventricular pacing (VP) was lower in the older group (median 18% vs 76%) but this difference was not statistically significant (p = 0.274).
Conclusions: Very old patients represent an important subset of all patients submitted to TAVI. This group has higher prevalence of newer conduction disturbances and PM implantation, however, seems to stay more time free of VP.

P 281. AORTIC STENOSIS SUBTYPES: IMPACT ON TAVR OUTCOMES

Pedro Ribeiro Queirós[1], Nuno Dias Ferreira[1], Cláudio Guerreiro[1], Gualter Silva[1], Mariana Silva[1], Cátia Serena[2], Pedro Teixeira[1], Pedro Braga[1], Ana Raquel Barbosa[1]

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Introduction: Severe aortic stenosis (AS) patients can be divided into different groups according to their hemodynamic characteristics and left ventricular ejection (EF) fraction. The differences in outcomes of AS patients treated with TAVR between these groups remain controversial.
Objectives: To characterise the different AS subtypes and determine their impact on periprocedural and 1-year outcomes after TAVR.
Methods: Four hundred and seventy one (471) consecutive severe AS patients who underwent TAVR at our institution from 2007 to 2018 were analysed. Groups were defined according to mean aortic gradient (MAG), indexed stroke volume (iSV) and left ventricular ejection fraction (LVEF): high-gradient AS (HGAS: MAG ≥ 40 mmHg); low-flow low-gradient AS with reduced EF (LFLGrEF, MAG < 40 mmHg, iSV ≤ 35 mL/m^2 and LVEF < 50%); paradoxical low-flow low-gradient AS (PLFLG, MAG < 40 mmHg, iSV ≤ 35 mL/m^2 and LVEF ≥ 50%); low-gradient normal-flow AS (LGNF, MAG < 40 mmHg, iSV ≥ 35 mL/m^2). The groups were compared according to VARC2 defined outcomes and 1-year all-cause mortality.
Results: Three hundred and sixty (n = 360, 76.4%) patients had HGAS, 38 (10.6%) LFLGrEF, 36 (10.0%) PLFLG, and 37 LGNF (10.3%). Mean age was 79.6 ± 7.8 with no differences between groups. LFLGrEF patients were more likely to be male (71%, p < 0.05), had higher prevalence of coronary artery disease (76.3% vs HGAS 51.1% vs PLFLG 64.7% vs LGNF 50.0%, p < 0.05), higher mean surgical risk (EuroscoreII score 8.4 ± 5.1 vs HGAS 5.3 ± 4.9 vs PLFLG 7.9 ± 9.3 vs LGNF 5.4 ± 3.7, p < 0.01), lower LVEF (36.7%, vs HGAS 54.0%, vs PLFLG 56.6% vs LGNF 52.0%, p < 0.001) and higher left ventricular end diastolic diameter (56.2 mm, vs HGAS 49.6 vs PLFLG 50.7 vs LGNF 50.5, p < 0.01). PLFLG patients had higher prevalence of atrial fibrillation (56.0%, vs HGAS 27.1% vs LFLGrEF 51.4% vs LGNF 36.1%). HGAS patients had smaller aortic valve area (0.62 cm^2 vs LFLGrEF 0.69 cm^2 vs PLFLG 0.68 cm^2 vs LGNF 0.77 cm^2, p < 0.001). No differences between the groups were observed regarding procedural success (HGAS 99.7% vs LFLGrEF 97.4% vs PLFLG 100% vs LGNF 97.3%, p = 0.12) as well as 1-year mortality (HGAS 13.1% vs LFLGrEF 13.1% vs PLFLG 8.3% vs LGNF 10.8%, p = 0.85) and safety (HGAS 58.6% vs LFLGrEF 47.4% vs PLFLG 72.2% vs LGNF 67.6%, p = 0.12).
Conclusions: The majority of patients treated with TAVR had classical HGAS. LFLGrEF represented a smaller group, with a particularly high risk profile. Nevertheless, these differences did not translate into worse procedural and 1-year outcomes, and in fact they seemed to derive similar benefit.

Painel 12 - Prevenção/Reabilitação Cardíaca 4

P 282. THE IMPACT OF THE CARDIAC REHABILITATION PROGRAM IN PATIENTS WITH MID-RANGE HEART FAILURE (40-50%) IN IMPROVING CARDIO RESPIRATORY PREDICTORS

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Centro Hospitalar de Lisboa Central, EPE/Hospital de Santa Marta.

Methods: We studied 30 patients (P) with ejection fraction (EF) 40-50%, in a number of 198 P that participated in cardiac rehabilitation program (CRP). Of these P, 24 (80%) male and 6 (20%) female, 20 P were diagnosed myocardial infarction with ST-segment elevation, 2 P myocardial infarction non ST and 8 P with myocardial hypertrophy non ischemic. Of these P 30% were diabetics, 56% hypertension, 70% dyslipidemia, 36% smokers previous to CRP and body mass index 26.3 medium. All P were submitted to previous echocardiogram, cardiopulmonary exercise testing (CET) and a rehabilitation program minimum 4 sessions and maximum 52 sessions. At the end of the total sessions the echocardiogram and CET were repeated.
Results: Of the 30 P that participated in CRP only 20 completed the program, while the other 10 P dropped out because of social and economic problems. Of the P that completed the CRP, 70% got better on EF, 80% improved VE/VCO2 slope < 33 therefore are classified VC-II in ventilatory classification (VC), 5% VE/VCO2 slope > 40 VC-III classification, and 15% maintained the initial classification. 50% of the P increased at least one level metabolic equivalent of task (MET) from the first CET. Only 3 of the 20 patients came, once, to the hospital after the CRP with heart failure, and one died but did not fulfill the program.
Conclusions: Patients with mid-range heart failure submitted to a CRP can improve cardiorespiratory predictors, leading to a better quality of life. However, it is important to find solutions to minimize the causes that make patients to give up CRP.

P 283. EXERCISE-BASED CARDIAC REHABILITATION: A REAL-WORLD PROGRAM EVALUATION

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Introduction: Participation in an exercise-based Cardiac Rehabilitation (ExCR) program is recommended in ST-segment elevation Myocardial Infarction (STEMI) and Heart Failure (HF). The aim of this study was to assess the benefit of ExCR in a real-world population of STEMI (STEMI-REF) or HF with reduced ejection fraction (HF-REF) patients compared to STEMI and preserved ejection fraction (STEMI-PEF).
Methods: This is a single-center study enrolling consecutive patients who participated in an ExCR program comprising supervised exercise, self-management education, risk factor modification, and counselling, from 2016 to 2019. Patients underwent a baseline and repeated cardiopulmonary exercise testing (CPET) at ExCR program completion, as per site protocol. REF was defined as a left ventricular ejection fraction (LVEF) < 40% and PEF as a LVEF ≥ 40%.
Results: A total of 145 patients (mean age 53 ± 18 years; 80% male) with a mean peak oxygen uptake (pVO_2) of 22.5 ± 6.9 mL/Kg/min and median minute ventilation/carbon dioxide production (VE/VCO_2) of 34.6 (IQR: 31.4-39.7) were included. Overall, 40 (27.6%) patients had STEMI-REF or HF-REF, while the remainder 105 (72.4%) had STEMI-PEF. At baseline, CPET showed significantly higher pVO_2 in STEMI-PEF compared to STEMI-REF or HF-REF (24.8 ± 6.1 vs 16.7 ± 4.9 mL/Kg/min; p < 0.001), lower VE/VCO_2 (33.6 ± 6.1 vs 40.8 ± 12.1; p < 0.001) and fewer patients with exercise oscillatory ventilation (8.6 vs 22.5%; p = 0.023). After ExCR program completion, CPET showed smaller yet persistent statistical difference in variables between groups. In addition, the baseline to repeated CPET variation in median pVO_2 [+1.7 (IQR: 0.0 to 3.0) vs +0.4 (IQR: -1.3 to 2.6 mL/Kg/min); p = 0.048] and VE/VCO_2 slope [-4.6 (IQR: -9.0 to 0.5) vs -0.7 (IQR: -3.6 to 2.7); p = 0.002] was significantly larger in STEMI-REF or HF-REF compared to STEMI-PEF. Similarly, there were more patients with an improvement in quality-of-life (QoL), as assessed by the HeartQoL questionnaire (> 5 points), in REF compared to PEF (69.0 vs 44.2%; p = 0.029).
Conclusions: In a real-world ExCR program, baseline to repeated CPET median variation in pVO_2 and VE/VCO_2 slope were significantly larger in STEMI and HF patients with REF, as was QoL improvement. Despite limitations (single-center design, no propensity-score matching, and surrogate CPET assessment), this study raises the hypothesis that STEMI-REF or HF-REF patients may benefit the most from a structured dedicated ExCR program.

P 284. PREDICTORS OF PHYSICAL INACTIVITY 1 YEAR AFTER A CARDIAC REHABILITATION PROGRAM

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Introduction: Physical activity practice presents an inverse relation with risk factors of cardiovascular disease, with positive effects in quality of life. Cardiac Rehabilitation (CR) programs are effective in guiding patients with cardiovascular disease to safely and sustainably incorporate lifestyle physical activity (PA) changes, however its impact in long-term follow-up is unknown.
Objectives: To determine predictors of PA 1 year after an hospital cardiac rehabilitation phase 2 program.
Methods: Observational study including consecutive patients, after completion of phase 2 CR. All the patients were submitted to a clinical and echocardiographic evaluation and performed a cardiorespiratory stress test after phase 2 cardiac rehabilitation program completion. The patients were advised to continue the phase 3 CR at a specialized cardiac rehabilitation center. After one year of follow-up, the level of PA activity was assessed by completing the International Physical Activity Questionnaire (IPAQ) by telephone. Through logistic regression analysis, predictors of physical activity were determined after 1 year of phase 2 CR program.
Results: 78 patients (60.3 ± 11 years, 84.6% men, 85.9% ischemic disease, mean LVEF was 48.6 ± 13) were included in a phase 2 cardiac rehabilitation program. Of the cardiovascular risk factors, hypertension was the most frequent (73.1%), followed by diabetes (69.2%), smoking 39.7% and dyslipidemia 35.9%. All patients completed the phase 2 program except one patient who dropped out. At the end of phase 2 CR, 55.8% of the patients were at class II. The mean LV ejection fraction was 51.5 ± 12%, LV end-diastolic volume 121 ± 53 mL, LV end-systolic volume 71.5 ± 52 mL and TAPSE 19.9 ± 4.3 mm. In a cardiorespiratory stress test the mean of maximum workload was 128.5 ± 42W, the duration of the test was 9.4 ± 2.5 min, the VO2 peak was 17.7 ± 5.5 ml/kg/min, corresponding to 67.8 ± 16.6% of the predicted maximum VO2, the slope was 29.8 ± 5.6 and

MYERS score 8.3 ± 5.2 points. After 1 year of phase 2 completion, the IPAQ showed that 10.9% of patients had a low level of PA, 34.8% a moderate level and 54.3% had an high PA level. In multivariable analysis the participation in phase 3 CR program in a specialized cardiac rehabilitation center was an independent predictor of higher level of physical activity (p = 0.017) as was the MYERS score (p = 0.002). No cardiovascular risk factor, echocardiographic or isolated cardiorespiratory stress test variable were associated with a higher level of physical activity 1 year after the completion of phase 2 of CR.
Conclusions: The MYERS score and the participation in phase 3 CR were independent predictors of higher level of physical activity 1 year after phase 2 CR completion. So, after investing in phase 2 cardiac rehabilitation, it is critical to encourage patients to participate in phase 3 specialized programs to maintain lifestyles with higher level of physical activity.

P 285. CARDIAC REHABILITATION PROGRAM-REAL LIFE RESULTS

Rafael Santos[1], Inês Aguiar-Ricardo[1], Nelson Cunha [2], Tiago Rodrigues[3], Joana Rigueira[2], Afonso Nunes-Ferreira[1], Pedro Silvério António[4], Sara Couto Pereira[2], Pedro S. Morais[2], Beatriz Valente Silva [2], Pedro Alves da Silva[5], Paula Sousa[2], Sandra Miguel[6], Fausto J. Pinto[2], Ana Abreu[2]

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Introduction: Cardiac Rehabilitation is a multidimensional structured intervention aimed at recovering a patient after an acute cardiovascular event or improvement of a patient with a significant cardiovascular risk.
Objectives: Evaluation of the results of a cardiac rehabilitation program.
Methods: Observational single center study including consecutive patients, undergoing structured cardiac rehabilitation program (CRP) since April 2018 until August 2019. The phase 2 CRP included 3 months of exercise training, aerobic and strength exercise, individually prescribed, 3 times a week, 60 minutes sessions. All patients were submitted to a clinical evaluation, echocardiogram and cardiopulmonary exercise test after and before the CRP.
Results: 78 patients (60.3 ± 11 years, 84.6% men, 85.9% ischemic disease) were included in a phase 2 CRP. Of the cardiovascular risk factors, hypertension was the most frequent (73.1%), followed by diabetes (69.2%), smoking 39.7% and dyslipidemia 35.9%. At initial evaluation, 61% of patients were at NYHA II and the mean LVEF was 48.6 ± 13 (23.9% of patients with LVEF < 40%). All patients completed the program except one patient who dropped out (compliance of 98.7%). After the CRP, there was a significant improvement of LVEF (48.6 vs 51.5%, p = 0.006) and the LV volumes tended to reduce (LV end-diastolic volume decreased from 168 ± 87 to 135 ± 54, p = NS; LV end-systolic volume reduced from 112 ± 73 to 83 ± 55, p = NS). PSAP also reduced from 38 ± 16 to 32 ± 9 mmHg (p = 0.05). From laboratory analysis, Nt-proBNP decreased (942 ± 1,535 vs 806 pg/ml ± 2,026, p = 0.035), HDL increased (from 43.1 ± 11.6 to 47.2 ± 14 mg/dL, p = 0.006), there was no other statistically significant differences. Regarding the cardiopulmonary exercise test, the duration of the test increased on average from 8.8 ± 2.1 to 9.5 ± 2.3 min (p = 0.019), also the workload from 100 ± 36w to 129 ± 43w (p < 0.001); VO2 peak 17.2 ± 4.3 to 18 ± 5.4 ml/kg/min (p = NS), predicted VO2 65.9 ± 16% to 68.3 ± 17% (p = NS) and QR 1.09 ± 0.7 to 1.12 ± 0.09 (p = 0.019).
Conclusions: In this group of patients undergoing a cardiac rehabilitation program, there was an improvement in echocardiographic and laboratory terms. The compliance rate was very good. These data reinforce the importance of referencing the patients to these programs.

P 286. PREDICTORS OF QUALITY OF LIFE AFTER CARDIAC REHABILITATION

Pedro S. Morais[1], Tiago Rodrigues[2], Inês Aguiar-Ricardo[2], Nelson Cunha[2], Joana Rigueira[3], Afonso Nunes-Ferreira[3], Rafael Santos[2], Joana Brito[3], Susana Pires[1], Pedro Silva[1], Madalena Lemos Pires[4], Helena Santa Clara[5], Fausto J. Pinto[2], Ana Abreu[2]

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Introduction: Despite the recent advances in diagnosis and treatment, cardiovascular disease is still responsable for high morbidity and loss of quality of life (QoL). Cardiac rehabilitation (CR) is a multi-factorial intervention designed to limit the physiological and psychological effects of cardiovascular disease, manage symptoms, and reduce the risk of future events.
Objectives: To determine predictors of quality of life 1 year after an hospital CR phase 2 program.
Methods: Prospective study of consecutive patients, after completion of phase 2 CR. All patients were submitted to clinical, laboratorial and echocardiographic evaluation. A cardiorespiratory exercise test (CPET) was performed after phase 2 completion. Patients were advised to continue the phase 3 CR at a specialized CR center. After 1 year of follow-up, the QoL was assessed by completing the Heart Quality of Life Questionnaire (HeartQoL). Through logistic regression analysis, predictors of better QoL were determined after 1 year of phase 2 CR program.
Results: 78 patients (60.3 ± 11 years, 84.6% men, 85.9% ischemic disease, mean LVEF 48.6 ± 13%) were included in a phase 2 CR program. Of the cardiovascular risk factors, hypertension was the most frequent (73.1%), followed by diabetes (69.2%), active smoking 39.7% and dyslipidemia 35.9%. All patients completed the phase 2 program except 1 patient (dropped out). At the end of phase 2 CR, 55.8% of the patients were in NYHA class II and the others were in NYHA class I. Mean LVEF was 51.5 ± 12%, LV end-diastolic volume 121 ± 53mL, LV end-systolic volume 71.5 ± 52 mL and TAPSE 19.9 ± 4.3 mm. In a CPET performed on a cycle ergometer the mean of maximum workload was 128.5 ± 42W, duration was 9.4 ± 2.5 min, VO2 peak was 17.7 ± 5.5 ml/kg/min, corresponding to 67.8 ± 16.6% of the predicted maximum VO2, VE/VCO2 slope was 29.8 ± 5.6 and MYERS score 8.3 ± 5.2 points. After 1 year of phase 2 completion, the mean value of HeartQoL score was 2.2 ± 0.84 (0 meaning worse QoL and 3 better QoL). In a univariate analysis non-smoking, MYERS score, maximum workload (MWL), VO2 peak, VE/VCO2 slope and duration of CPET were associated with a higher score (p < 0.05). Patients who entered phase 3 CR in a specialized CR center had, on average, better QoL than the remaining patients (2.46 ± 0.78 vs 2.09 ± 0.86, p = NS) and higher levels of physical activity were also associated with better QoL (p = 0.06).
Conclusions: The MWL, duration of CPET, peak VO2, VE/VCO2 slope and MYERS were associated to a higher level of physical activity 1 year after phase 2 CR. The MYERS score, in our study, that included also patients without heart failure, was associated with better QoL, suggesting that this score may have some value in other populations. Although not statistically significant, possibly related to the sample size, higher levels of activity level seems to associate to better QoL and so, patients should be motivated to maintain physical activity.

P 287. IMPACT OF CARDIAC REHABILITATION ON PHYSICAL FITNESS AND HEALTH STATUS

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Introduction: Sedentary behavior and physical inactivity are among the leading modifiable risk factors worldwide for cardiovascular disease. Many patients in contemporary cardiac rehabilitation programs are quite deconditioned on entry. Cardiac rehabilitation Program (CRP) is crucial to accelerate recovery following an acute event and reduce the risk of recurrent events through structured exercise prescription, education, and risk factor modification. The positive effect of CRP on functional capacity has been known some years ago. In this study, we aimed to assess health-related quality of life (HRQoL), Metabolic Equivalents (METS); body mass index and waist circumference in patients with cardiovascular disease, before and after being submitted to CRP.
Methods: Thirty sex male patients with coronary heart disease, 51.2 ± 8.7 years old, concluded a three months CRP with 25.4 ± 6.4 sessions. The HRQoL was assessed with the MacNew and short form-36 (SF-36) questionnaires. METS were calculated at exercise tests at beginning and end of the program. Bruce protocol was used for all tests. Body mass index (BMI) and waist circumference was measured, at initial physical examination. All subjects signed an informed consent.
Results: In HRQoL we observed improvements in some domains of SF-36: physical function (68.2 ± 18.3; 86.3 ± 11.5), role physical (71.3 ± 17.1; 91.1 ± 8.7) vitality (60.0 ± 24.1; 78.1 ± 12.5), ($p < 0.05$). In MacNew questionnaire we saw significant improvements ($p < 0.05$) in all domains. In BMI and waist circumference there was no significant improvements, but there was significant improvements in METS (9.3 ± 2.5; 11.6 ± 3.2) p = 0,000. There was a negative correlation between METS, BMI and waist circumference (r = -0.620; p = 0.006). The domain physical functioning score from SF-36 was positively correlated with METS (r = 0.822; p = 0.000), and was negatively correlated with waist circumference (r = -0.569; p = 0.011).
Conclusions: As expected, CRP had positive impact on cardiorespiratory fitness and better perception HRQoL. Nevertheless the improvements observed in BMI and waist circumference weren't significant, they were in accordance with previous studies, which reports decreases of 1.3 Kg/m² in BMI and reduction of 2 cm in waist circumference. We can conclude that a short-term CRP have positive impact on cardiorespiratory fitness and HRQoL, but may be insufficient to have positive impact on body composition.

Painel 2 - Insuficiência Cardíaca 8

P 223. CLINICAL IMPACT OF NON-INVASIVE TELEMONITORING IN PATIENTS WITH CHRONIC HEART FAILURE

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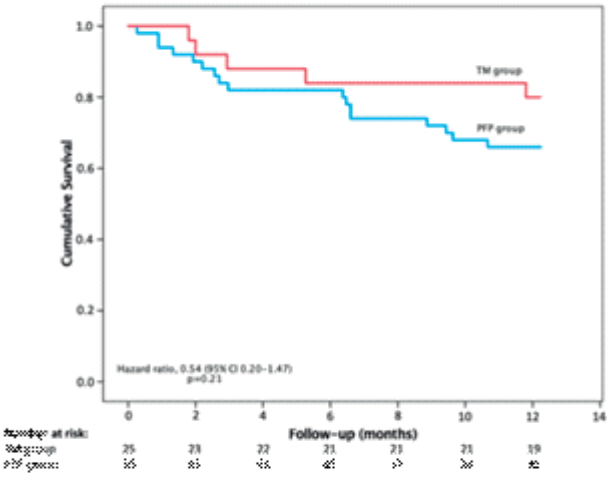
Introduction: Impact on prognosis and quality of life of non-invasive remote monitoring of patients with heart failure (HF) is controversial, mainly when compared to a protocol-based HF program.

	TM group (N=25)	PFP group (N = 50)	P value
Age, average ± SD	65.4 ± 9.7	67.5 ± 11.0	0.98
Female sex, N (%)	8 (32)	13 (26)	0.44
NYHA Class, N (%)			
I	4 (16)	15 (30)	0.05
II	16 (64)	32 (64)	
III	5 (20)	3 (6)	
IV	0 (0)	0 (0)	
LVEF, median (IQR)	26 (21-30)	26.5 (19.8-34.3)	0.27
Aetiology, N (%)			
DCM	14 (56)	26 (52)	0.90
Ischemic CMP	10 (40)	18 (36)	
Valvular CMP	1 (4)	4 (8)	
Other	0 (0)	2 (4)	
Laboratory characteristics			
Serum creatinine	1.23 ± 0.58	1.23 ± 0.45	0.35
NT-proBNP, pg/ml	3112±2456	3394±4043	0.50
Comorbidities, N (%)			
Hypertension	17 (68)	36 (72)	0.94
Diabetes *mellitus*	9 (36)	19 (38)	0.12
Anaemia [a]	6 (24)	10 (20)	0.87
CKD [b]	12 (48)	23 (46)	0.95
CPD	8 (32)	20 (40)	0.66
Atrial fibrillation	8 (32)	27 (54)	0.19
Medical Therapy			
ACEi/RAA inhibitor	19 (76)	46 (92)	0.04
ARN inhibitor	6 (24)	1 (4)	0.001
Beta-blocker	25 (100)	48 (96)	0.60
Mineralocorticoid antagonist	24 (96)	43 (86)	0.32
Diuretic	19 (76)	44 (88)	0.41
ICD	13 (52)	18 (36)	0.18
CRT	7 (28)	11 (22)	0.75



P 223 Figure

Objectives: To assess the success and the impact in the quality of life of HF patients followed-up in a telemonitoring (TM) program versus a protocol-based follow-up program (PFP).
Methods: Prospective and single center study of propensity score matched patients (pts) discharged from hospital after an episode of decompensated HF. Pts were matched according to age, NYHA at discharge and ejection fraction (EF): 1 group of 50 pts integrated in a PFP after hospital discharge, and 1 group of 25 pts integrated in a TM program. The TM group included patients with HF and reduced EF and ≥ 1 HF hospitalization last year. These pts were evaluated remotely 24/7. 12-month success was assessed by composed endpoint (death or hospitalization from any cause) with Kaplan-Meier analysis, and by the days lost due to unplanned hospital admission, evaluated by hospital emergency department admission, total number of days hospitalized or death. Quality of life (QoL) was evaluated by NTproBNP, NYHA and Kansas City Cardiomyopathy Questionnaire (KCCQ).
Results: Mean age of patients was 66.8 ± 10.6 years, 28% female. Dilated cardiomyopathy was the main etiology in 53.3%. Median EF at baseline was 26% (20-32), NTproBNP of 3,293 ± 3,542 pg/mL. There were no significant differences in the baseline clinical and laboratory characteristics of patients. In the 12-month success evaluation, there was no difference between TM or PFP in death or all-cause hospitalization (HR 0.54, p = 0.2). However, there was a reduction in the average of days lost due to unplanned hospital admissions or all-cause death in the TM group compared to PFP group (5.6 vs 12.4 days, p < 0.05). In QoL, there was a more significant reduction in the mean NTproBNP in TM group from 3,112 ± 2,456 pg/ml to 1,655 ± 1,670 pg/mL (p < 0.05) than in the PFP group from 3,394 ± 4,043 pg/ml to 3,183 ± 3,183 ± 7,170 pg/mL. 52.2% of patients on TM group had an improvement at 12 months in NYHA functional class, compared with 32% in the PFP group. The mean decrease in total symptom score in KCCQ (indicating fewer symptoms) was greater in the TM vs PFP (19.9 ± 26.2 vs 13.5 ± 21.1). Fewer had deterioration (5.3% vs 17.9%).
Conclusions: TM program when compared to a PFP program may decrease the number of days lost due to hospital admission or death, with an improvement in the quality of life.

P 225. QUALITY OF LIFE OF HEART FAILURE PATIENTS IN PORTUGAL: A CROSS-SECTIONAL STUDY (PRIME STUDY)

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Introduction: Heart failure (HF) is a major worldwide health problem with direct impact on patients' daily activities, accounting for a significant social and economic burden. The aim of this study was to characterize the quality of life (QoL) of HF patients recruited in a Portuguese observational study (PRiMe).
Methods: The PRiMe study is a cross-sectional and multicenter study. Adult patients (≥ 18 years) or caregivers with a prescription of sacubitril/valsartan were recruited through Portuguese community pharmacies. All community pharmacies associated with the Portuguese National Association of Pharmacies were invited to participate. Data was collected through a structured questionnaire applied to patients or caregivers by the pharmacist. Generic and specific QoL was measured through the EQ-5D-3L and the Minnesota Living with Heart Failure Questionnaire (MLHFQ), respectively, which were only applied to patients. Higher values of MLHFQ and lower values of EQ-5D index score address worse health status. This study was approved by the competent Ethics Committee and is compliant with the General Data Protection Regulation.
Results: A total of 285 patients were recruited (23% through their caregiver). The median age of patients was 72 years (IQR, 63-80), and the majority were male (66%). These were multicomorbid patients with hypertension (69%), atrial fibrillation (55%), hypercholesterolemia (53%), sleep disorders (47%), anxiety (40%), diabetes (40%), acute myocardial infarction (35%), among others. HF had been diagnosed for a median of 5 years (IQR, 2-11) and according to the self-assessed NYHA, the majority of patients (66%) were NYHA II or III. The mean EQ-5D index score (SD) of this population was 0.6 (0.3) and the mean VAS utility value (SD) was 61 (20). The mean total score (SD) of the specific QoL instrument was 37 (24). Both EQ-5D index score and total MLHFQ score worsened with the increase of the self-assessed NYHA: EQ-5D ranged from 0.9 to 0.5 and MLHFQ from 14 to 49 for self-assessed NYHA class I and IV, respectively.
Conclusions: Our findings show that HF patients in Portugal have their QoL impacted by the disease and that worse functional status patients suffer a higher impact. The adoption of measures that directly improve patients' QoL should be a priority in HF management.

P 222. EARLY RECURRENT CONGESTION AFTER AN ACUTE HEART FAILURE EVENT: EXPERIENCE FROM A DEDICATED CLINIC

Gonçalo Cunha[1], Bruno Rocha[1], Sara Trevas[2], Pedro Custódio[3], Tiago Telo Pacheco[2], Diogo Faustino[3], Laura Moreira[3], Marta Roldão[3], Catarina Bastos[2], Juliana Campos[2], Inês Sarmento[2], Inês Araújo[2], Cândida Fonseca[3]

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Introduction: Heart Failure (HF) patients are at an increased risk for hospital readmission within the so-called vulnerable phase, thus current recommendations emphasize early reevaluation as crucial to reduce HF readmissions. We aimed to assess the prognostic significance of recurrent congestion at early reevaluation after an acute HF (AHF) event, as per protocol in our HF management program.
Methods: This is a single-center retrospective cohort enrolling consecutive patients who were admitted in a dedicated HF unit for AHF in 2016-2018, regardless of left ventricular ejection fraction (LVEF). Decompensation at early (≤ 2 weeks) day-hospital reevaluation was defined as clinical evidence of *de novo* congestion, with a need for furosemide usual dose increment, and > 30% NT-proBNP discharge-to-reevaluation elevation. Death or HF hospitalization was the primary composite endpoint.

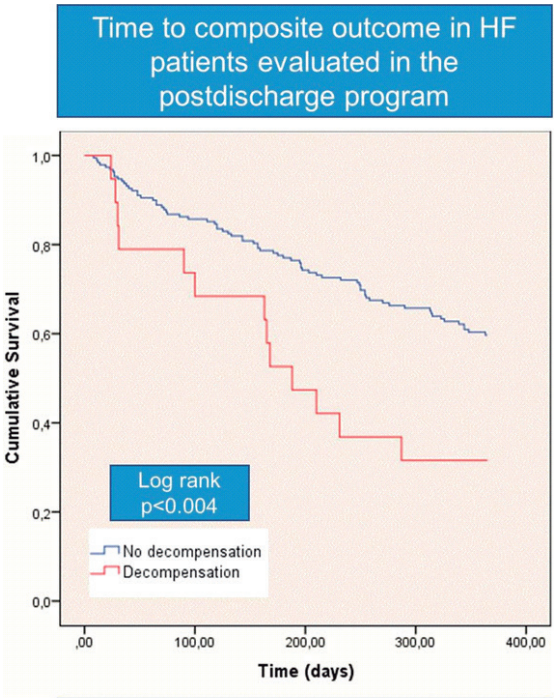

Figure 1- Kaplan Meier analysis of time to all-cause death or HF hospitalization according to decompensation at early postdischarge evaluation. Events are truncated at 1 year.

Results: Overall, 211 HF patients [median age 77.8 (68.7-83.3) years; 70.1% male; 59.6% ischemic HF; 14.8% NYHA III-IV; 59.6% atrial fibrillation; median discharge NT-proBNP 2,590 (IQR: 1,197-5,258) pg/mL], of whom 89 (42.2%) had a LVEF < 40% (i.e., HFrEF) were assessed. Most (96.4%) received loop diuretic and fewer (11.3%) were on metolazone at discharge. At a median 11 (7-14) days to reevaluation, decompensation was detected in 20 (9.5%) patients. These were more likely to have had a significantly larger in-hospital reduction in median NT-proBNP (p = 0.041) compared to stable patients. Additionally, the former were more likely to have been admitted for AHF with no identifiable precipitant factor compared to the latter (60.0 vs 32.6%; p = 0.015). Over a median follow-up of 19.5 (IQR: 9.4-29.0) months, 68 (32.2%) patients died and 87 (41.2%) had at least one HF hospitalization. In multivariate analysis adjusted for age, estimated glomerular filtration rate and NT-proBNP, day-hospital decompensation remained predictive of the primary endpoint (HR: 1.81; CI: 1.05-3.13; p = 0.033), mostly due to increased risk of HF hospitalization (HR: 1.87; CI: 1.01-3.46; p = 0.046).
Conclusions: Recurrent congestion after AHF in our HF management program is a significant event in the vulnerable phase, and it was an independent predictor of major outcomes. These results further unveil the pervasiveness and prognostic value of recurrent congestion despite assertive measures to optimize outpatient diuretic treatment.

P 224. EARLY FOLLOW-UP VISIT BY A MULTIDISCIPLINARY HEART FAILURE TEAM AFTER ACUTE HEART FAILURE HOSPITALIZATION-IMPACT IN THE OUTCOMES

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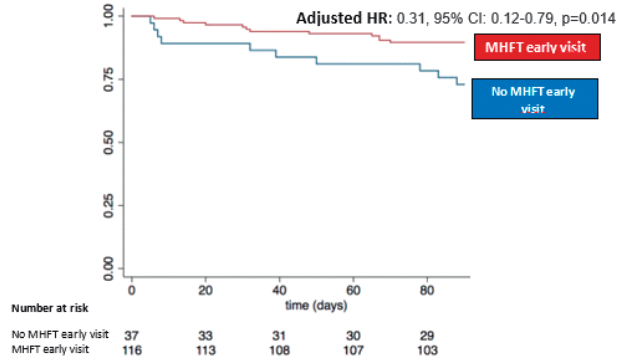
Introduction: Hospitalization for Acute Heart Failure (AHF) remains an important turning point for patients and families, presenting itself as an index event after which the rate of readmission and mortality are particularly high. Hospitalization for Heart Failure (HF) also has a considerable cost impact on healthcare systems. Strategies that reduce the risk of readmission for HF are, therefore, crucial for patients and healthcare systems. A possible strategy to reduce HF readmissions currently recommended by the European Society of Cardiology is guaranteeing an outpatient follow-up visit carried out by a multidisciplinary HF team (combining specialized medical and nurse care) shortly after discharge. Our goal was to describe and demonstrate the feasibility of an early follow-up visit carried out by a multidisciplinary HF team in the transition care of HF patients, after hospital discharge, and to evaluate its association with early HF readmission and all-cause mortality.
Methods: This was a retrospective cohort study of acute heart failure (AHF) patients consecutively admitted to an AHF Unit during one year. Exclusion criteria were in-hospital death and transfer to another hospital. We compared patients who were evaluated in a follow-up visit carried out 7 to 14 days after hospital discharge where treatment adjustments could be made, with those who were not. Primary outcomes: AHF readmissions and all-cause mortality at 3 months after discharge were analysed. Cox proportional hazards regression was used.
Results: Of 181 admissions for AHF, 153 were analysed. Patients were 77 ± 11 years-old; 54% were male and 46% had reduced left ventricular ejection fraction. At hospital discharge median NT-proBNP was 3,258 (1,429-5,995) pg/mL. One-hundred and forty-four (94%) patients were referred to a follow-up visit by the same multidisciplinary HF team with a compliance rate of 81% (n = 116). The mortality rate after 3 months was 6.5% (n = 10) and the AHF readmission rate was 14.3% (n = 22). An early follow-up visit was independently associated with a lower risk of AHF readmission at 3 months after discharge (crude HR 0.35, 95% Confidence Interval (CI): 0.15-0.82, p = 0.015; adjusted HR for age and implantable cardiac defibrillator: 0.31, 95%CI: 0.12-0.79, p = 0.014) (Figure 1A). and a lower combined risk of all-cause mortality or AHF readmission at 3 months (crude HR 0.37, 95%CI: 0.18-0.78, p = 0.009; adjusted HR for age, implantable cardiac defibrillator, pacemaker presence and NYHA > 2: 0.29, 95%CI: 0.13-0.67, p = 0.004) (Figure 1B).

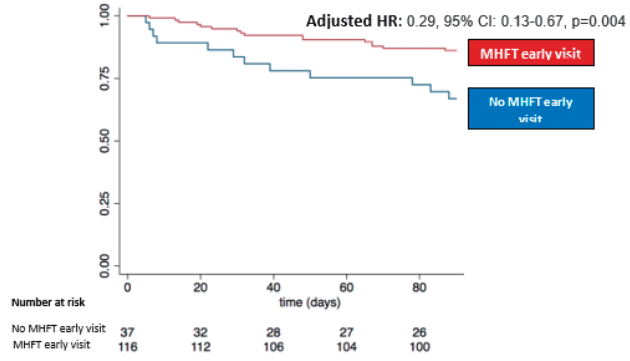
Figure 1. Survival Kaplan-Meier curves at 3 months

A) Primary endpoint of readmission for HF



Adjusted for age and implantable cardiac defibrillator

B) Composite endpoint of all-cause death and readmission for HF



Adjusted for age, implantable cardiac defibrillator, pacemaker presence and NYHA >2

Abbreviations: MHFT- multidisciplinary heart failure team

Conclusions: Conducting an early specialized follow-up visit after AHF hospitalization is highly feasible and associated with an excelent patient compliance. A multidisciplinary HF team visit in the vulnerable phase after AHF hospitalization was associated with a significantly lower risk of HF readmission and all-cause death at 3 months, mostly due to preventable readmissions.

P 226. REAL LIFE HEART FAILURE POPULATION: SOMEWHAT DIFFERENT FROM THE REPORTS?

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Heart Failure (HF) is a prevalent syndrome with multisystemic interactions that yield high morbimortality. Its holistic, systematic and integrated approach by a multidisciplinary team plays a key role in optimizing the associated prognosis. Most series address HF with reduced ejection fraction (HFrEF) patients, more frequent in Cardiology departments. Perception tells us that real life is far different from these data. The authors conducted a retrospective analysis of patients admitted in an Acute Heart Failure (AHF) Unit that treats all patients regardless of their ejection fraction (EF), over 3 years. A demographic analysis was conducted, with HF characterization according to EF, etiology, decompensating factors,

hemodynamic profile and previous New York Heart Association (NYHA) class. There were 354 patients consecutively admitted with AHF, medium age: 76.3 ± 11.4 (20.7-97.1) y, 54.6% male. 48.6% were HFpEF, 10.3% HF with intermediate (HFmEF) and 40.6% HFrEF. There were 20 in-hospital deaths (5.6% of in-hospital mortality), 50% male. Only 5 deaths occurred in HF with preserved ejection fraction (HFpEF) patients, although there was no statistically significant association with HFpEF or HFrEF and in hospital death (Pearson chi-square = 1.832, p = 0.176). In the 334 survivor patients, there were 118 readmissions with average time to first readmission of 251.9 ± 261.9 (5-1,112) days, 49.5% were HFpEF, 9.9% were HFmEF and 39.6% were HFrEF (0.9% of missing data). No association was found between HFpEF and readmission (Pearson chi-square 2.871, p = 0.09). The most frequent etiology was ischemia, in 31.8%, followed by hypertension and valvular disease (22.2 and 7.5%, respectively). Most admissions occurred in context of therapeutic insufficiency or non-compliance, in about one third of cases, and the following most frequent causes were infection (25.2%) and tachydysrithmias (23.1%). Assessing NYHA class before admission, 56.5% were class II, 16.2% class I and 13.8% class III. The most observed clinical profile at admission was the B-profile (89.2%), followed by C (7.2%) and L (1.5%). After discharge, there were 117 deaths, with medium time-to-death 327.7 ± 275.8 (4-1243) days, corresponding to a mortality rate of 33%, and. In the first 120 days, there was a statistically significant association with C-profile (Fisher test, p =.014). This non-selected AHF population confirms the perception, as well as the epidemiological data, that, in real life, HFpEF is more prevalent than HFrEF. In-hospital mortality and length of stay are in line with scientific literature. Long-term mortality is still high despite admission in an AHF Unit and systematic enrolment in a HF management programme with a multidisciplinary approach.

P 227. IMPACT OF SPIRONOLACTONE IN HEART FAILURE WITH MID-RANGE EJECTION FRACTION: A FUTURE THERAPY?

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Introduction: Heart failure with mid-range ejection fraction (HFmrEF) is a recently defined category of heart failure (HF), but there is limited evidence regarding its optimal treatment. Spironolactone has shown beneficial effects in patients (P) with HF with reduced ejection fraction. This study aims to investigate the prognostic impact of spironolactone in P with HFmrEF.
Methods: All P admitted for acute HFmrEF for 7 years in a Cardiology Department were enrolled in this study. Spironolactone use at discharge was assessed. P were followed up for 18 months. The primary outcome was a composite of all-cause mortality or hospitalization for HF. Statistical analysis used chi-square and Mann-Whitney U tests; Kaplan-Meier curves and log-rank tests; and an unadjusted Cox model.
Results: 157 P were included (mean age 75.0 ± 10.6 years, 61.8% male). At discharge, spironolactone was prescribed in 71 P (45.2%). Its use was associated with absence of chronic kidney disease (p = 0.022), previous treatment with loop diuretics (p = 0.028) or spironolactone (p = 0.002), and decreased creatinine (p = 0.004) levels at admission. In survival analysis, P treated with spironolactone had a significant reduction in the primary outcome in the follow up at 3 months (p = 0.041) and 6 months (p = 0.035), but not at 12 months or 18 months. Of the components of the primary outcome, only hospitalization for HF had a significantly lower incidence in spironolactone-treated P in the follow up at 3 months (p = 0.010), 6 months (p = 0.006), 12 months (p = 0.037) and 18 months (p = 0.030); the unadjusted hazard ratio was 0.542 (95%CI 0.309-0.952, p = 0.033) for reduction in hospitalization during the 18 months. In subgroup analysis, the beneficial effect of spironolactone in hospitalization was consistent among P stratified based on gender and comorbidities. However, there was a significant interaction between the effect of spironolactone and the level of hemoglobin (Hb) at admission (p = 0.031), with greater benefit in P with Hb > 10 g/dL.
Conclusions: In this study, spironolactone use in HFmrEF was associated with a reduction in the primary outcome in the 6-month follow up, as well as a significant decrease in hospitalization for HF in the 18-month follow up. This result was consistent among different subgroups, but there was a greater benefit in P with Hb > 10 g/dL. Therefore, spironolactone may be considered in the future in the management of P with HFmrEF in order to reduce the negative impact of this disease.

Painel 3 - Imagiologia Cardiovascular 4

P 231. HYPERTROPHIC CARDIOMYOPATHY: CAN WE PREDICT DYSRHYTHMIC EVENTS?

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Introduction: In hypertrophic cardiomyopathy (HCM), there is a significant contribute of dysrhythmic events (DE) for the burden of morbidity and mortality of the disease.
The aim of this study is to assess the arrhythmic profile of HCM patients (pts) and predictors of DE.
Methods: Retrospective single-center study of 36 consecutive pts with HCM defined by wall thickness ≥ 15 mm in ≥ 1 LV myocardial segments in CMR; patients with history of uncontrolled hypertension (HTN) and significant valvular disease were excluded. Demographic, clinical, CMR data and outcomes were analyzed. For statistical analysis, chi-square and Mann-Whitney tests were used, with prediction of DE (atrial fibrillation (AF); ventricular tachycardia (VT)) and implantation of cardioverter defibrillator (ICD)) with binary logistic regression model.
Results: The median age was 62.5 years (IQR: 49.5-74.8), 64% were male. 69% had controlled HTN, 46% dyslipidemia and 23% diabetes; family history (FH) of sudden cardiac death and HCM occurred in 16% and 46%, respectively. 9% presented with syncope, 21% with palpitations and 12% with angina. Previous history of AF was present in 12% pts. Genetic study was available in 42% pts, mutations were identified in 25% (TNNT2: 8.3%; MYBPC3:5.6%). During a mean follow-up of 496 ± 338 days, new onset of AF was found in 26%, VT episodes in 20%, ICD implantation in 29% and 3% died. On ECG evaluation, an intraventricular disturbance conduction was found in 33% of pts and T wave inversion in 39%. On CMR, most pts had hypertrophy of septal wall (81%), while 11% had apical, 3% anterior-wall and 6% lateral-wall. SAM was present in 28% and LVOTO in 33%. 69% of the patients had LGE (midwall: 61%, subendocardial: 11%, subepicardic: 3%, LVH area: 47%, RV/LV insertion points: 25%, other: 19.4%). There was no associations of clinical data and AF. In univariate analysis, SAM (OR 5.25, 95%CI 1.02-26.9, p = 0.047), LVOTO (OR 6.7, 95%CI 1.27-35.0, p = 0.025), distribution of LGE on other segments than RV/LV insertion points (OR 9.6, 95%CI 1.36-67.6, p = 0.023) and absence of T-wave inversion (OR 0.17, 95%CI 0.033-0.937, p = 0.042), predicted AF. The absence of T-wave inversion was the only independent predictor of AF in our population (OR 0.073, 95%CI 0.006-0.949, p = 0.045). Also, we found that AF predicted VT (OR 6.13, 95%CI 1.032-36.45, p = 0.046) in univariate analysis and was an independent predictor for ICD (OR 9.6, 95%CI 1.26-67.59, p = 0.023). There were no independent predictors of ventricular arrythmias. AF was a predictor of composite outcome (death, heart failure and thromboembolic events) in our population (OR 6.3 95%CI 1.3-31.1, p = 0.024).
Conclusions: In our population, T-wave characteristics, SAM, LVOTO and LGE distribution were predictors of AF. AF was an independent predictor for ICD implantation. These findings could be used for risk assessment and improve AF monitoring in HCM but larger studies are needed.

P 232. MITRAL VALVE PROLAPSE-IS IT A DEFECT OR OFTEN JUST A FEATURE?

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Introduction: Despite being known for more than a century, mitral valve prolapse (MVP) is an entity not fully understood with controversial data regarding the prognosis.
Objectives: To characterize a sample of patients with MVP and to access the frequency of complications associated with MVP, hospital admissions and death.
Methods: Single-center retrospective study of consecutive patients with MVP documented in transthoracic echocardiogram between January 2014 and October 2019. MVP was defined as systolic displacement of the mitral leaflet into the left atrium ≥ 2 mm from the mitral annular plane. Demographic, clinical, echocardiographic, electrocardiographic data were collected as well as major adverse events at follow-up. Categorical variables were reported in absolute number and/or percentage and continuous variables were reported as mean and standard deviation or median and interquartile range (IQR). The results were obtained using chi-square and ANOVA tests.
Results: 247 patients were included (mean age 62.9 ± 18 years, 61% males). The mean diameter of the MVP was 6 mm (IQR 5-9). The mean LVEF was 63% ± 6.3% and LV mass was 124.7 ± 41 g/m^2. Most of the patients were in sinus rhythm (78%). The posterior mitral valve leaflet (PL) was the most frequently involved (49%), followed by involvement of both leaflets (BL) (27%) and the anterior leaflet (AL) (25%). Patients with MVP of PL were older compared to patients with BL and AL involvement (68 ± 15 vs 58 ± 17 vs 59 ± 22 years, respectively, p < 0.001) and had longer QT interval (419 ± 35 vs 403 ± 25 vs 410 ± 34 ms, respectively, p = 0.013). Mitral annulus disjunction was present in 9.3% (n = 23) of the patients, but this was not associated with more arrythmias or death. Only 6 patients didn't have mitral regurgitation (MR), and 70.4% (174) had significant MR (moderate-severe or severe). 49% of the patients had symptoms (0.4% syncope, 5.7% pre-syncope, 18.6% palpitations, 5.1% chest pain and 49% dyspnea). During a mean follow-up of 30 ± 19 months, 25.1% of the patients had atrial fibrillation, 8 patients (3%) were submitted to supraventricular dysrhythmia ablation. 16.2% had premature ectopic ventricular complexes, 2.4% non-sustained VT, 0.4% sustained VT, 0.8% needed ICD, 8.5% had a pacemaker. 25% of the patients were submitted to mitral valve intervention (23.9% to surgical intervention and 3 to percutaneous). 12% of the patients had a hospital admission for cardiovascular cause and 8.5% of the patients died.
Conclusions: MVP was traditionally described as a benign entity. However, in our population it was associated with significant mitral regurgitation, some requiring intervention. Besides that, almost half of the patients were symptomatic and 44% had arrhythmias, with atrial fibrillation occurring in about 25%.

P 229. MYOCARDIAL WORK: A NEW WAY TO PREDICT FIBROSIS IN HYPERTROPHIC CARDIOMYOPATHY PATIENTS

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Introduction: Late gadolinium enhancement (LGE) on cardiac magnetic resonance (CMR) adds important prognostic information for hypertrophic cardiomyopathy (HCM) patients. Myocardial work (MW), a new transthoracic echocardiographic (TTE) parameter, is able to assess myocardial performance through left ventricular (LV) global longitudinal strain information. Whether MW can predict LGE on CMR is unknown.
Objectives: Evaluate if MW can predict the presence of significant LV fibrosis in HCM patients.
Methods: Prospective evaluation of HCM patients in which several exams were performed baseline, including a TTE and a CMR. MW and related indices (global constructive work (GCW), global wasted work (GWW), global work efficiency (GWE) and global work index (GWI)) were calculated from global longitudinal strain and from estimated LV pressure using the GE Vivid E95 ultrasound system. CMR was performed on a 3-T system. The regional LGE extent was quantitatively assessed on a per-segment basis. LGE ≥ 20% was chosen to define significant fibrosis. Univariable logistic regression analysis was performed to find the variables associated with LGE ≥ 20%. In these variables, cut-off values were determined by the area under the curve (AUC) analysis so that the sum of sensitivity and specificity was maximized. Statistical differences with a p value < 0.05 were considered significant.
Results: There were 32 patients enrolled in this analysis. Mean age was 57 ± 16 years, with 18 (56%) male patients with a mean LV ejection fraction by TTE of 67 ± 8%. In the per-segment analysis, GWI (1,242 ± 720 mmHg% vs 1, 556 ± 734 mmHg%, p < 0.001) and GWE (88 ± 15% vs 92 ± 13%, p = 0.012) had significantly lower values in the segments with fibrosis. Table 1 shows the univariable logistic regression analysis results. GCW was the only significant predictor. A cut-off of ≤ 1,550 mmHg% was able to predict LV myocardial fibrosis ≥ 20% with a sensitivity of 87% and a specificity of 82%, while the best cut-off for GLS (> -15) had the same specificity but a lower sensitivity of 73%.

Table 1 - Predictors of LV fibrosis

PARAMETER	p	HR[1]	95% CI[2]
Age	0.395	0.986	0.956-1.018
Body mass index	0.368	0.941	0.823-1.075
QTc interval	0.660	1.005	0.981-1.030
HCM risk score	0.158	1.171	0.940-1.459
LV[3] end-diastolic diameter (TTE)	0.365	1.050	0.945-1.167
LV[3] mass index (TTE)	0.486	1.003	0.995-1.010
LV[3] ejection fraction (TTE)	0.387	0.971	0.908-1.038
Global Longitudinal Strain (TTE)	0.052	0.901	0.812-1.001
RV-RA gradient (TTE)	0.208	1.033	0.982-1.088
LV[3] mass index (CMR)	0.166	1.009	0.996-1.021
T1 mapping (CMR)	0.138	1.010	0.997-1.024
GWI	0.067	0.999	0.998-1.000
GWE	0.321	0.972	0.918-1.028
GWW	0.625	1.001	0.996-1.006
GCW	0.047	0.999	0.998-1.000

1- Hazard ratio; 2 - Confidence interval; 3 - Left ventricle;

Conclusions: GCW was the best parameter to predict significant LV myocardial fibrosis in CMR. Further studies should evaluate his utility in patients who cannot perform CMR.

P 230. LEFT ATRIAL MECHANICS IMPROVEMENT AFTER INITIATION OF SACUBITRIL-VALSARTAN

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Introduction: Heart failure with reduced ejection fraction (HFrEF) is traditionally associated with significant morbidity and mortality. Recently, new drugs have been introduced in the management of chronic HFrEF. In the PARADIGM-HF sacubitril-valsartan was superior to enalapril in reducing death and hospitalization for heart failure, and there is a growing interest in determining the structural changes besides reverse left ventricular (LV) remodelling.

Objectives: To determine if, in patients treated with sacubitril-valsartan, there was a change in left atrial (LA) mechanics quantified by two-dimensional strain echocardiography (2D-STE).

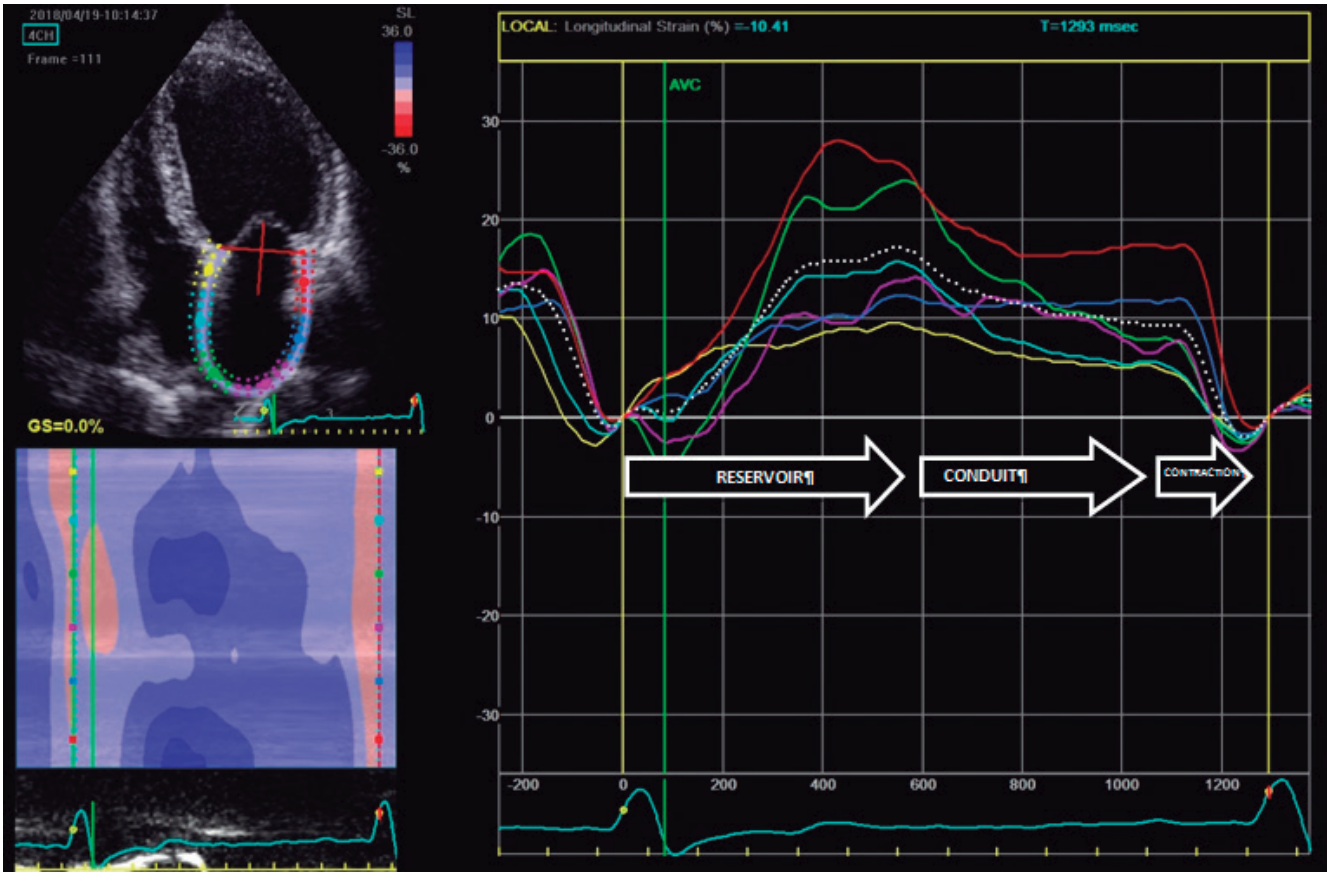
Methods: A total of 38 consecutive patients with HFrEF, followed in an outpatient heart failure clinic, were recruited. The population was characterized concerning clinical data, previous medical history, guideline-directed therapy and baseline laboratory results (Table). 2D-STE was used to measure left atrial strain in the reservoir phase (LASr) (Figure) and strain rate (LA-SR) before and 3 months after initiation of sacubitril-valsartan. Conventional echocardiographic LA and LV measurements were also determined.

Results: There was a significant improvement in LASr (11.3 ± 6.5% vs 14.2 ± 7.4%, p = 0.006) and LA-SR (0.55 ± 0.25 s^{-1} vs 0.69 ± 0.31 s^{-1}, p = 0.008) after initiation of sacubitril-valsartan. There was also a significant reduction in N-terminal pro-B-type natriuretic peptide (NT-proBNP) levels (1,443.5 pg/ml (Interquartile range [IQR], 772-2,912) vs 1,112.0 pg/ml (IQR, 510-1455), p = 0.016) and a tendency towards reduction in left atrial volume index (LAVI) (54.6 ± 17.0 ml/m^2 vs 51.4 ± 18.8 ml/m^2, p = 0.053). Left ventricular end-diastolic volume index (LVEDVI), left ventricular end-sistolic volume index (LVESVI) and ejection fraction (EF) were numerically better although without reaching statistical significance (100.3 ± 32.7 ml/m^2 vs 94.1 ± 34.3 ml/m^2, p = 0.071; 68.0 ± 25.0 ml/m^2 vs 63.4 ± 26.4 ml/m^2, p = 0.086; 32.4 ± 7.7% vs 34.7 ± 8.3%, p = 0.100; respectively). At the moment of echocardiographic re-evaluation, 2 patients (5.3%) had the lower dose of sacubitril-valsartan, 16 patients (42.1%) the intermediate dose and 20 patients (52.6%) the higher dose. The change in LASr and LA-SR was not related with the dose of sacubitril-valsartan (p = 0.089).

Table 1. Baseline characteristics of the population

Characteristic	Sacubitril-Valsartan
Clinical data	
Male gender, n (%)	28 (73.7)
Age in years, mean ± SD	68.1 ± 9.4
Systolic blood pressure in mmHg, mean ± SD	127 ± 23
Diastolic blood pressure in mmHg, mean ± SD	68 ± 12
Heart rate in beats/min, mean ± SD	70 ± 14
NYHA functional class, n (%)	
II	28 (73.7)
III	10 (26.3)
Medical history, n (%)	
Ischemic etiology for heart failure	19 (50.0)
Hypertension	24 (63.2)
Diabetes	13 (34.2)
Atrial fibrillation	19 (50.0)
Myocardial infarction	12 (31.6)
Guideline-directed therapy, n (%)	
Beta-blocker	37 (97.3)
Mineralocorticoid antagonist	29 (76.3)
Implantable cardioverter-defibrillator	12 (31.6)
Cardiac resynchronization therapy	10 (26.3)
Baseline laboratory results	
Serum creatinine in mg/dl, mean ± SD	1.16 ± 0,3
N-terminal pro-B-type natriuretic peptide, median (IQR)	1443 (772-2912)

Conclusions: In this population of HFrEF patients LA mechanics, as determined by 2D-STE, as well as NT-proBNP levels, significantly improved after treatment with sacubitril-valsartan.



Left atrial strain during reservoir phase.

P 233. ECHOCARDIOGRAPHY RED FLAGS FOR CARDIAC AMYLOIDOSIS IN PATIENTS WITH SEVERE AORTIC STENOSIS

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Introduction: Aortic stenosis (AS) is the most common valvular heart disease and its prevalence increases with the age as well as Cardiac Amyloidosis (CA). It's estimated that ≤ 15% of the AS population and ≤ 30% of the subset with low-flow low-gradient (LF-LG) pattern may have CA. Recent studies suggest that the coexistence of AS and CA is more common than previously anticipated. Until now, there is no recommendation or consensus on whether patients with AS should be systematically screened for CA. Our aim was to analyze the prevalence of echocardiography Red Flags (RF) for CA in patients with severe aortic stenosis (SAS).
Methods: We did a retrospective analysis on 153 echocardiograms (ETT) of patients with SAS performed in the last 3 years and RF for CA was systematically searched [severe left ventricular (LV) longitudinal systolic dysfunction with apical sparing (APS); LV global longitudinal strain (GLS) ≥ -12%; apex/basal longitudinal strain ratio (GLSr) > 2; mitral S' (MS') ≤ 6 cm/s; right ventricular wall (RVW) thickening > 5 mm; myocardial granular sparkling (MGS); atrial septal (ASP) thickening and biatrial dilatation (BAD); atrioventricular valve (AV) thickening > 2 mm; moderate/severe pulmonary hypertension (PHT)].
Results: Of the 153 patients with SAS 78 was male (median age 77 years; range 52 to 93 years) and all had hypertension and heart failure (New York Heart Association functional class II/IV). All had LV hypertrophy (median wall thickness, 16 mm; range 14 to 20 mm) with a mean of calculated aortic valve area ≤ 0.6 cm^2/m^2. In 65 (42,8%) patients, a LF-LG condition was present. The RF found were, GLS ≥ -12% in 21 (14%) patients and APS in 23 (15%), MS' ≤ 6 in 91 (90%), GLSr > 2 in 23 (15%), RVW > 5 mm in 74 (49%), MGS in 21 (13,8%), AV > 2 mm in 52 (34%), ASP thickening in 53 (35%), BAD in 51 (33,6%), PHT in 27 (18%). Remarkably, all echocardiographic RF was present in 19 (12%) patients.
Conclusions: In this study, we saw that the RF for CA are common in patients with AS. The study cannot provide data on sensitivity and specificity but suggest that echocardiography plays a central role in the screening and particular attention should be paid to echocardiographic signs. More studies are needed to establish in which patients with AS we should search for CA.

P 228. VALVE INDICES IMPROVEMENT IS NOT FOLLOWED BY THE LONGITUDINAL STRAIN AFTER AORTIC VALVE SUBSTITUTION

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Introduction: There are few data regarding the impact of aortic valve intervention (AVI) in patients with severe symptomatic aortic stenosis (SAS) on left ventricular global longitudinal strain (LVGLS).
Objectives: To access the impact of aortic valve intervention on valvular indices with special focus on LVGLS.
Methods: Retrospective study of patients with severe AS who underwent AVI (surgical aortic valve replacement- SAVR or transcatheter aortic valve implantation-TAVI). We collected clinical and demographical baseline characteristics and echocardiographic data pre and post AVI (mean interval of 16 ± 13 months). Normal distribution of data was assumed. Categorical variables are presented as frequencies and percentages and continuous variables as means and standard deviations. Paired samples Student T Test was used to compare means of categorical variables, and McNemar's test was used to compare categorical variables.
Results: From a total of 74 patients with SAS, 70 (94%) underwent SAVR and 4 (6%) TAVI. Mean age was 70 ± 9 years and most patients were male (n = 47, 64%). Persistent or paroxysmal atrial fibrillation was observed in 18 patients (24%) and concomitant coronary artery disease (stenosis > 50%) was identified in 20 patients (27%). Dyspnoea and fatigue were the main symptoms pre intervention (77%). Mean NTproBNP before intervention was 1,530 ± 5,374 pg/mL. Following AVI, there was a reduction in left ventricular wall thickness (interventricular septum 15 ± 2.7 mm vs 13.3 ± 2.1 mm, p < 0.001) and mass (167 ± 41 g/m^2 vs 138 ± 41 g/m^2, p = 0.005), and expectedly a marked decrease in mean transvalvular gradient (50 ± 12 mmHg vs 12 ± 5 mmHg, p < 0.001), peak velocity (4.5 ± 0.5 m/s vs 2.3 ± 0.4 m/s, p < 0.001), as well as a marked improvement in aortic valve area (AVA 0.77 ± 0.17 cm^2 vs 1.91 ± 1.56 cm^2, p < 0.001). E/e' also improved post AVI (15 ± 5 vs 13 ± 5, p = 0.043). There was no change in LV ejection fraction (57 ± 8% vs 57 ± 7%, p = 0.801) or left atrium volume (45 ± 12 ml/m^2 vs 46 ± 12 ml/m^2, p = 0.961). LVGLS did not improve after AVI (-14.5 ± 4.3% vs -14.6 ± 4%, p = 0.810), nor did LV basal longitudinal strain (-12.4 ± 3.6% vs -13 ± 5.9%, p = 0.354).
Conclusions: In the current population, despite a significant reduction in valvular indices and left ventricular wall thickness, LVGLS did not improve after AVI.

Painel 4 - Arritmologia 7

P 234. GENDER RELATED DIFFERENCES IN BRUGADA SYNDROME

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Introduction: Brugada syndrome (BS) is a heritable channelopathy with male predominance. Males (M) seem to have a higher risk of arrhythmic events, although, there is limited data regarding gender differences in BS.
Objectives: To compare the differences between genders in a Portuguese sample of BS patients (pts).
Methods: Single-center retrospective study of BS pts followed by the Arrhythmology Department. Pts were divided according to gender and compared regarding baseline characteristics and electrocardiographic (ECG) parameters that possibly predict the arrhythmic risk (significative S wave in DI, R wave sign, Tpeak-Tend interval and fragmented QRS). The events during follow-up were syncope of probable arrhythmic origin, ventricular tachycardia/ventricular fibrillation (VT/VF) and sudden cardiac death (SCD).
Results: A total of 165 pts were included; 64 (39%) were female (F) and the mean age at diagnosis was 47 ± 15 years. The diagnosis was made by family screening (FS) in 72 (44%) pts. Sixty-seven pts (41%) had spontaneous type 1 pattern, 59 (36%) had history of syncope and 5 (3%) had history of aborted SCD. A positive genetic test was identified in 41 (25%) pts. Sixty-three (38%) pts were referred for an electrophysiological study (EEF) which was positive in 17 (27%) pts. A cardioverter-defibrillator was implanted in 45 (27%) pts. Females were more often diagnosed by FS (64% vs 31%, p < 0.001), had less type 1 spontaneous pattern (22% vs 53%, p < 0.001) and had no atrial fibrillation (0% vs 7%, p = 0.043). They performed EEF less frequently (22% vs 49%, p < 0.001) and had less spontaneous pattern during treadmill stress test (8% vs 33%, p = 0.004). Regarding ECG parameters, females had shorter QRS interval (104 ± 12 vs 115 ± 18 ms, p < 0.001), less frequent aVR sign (3% vs 27%, p < 0.001), less significative S wave in DI (31% vs 55%, p = 0.004), and a tendency for a shorter Tp-Te interval (80 vs 100 ms, p = 0.051). Corrected QT interval was longer in females (396 vs 392 ms, p = 0.044). During a median follow-up of 28 (IQR 16-41) months, 7 pts had VT/VF (2F, 5M) and 3 had syncope (3M), with no differences between gender (*p =.287*). There were no cardiovascular deaths.
Conclusions: In BS, female pts are more often diagnosed by FS and have less spontaneous type 1 pattern. Gender appears to affect basal ECG characteristics in BS, namely in parameters that may predict arrhythmic

risk. Further studies are important to clarify the role of gender in prognosis and risk stratification of BS pts.

P 235. 3D ARCHITECTURE AND ARRHYTHMOGENIC POTENTIAL OF PREVIOUS MYOCARDIAL INFARCTION SCARS

Pedro Freitas[1], António Ferreira[2], Diogo Cavaco[1], Gonçalo Cunha[1], Daniel Nascimento Matos[1], Gustavo Rodrigues[1], Carolina Padrão[1], Patrícia Santim[1], Ricardo Lopes[1], Afonso Grego[1], Fernando Marques[1], Telma Lima[1], João Carmo[1], Maria Salomé Carvalho[1], Ana Coutinho Santos[1], Anaí Durazzo[1], Francisco Moscoso Costa[1], Pedro Carmo[1], Carla Saraiva[2], Francisco Morgado[1], Pedro Adragão[1]

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Introduction: The ability of left ventricular ejection fraction (LVEF) to correctly estimate the arrhythmic risk has been questioned. Recently, a method using 3D delayed enhancement cardiac magnetic resonance (CMR) identifies the potential arrhythmic substrate among scar tissue (border zone [BZ] channels).
Objectives: to assess the prevalence of BZ channels in patients with previous MI and LVEF above and below the 35% threshold.
Methods: Patients with previous MI undergoing 1.5T CMR at a single center were prospectively enrolled from Dec/2017. The presence, mass, quality (scar core vs BZ scar) were recorded as were the number and mass of BZ channels detected.
Results: A cohort of 51 patients (82% male, mean age 60 years) with previous MI and a high-quality 3D CMR dataset were enrolled. 49% (n = 25) had LVEF ≤ 35%. Table 1 compares the scar characteristics between the 2 groups. As expected, the number and mass of channels identified were correlated with the total scar burden (Spearman r > 0.7, p < 0.001). Yet, no meaningful correlations were found between the number/mass of channels and scar heterogeneity (ratio BZ mass/scar mass) or LVEF. All patients with LVEF ≤ 35% had ≥ 1 channel detected, while 68% (n = 18) had ≥ 1 channel identified in the LVEF > 35% group. During a median follow-up of 11 months, 2 events were recorded (1 SCD and 1 appropriate ICD discharge). Both occurred in patients with LVEF ≤ 35% with an increased number of channels detected (13 and 6, respectively).

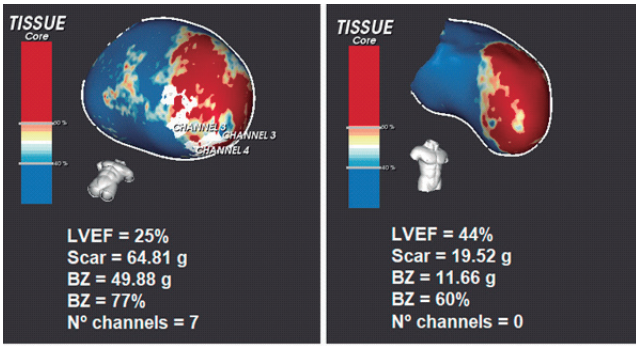

Table 1. Scar characterization according to LVEF

	≤35% (n=25)	>35% (n=26)	p-value
Scar mass, gram	28.5 (22.4 - 48.2)	23.6 (7.1 - 30.6)	**0.026**
Core mass, gram	9.3 (4.9 - 11.7)	7.4 (1.8 - 12.9)	0.337
Border zone mass, gram	20.5 (14 - 32.6)	13.7 (5.2 - 21.2)	**0.01**
Heterogeneity (BZ/scar mass), %	69% (61 - 79)	65% (57 - 76)	0.256
Number of channels	4 (2 - 5)	2 (0 - 4)	**0.006**
Channel mass, gram	4.1 (1.8 - 7.1)	1.5 (0 - 3.3)	**0.004**
Number of patients without channels	0 (0%)	8 (32%)	**0.002**

Conclusions: BZ channels are highly prevalent in patients with previous MI, even when LVEF > 35%. This finding suggests that the mere presence of BZ channels will probably be insufficient to identify patients at high-risk for arrhythmic events.

P 236. NON-CONTACT MULTI-ELECTRODE BALLOON CATHETER MAPPING-GUIDED ABLATION OF VENTRICULAR ARRHYTHMIAS ORIGINATING FROM THE OUTFLOW TRACT

Inês Almeida [1], Ana Lousinha[2], Pedro Silva Cunha[2], Bruno Valente[2], Guilherme Portugal[2], Madalena Cruz[2], João Pais[3], Ana Sofia Delgado[2], Mário M. Oliveira[2], Rui Cruz Ferreira[2]

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Introduction: The outflow tract (OT) regions of the ventricles are a common location of origin of idiopathic ventricular arrhythmias (VA). Non-contact mapping (NCM) with a multi-electrode balloon catheter *Ensite-Array* enables three-dimensional reconstruction of the geometry of the cardiac chamber and an accurate mapping of the propagation map, based on a single-beat analysis, facilitating the ablation and contributing to the success of the procedure.
Objectives: Evaluation of feasibility and long-term outcomes following NCM-guided VA ablation.
Methods: Single centre retrospective analysis of patients' admitted for symptomatic OT VA ablation. Demographic and clinical characteristics of patients, procedure data and outcomes were evaluated.
Results: 58 patients (79.3% female gender, mean age 43.9 ± 17.6 years). Structural heart disease was excluded by echocardiography and/or cardiac magnetic resonance in 89.7% of the patients. An underlying cardiac disease was present in 7 cases: surgically corrected atrial septal defect (n = 1), repaired Fallot tetralogy (n = 1), ischemic cardiomyopathy (n = 1), idiopathic dilated cardiomyopathy (n = 1), mitral valve prolapse (n = 1) and right ventricle dysfunction of unknown etiology (n = 2). Most cases (75%) presented with palpitations, 13.5% with fatigue and 11.5% with presyncope/syncope. 24h-Holter recording documented sustained VA episodes in 12.1% of the patients, non-sustained VA in 31.0%, and > 10,000 ventricular ectopic complex (VEC) in 56.9%, with an ECG suggesting OT origin. NCM-guided ablation included 3D-reconstruction of ventricular geometry, followed by acquisition of maps during sinus rhythm and VEC beats, to identify the early activation points. The origin of the arrhythmia was in the right ventricle OT in 84.5% and in the left OT in 15.5%. A mean of 13 ± 8 RF applications was delivered to the target sites: posteroseptal-31.5%, posterolateral-16.7%, posterior-13%, anterolateral-11.1%, and other OT locations-17.7%. The acute success rate was: total elimination of VEC-87.9%; significant reduction of VEC -3.4%. In 8.6% the ablation was non-successful. In 4 cases, the procedure was complicated due to pericardial effusion (n = 1), cardiac tamponade (n = 2) and a pseudo-aneurysm of the femoral artery (n = 1). During a mean follow-up of 28 months, most patients (87.9%) remained asymptomatic without medication after the first ablation, 12.1% of the patients were submitted to re-ablation due to symptomatic VEC recurrence, and 2 cases underwent a third successful intervention.
Conclusions: NCM-guided multi-electrode balloon catheter VA ablation is a highly effective and safe procedure, with a low rate of long-term recurrence.

P 237. LONG-TERM OUTCOME OF SUBSTRATE-BASED ABLATION IN PATIENTS WITH RECURRENT ICD THERAPY AND DILATED CARDIOMYOPATHY: EXPERIENCE WITH HIGH-DENSITY MAPPING

Mário M. Oliveira[1], Pedro Silva Cunha[1], Bruno Valente[1], Guilherme Portugal[1], Madalena Cruz[1], Ana Lousinha[1], Inês Almeida [2], Mariana Pereira[3], Ana Sofia Delgado[1], Rui C Ferreira[1]

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Introduction: Recurrent ventricular tachydysrhythmias (VT) episodes have a negative impact in the clinical outcome of implantable cardioverter-

defibrillator (ICD) patients (P). Modification of the arrhythmogenic substrate has been used as a promising approach for treating recurrent VTs, especially in P with ischemic cardiomyopathy.
Objectives: To analyze long-term results of a VT substrate-based ablation using high-density mapping in P with left ventricular (LV) dysfunction and recurrent appropriate ICD therapy.
Methods: 20P (16 men, non-ischemic cardiomyopathy 65%, 58 ± 14 years, LV ejection fraction 33 ± 6%) and repetitive appropriate shocks (≥ 2 shocks/24h) despite antiarrhythmic drug therapy and optimal heart failure medication. All P underwent a protocol of ventricular programmed stimulation (600 ms/S3) to obtain baseline VT documentation. A sinus rhythm (SR) voltage map was created with 3D electroanatomic mapping system (CARTO) using a high-density mapping catheter (PentaRay) to delineate areas of scarred myocardium (ventricular bipolar voltage ≤ 0,5 mV-dense scar; 0,5-1,5 mV-border zone; ≥ 1,5 mV-healthy tissue) and provide high-resolution electrophysiological mapping. The substrate modification included elimination of local abnormal ventricular activities (LAVA) during SR (fractionated, splited, low-amplitude/long-lasting, late potentials, pre-systolic) and linear ablation to obtain scars homogenization and scar dechanneling. Pace-mapping techniques were used when capture was possible. LV approach was retrograde in 9 cases, transeptal in 5 and endo-epicardial in 4 cases. In 2P the ablation was performed inside the right ventricle.
Results: LAVA and scar areas were modified in all P. The mean duration of the procedure was 149 mn (105-220 mn), with radiofrequency ranging from 18 to 70 mn (mean 33 min) and a mean fluoroscopy time of 15 mn. Non-inducibility was achieved in 75% of the cases (in 4P-haemodynamic deterioration/LV assistance device-VT inducibility was not performed). There were 2 pericardial tamponades drained successfully. During a follow-up of 50 ± 24 months, 73% had no VT recurrences. Among the 7P with recurrences, 3P underwent redo ablation and 7P, with less VT episodes, received ICD therapy. There were 5 hospital readmissions due to HF decompensation, 1P died in the first week after unsuccessful ablation of VT storm and 4P died from pneumonia.
Conclusions: Catheter ablation based on substrate modification is feasible and safe in P with LV dysfunction. This approach may be of clinical relevance, with potential long-term benefits in reducing VT recurrence.

P 238. OBSTRUCTIVE SLEEP APNEA AND NIGHTTIME OXYGEN DESATURATION IN NOCTURNAL VENTRICULAR ARRHYTHMIAS

Rita Marinheiro, Leonor Parreira, Pedro Amador, Dinis Mesquita, José Farinha, Susana Varela, Ana Esteves, Marta Fonseca, António Pinheiro, Joana Ferreira, Mafalda Silva, Cláudia Lopes, Bruno Santos, Cristina Carradas, Duarte Chambel, Rui Caria

Centro Hospitalar de Setúbal, EPE/Hospital de São Bernardo.

Introduction: Although several arrhythmias have been proposed to be linked with obstructive sleep apnea (OSA), there is some controversy regarding ventricular arrhythmias in these patients.
Objectives: To determine if ventricular arrhythmias are associated with OSA.
Methods: We studied patients referred for polysomnography who also performed a 24-hour Holter monitoring. Moderate to severe OSA was considered when an apnea/hypopnea index (AHI) > 15 was present. Mean oxygen saturation (SaO2) and percentage of total sleep time with SaO2 < 90% (T90) were evaluated during sleep. Based on Holter monitoring, we analysed number of premature ventricular contractions (PVCs) and the presence of frequent PVCs (> 30/h), non-sustained and sustained ventricular arrhythmias and also the circadian pattern of these arrhythmias.
Results: We studied 343 patients [median age 66 (IQR 56-72) years, 62% male, body mass index (BMI) = 31 (IQR 28-34)]. 143 (42%) had moderate to severe OSA, median AHI was 12 (IQR 6-26), mean SaO2 was 94% (92-95) and median T90 was 5% (IQR 1-17). Median number of PVCs was 21 (1-250), 63 patients (26%) had frequent PVCs, 17 (5%) had NSVT, no patient had VT and 19 (6%) had predominantly nocturnal PVCs. The number of PVCs, frequent PVCs or NSVT were not associated with the presence of moderate to severe OSA. However, patients with nocturnal PVCs had a significant higher AHI and T90 comparing with those without nocturnal PVCs, and there was a trend towards significant difference between the presence of nocturnal PVCs and mean nocturnal SaO2 (panel A). In univariate analysis, the presence of nocturnal arrhythmias is associated with AHI, mean SaO2 and T90 (panel B). In multivariate analysis, no variable remained independently associated with nocturnal PVCs and no interaction was found between these variables.
Conclusions: The presence of moderate to severe OSA was not related to the frequency or complexity of ventricular arrhythmias, but it was associated with the circadian pattern of ventricular arrhythmias, namely nocturnal PVCs. The occurrence of nocturnal ventricular arrhythmias was associated with the severity of OSA but also with nighttime oxygen saturation, highlighting the possible role of hypoxemia in ventricular arrhythmogenesis of OSA patients.

P 239. ROLE OF LATE-POTENTIALS IN SIGNAL-AVERAGED ECG IN PREDICTING FLECAINIDE PROVOCATIVE TEST IN BRUGADA PATTERN

Joana Brito[1], N. Cortez-Dias[2], N. Nunes-Ferreira[2], J. Rigueira[2], P. Silvério António[2], Tiago Rodrigues[3], Irina Neves[2], Nelson Cunha [2], Mafalda Carrington[2], Inês Aguiar-Ricardo[2], Gustavo Lima Silva[2], Andreia Magalhães[2], Fausto J. Pinto[2], João de Sousa[2]

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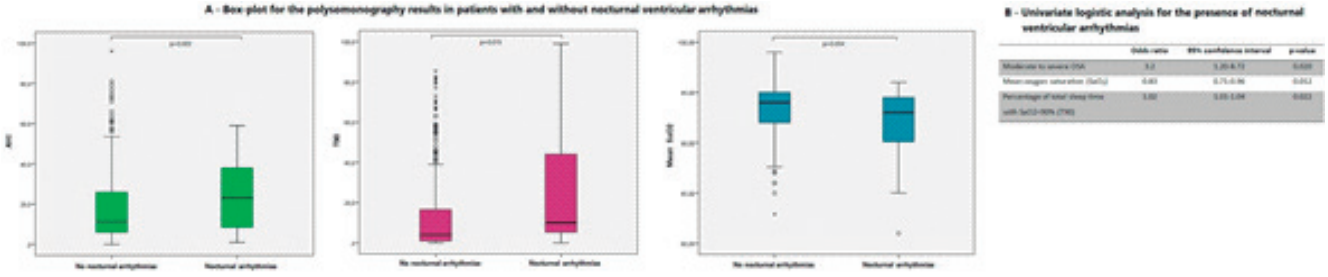
Introduction: In Brugada Syndrome (BrS) risk of sudden cardiac death is higher in patients with spontaneous type 1 pattern. Brugada pattern is also established in patients with induced type 1 morphology after provocative test with intravenous administration with a sodium blocker channel. Nevertheless, this group is known to be at a lower risk of SCD, and their risk stratification is still a matter of discussion. Late potentials (LP) on signal-averaged ECG (SAECG) measured on the RVOT have been previously proposed as a predictor factor for BrS, even though data is lacking on its predictive value.
Objectives: To evaluate the association between positive LP (LMS_{40} > 38 ms) on SAECG with modified Brugada leads and a positive flecainide test in patients with non-type 1 BrS.
Methods: Retrospective single-center study of non-type 1 BrS patients referred for the performance of a flecainide provocative test. Patients



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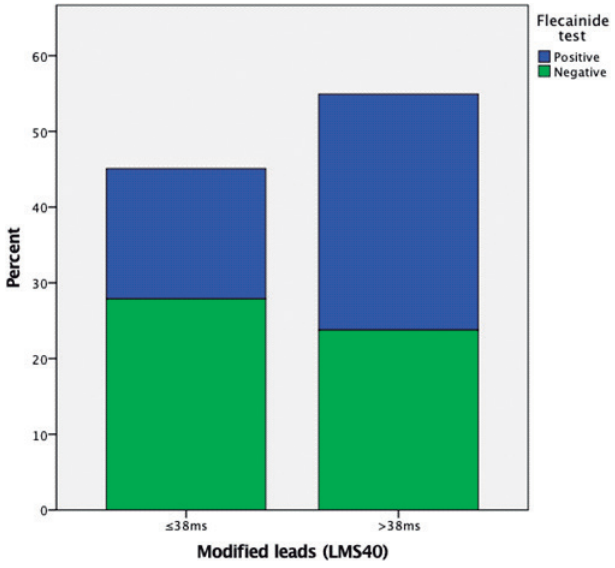
presenting with spontaneous type 1 morphology were excluded from the study. Study of LP on SAECG with modified leads for Brugada were evaluated before administration of flecainide [2 mg/kg (maximum 150 mg), for 10 minutes] with determination of filtered QRS duration (fQRS), root mean square voltage of the last 40 ms of the QRS complex (RMS_{40}) and duration of low amplitude signals < 40 μV of the terminal QRS complex (LMS_{40}).
Results: 126 patients (47.3 ± 14.1 years, 61.9% males) underwent study with LP SAECG and flecainide test. From these patients, 7.9% were symptomatic and 16.7% had familiar history of BrS. Flecainide test was positive in 46.8% of these cases. In patients with a positive flecainide test, 64.4% presented LMS_{40} > 38 ms whereas LMS_{40} > 38 ms was present in only 46% of patients with a negative flecainide test (p = 0.031). The presence of positive LMS_{40} was a positive predictor for a positive flecainide test, associated with a two-fold increase likelihood in the induction of a Brugada pattern (OR: 2.12; IC95% 1.025-4.392; p = 0.043). There was no association between fQRS or RMS_{40} and a positive flecainide test (p = NS). fQRS > 114 ms and RMS_{40} < 20 uV was present in only 22% and 61% of patients with a positive flecainide test, respectively.



Conclusions: In patient with non-type 1 Brugada syndrome, LMS_{40} > 38 ms evaluated was a predictor for a positive flecainide test, suggesting that this late potential could be helpful on the risk stratification of patients undergoing study for Brugada syndrome.

Painel 5 - Arritmologia 8

P 240. PROGRAMMING TACHYCARDIA ZONES TO REDUCE AVOIDABLE DEFIBRILLATOR SHOCKS

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Introduction: In recent years, there is an increased awareness of the frequency and the adverse outcomes associated with avoidable implantable cardioverter-defibrillator (ICD) therapy. Most of these avoidable ICD therapies can be reduced by evidence-based programming, but defining tachycardia settings across all device manufacturers is not straightforward.
Objectives: to determine if a homogeneous programming of tachycardia zones, independently of the manufacturer, result in a lower rate of avoidable shocks in heart failure (HF) patients with a primary-prevention indication for a defibrillator. We also aimed to find if programming high rate or delayed therapies can have some benefit over the other.
Methods: Since 2017 we randomly assigned consecutive HF patients with a primary-prevention indication for defibrillator to receive one of two programming configurations (panel A)-"new programming" (NP) group. Between 2015 and 2017, we retrospectively analyzed patients in whom tachycardia zones programming had been left to physician consideration-"conventional programming" (CP) group. We included patients with *de novo* ICD or cardiac resynchronization therapy with defibrillator (CRT-D) implantation and those with previous implanted defibrillators with no indication for an individualized programming (e.g. previous VT or shock). We compared the rate of appropriate

A - Device programming in the two arms of "new programming" group

		"High rate" therapy	"Delayed" therapy
Zone 1	Heart rate [1]	≥150 bpm (400ms)	≥150 bpm (400ms)
	Time/intervals for detection	12 sec / 32 intervals	12 sec / 32 intervals
	Therapy	Monitor only	Monitor only
Zone 2	Heart rate [1]	≥200 bpm (300ms)	> 188 bpm (320ms)
	Time/intervals for detection	2.5 sec / 12 (or 12/16) intervals	10 sec / 30 (or 30/40) intervals
	Therapy	Shock + quick convert ATP [2]	Shock + quick convert ATP [2]

[1] For devices using cycle length instead of heart rate the value is under parenthesis. [2] Anti-Tachycardia Pacing (ATP) during charge

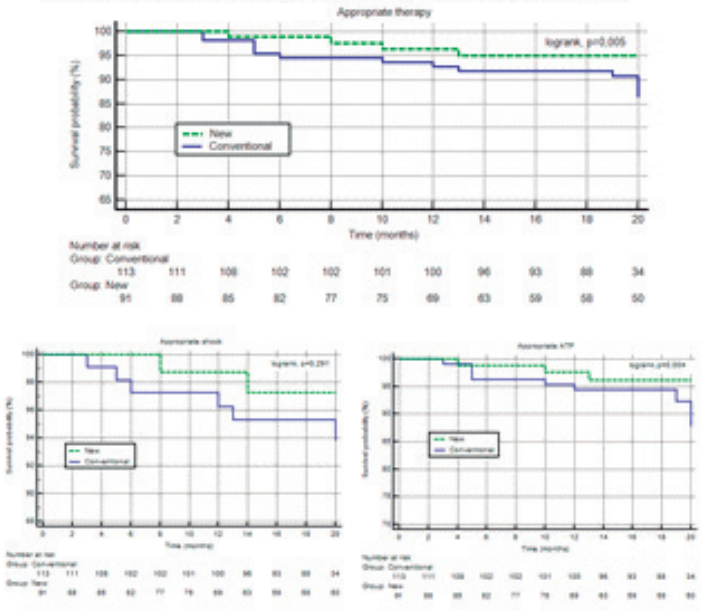
B - Incidence of the first occurrence of device terapies and death

	Total	Conventional programming	New programming
Any therapy	35 (17)	24 (21)	11 (12)
Appropriate therapy	23 (11)	17 (15)	6 (7)
Appropriate ATP	20 (10)	15 (13)	5 (6)
Appropriate shock	10 (5)	6 (5)	4 (4)
Inappropriate shock	9 (4)	7 (6)	2 (2)
All-cause death	36 (18)	20 (18)	16 (18)

C- Univariate Cox-regression analysis for new programming

	Hazard ratio	95% confidence interval	p-value
Any therapy	0.30	0.13-0.71	**<0.01**
Appropriate therapy	0.23	0.07-0.70	**0.01**
Appropriate ATP	0.19	0.05-0.67	**0.01**
Appropriate shock	0.43	0.09-2.15	0.30
Inappropriate shock	0.31	0.06-1.51	0.15
All-cause death	0.76	0.37-1.54	0.44

D - Kaplan-Meier survival curves for device therapies according to programming



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and inappropriate therapies (shocks and ATP) in CP and NP groups and also in high rate versus delayed therapies groups. We also evaluated syncopal episodes and all-cause mortality during the follow-up.
Results: Two-hundred and four patients [median age 66 (IQR 59-71), 82% male, 61% with ischemic heart disease) were evaluated: 91 patients were assigned for NP group [high rate (n = 47) or delayed therapy (n = 44)] and they were compared with 113 patients with CP. During a median follow-up of 20 (IQR 16-22) months, 35 patients (17%) had a first occurrence of appropriate or inappropriate therapy (panel B). New programming as compared with conventional programming was associated with a reduction in all ICD therapies, appropriate therapy and appropriate ATP, but not with inappropriate therapies (panel C and D). The risk of all-cause mortality was not different between the groups (panel C). Syncope did not occur in any group. In NP group, high-rate versus delayed programming was not significantly associated with a different incidence of appropriate (p = 0.68) or inappropriate therapy (p = 0.45).
Conclusions: In our study, programming tachycardia zones homogeneously across all manufacturers resulted in a lower rate of "appropriate" but potentially avoidable therapies, mainly due to the reduced number of ATP. Despite recognizing the reduced number of events, there were no differences in the incidence of ICD therapies comparing high-rate versus delayed therapies.

P 241. PERMANENT PACEMAKER IMPLANTATION AFTER SURGICAL AORTIC VALVE REPLACEMENT: IMPACT IN MID-TERM SURVIVAL

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Introduction and objectives: Rhythm disturbances are well-known complications of aortic valve replacement (AVR). New permanent pacemaker implantation (PPI) incidence is 2-6% after surgical AVR (SAVR) but over 10% following transcatheter AVR (TAVR). (Mehaffey *et al*, 2018).Our aims were to estimate the incidence and identify risk factors for PPI after SAVR with bioprosthesis, and to estimate its impact on mid-term survival.
Methods: A sub-study of Freedom Solo® versus Trifecta® single center retrospective cohort (Cerqueira *et al*, 2018) was conducted. Patients with pre-operative pacemaker and those who died during surgery were excluded from this analysis. Pre- and peri-operative data, including PPI, were collected. Median follow-up for all-cause mortality was 4.5 years. Chi-square or Fisher and independent t-tests or Mann-Whitney were used to compare categorical and continuous variables, respectively, between patients with or without need of PPI. PPI impact on cumulative survival was assessed using Kaplan-Meier estimates and log-rank test adjusted for euroSCORE II (with multivariable Cox regression).
Results: 938 patients were included. The incidence of PPI was 3.3% (n = 31). No difference was found between genders (2.8% in males vs 3.9% in females, p = 0.368), but patients requiring PPI were older (mean age 77 ± 6 vs 73 ± 9, p = 0.019) and presented higher euroSCORE II (median 5.0 vs 2.7, p = 0.003). None of the remaining pre and peri-operative variables were associated with PPI, namely, previous atrial fibrillation, chronic kidney disease, NYHA class, smoking, hypertension, diabetes Mellitus, cerebrovascular disease or multiple procedures. However, patients requiring PPI had longer surgeries (median cardiopulmonary bypass (CPB) time 159 vs 116, p = 0.019). 4.5-years cumulative survival was similar between patients with and without PPI (87.1% vs 82.7%, log-rank p = 0.406). PPI was not associated with mortality, even after adjusting for euroSCORE II (HR: 0.59, 95%CI 0.22-1.60, p = 0.30).
Conclusions: Older age, higher euroSCORE II and longer CPB time increased the risk for PPI after SAVR. In our sample, new PPI after SAVR did not impact mid-term survival, which goes in line with recent TAVR *vs* SAVR literature (Fujita *et al*, 2019). The observational and retrospective design, small absolute number of PPI's (n = 31) and short follow-up are major limitations of this study.

P 242. COMPARISON OF DE NOVO AND UPGRADE TO RESYNCHRONIZATION THERAPY: A PROPENSITY-SCORE MATCHED ANALYSIS

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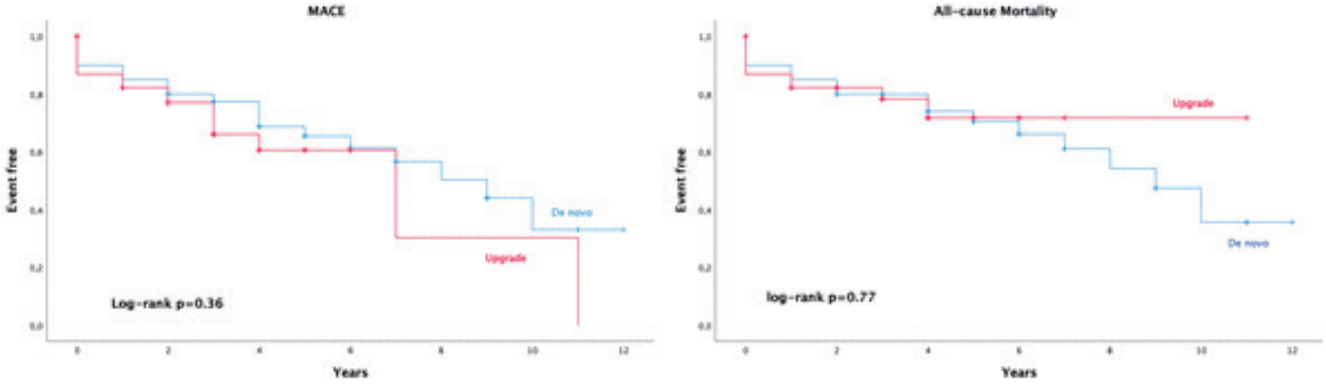
Centro Hospitalar de Vila Nova de Gaia/Espinho.

Introduction: Upgrade to resynchronization therapy (CRT) is common practice in Europe, but guidelines (GL) are discordant: class I recommendation (Pacing GL) *versus* IIb (Heart failure (HF) GL). Previous studies suggested worse outcomes in upgraded patients (pts).
Objectives: To compare clinical outcomes in a cohort of pts receiving *de novo* or upgrade to CRT.
Methods: Single-center retrospective study of consecutive pts submitted to CRT implantation (2007-2017). Major adverse cardiac events (MACE) included HF hospitalization (HHF) or all-cause mortality (ACM). Clinical response was defined as New York Heart Association (NYHA) class improvement without MACE in the 1st year of follow-up (FU). Left ventricle end-systolic volume reduction of > 15% denoted echocardiographic (echo) response. Survival analysis with Kaplan-Meier method and *Log-rank* test was performed. Propensity-score matching (PSM) analysis was done to adjust for possible confounder variables.
Results: 230 CRT recipients (70.9% male, mean age 67 ± 11 years, 71.5% non-ischemic cardiomyopathy) were included, of whom 46 (20%) underwent an upgrade. Upgraded pts were older (69.8 *vs* 65.9 years, p = 0.015), with more permanent atrial fibrillation (37.0% *vs* 12.7%, p = 0.001), moderate to severe valve disease (45.7% *vs* 22.3%, p = 0.002), chronic kidney disease (37.0% *vs* 17.2%, p = 0.005) and antimineralocorticoid treatment (79.1% *vs* 52.0%, p = 0.002). They were more likely to receive CRT-P (65.2% *vs* 33.2%, p < 0.001) and CRT-D were more often implanted for secondary prevention (60.0% *vs* 17.9%, p = 0.001). No differences emerged in procedural



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complications, clinical (74.4% *vs* 71.4%, p = 0.712) or echo (66.7% *vs* 69.7%, p = 0.822) response rates. During a median FU of 3 ± 4 years, ACM was similar among groups (p = 0.522). There was a statistical tendency for higher MACE rate in the upgrade group (p = 0.064). No differences were found in lead dislodgement (10.9% *vs* 7.1%, p = 0.368) or endocarditis (2.2% *vs* 4.3%, p = 0.692) rates. PSM analysis identified 88 matched pairs (46 upgrade/42 *de novo* pts) (Figure).

Conclusions: In this cohort, upgrade to CRT was similar to *de novo* implantation in terms of complications and clinical response. The risk for MACE and mortality was also comparable.

P 243. WHEN TO IMPLANT CRT-P OR CRT-D IN THE ELDERLY?

Inês Aguiar-Ricardo[1], Afonso Nunes-Ferreira[2], Tiago Rodrigues[2], Pedro S. António[3], Joana Rigueira[2], Rafael Santos[2], Nelson Cunha[2], Pedro Morais[3], Sara Couto Pereira[2], Igor Santos[3], Ana Bernardes[3], Andreia Magalhães[3], Helena Neves[3], Fausto J. Pinto[4], João de Sousa[3], Pedro Marques[3]

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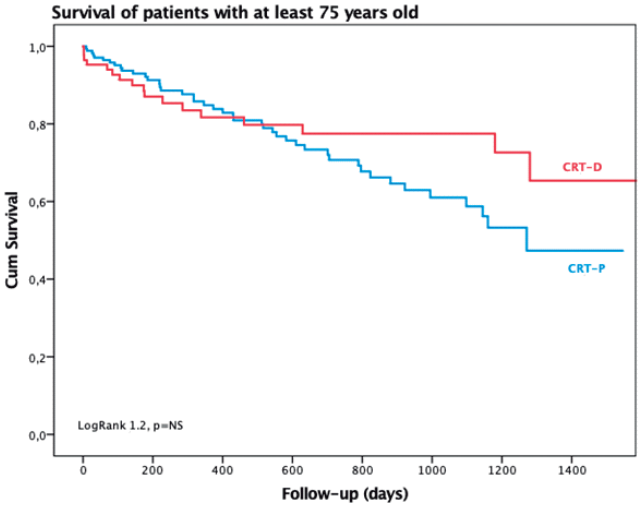
Introduction: Cardiac resynchronization therapy (CRT) in elder patients is increasingly common. However, the decision to implant a device with defibrillator in these patients is often complex and it can be limited not only by the shorter life expectancy but also by a lower relative risk of arrhythmic compare to non-arrhythmic death due to other comorbidities. Thus, whether CRT is effective in an elderly population (≥ 75 years old), or if a defibrillator (CRT-D versus CRT-P) influences outcomes is a pivotal concern needing additional data.

Objectives: To compare the prognostic impact of CRT-P vs CRT-D in old patients (≥ 75 years old) and its impact in the response rate to CRT.



Methods: A prospective single-center study was conducted of patients indicated for CRT implant since 2015. Demographic and clinical criteria were evaluated. Transthoracic echocardiography was performed before CRT implant and between 6-12 months post-implant. Patients with an ejection fraction (EF) elevation ≥ 10% or a LV end-systolic volume (ESV) reduction ≥ 15% were classified as responders. Patients with EF elevation ≥ 20% or LV ESV reduction ≥ 30% were classified as super-responders. Time to surgical revision and mortality were evaluated using the Cox regression and Kaplan-Meier methods. The decision to implant a CRT-P or CRT-D device was made according to clinical decision. Prognostic impact of CRT-P vs CRT-D was evaluated by comparing total mortality using the Cox regression and Kaplan-Meier methods.

Results: From 2015-2019, 566 CRTs were implanted (26.1% female, follow-up duration 18.9 ± 15.8 months). Among these patients, 53.5% had < 75 years old and 46.5% ≥ 75 years. Baseline clinical characteristics were similar, except for a higher prevalence of chronic kidney disease and atrial fibrillation in the elderly population. The proportion of CRT-D/CRT-P was different between these groups (p < 0.001): in the elderly group, more CRT-P were implanted (67.6% vs 32.4 CRT-D) and in the younger group more CRT-D were implanted (77.9% vs 22.1% CRT-P). The prevalence of complications due to CRT implant was similar in the two groups (4.7% vs 4.2%, p = NS) but the need for surgical revision was less frequent in the elderly group (11.0% vs 5.7%, p = 0.03). The CRT response rate was equivalent in both groups (40.1% vs 59.9%, p = NS), as was the super-response rate (33% in young vs 26.5% in old patients, p = NS).In the elderly population, the 4-year survival rate was similar between CRT-P and CRT-D patients (75.4% vs 79.8%).

Conclusions: Patients older than 75 years old have similar benefits from the CRT as patients < 75 years, with equivalent response rates to CRT. However, judging from the similar prognostic impact of CRT-P vs CRT-D in this elder population, the implant of a defibrillator should be personalized.

P 244. ATRIAL FIBRILLATION AND CARDIAC RESYNCHRONIZATION THERAPY-IS THIS COMBINATION TRULY BAD?

Pedro Silvério António[1], Afonso Nunes-Ferreira[2], Inês Aguiar Ricardo[3], João R. Agostinho[3], Tiago Rodrigues[2], Rafael Santos[2], Nelson Cunha[2], Sara Couto Pereira[3], Pedro S. Morais[3], Joana Brito[2], Andreia Magalhaes[3], Ana Bernardes[3], Fausto J. Pinto[3], João de Sousa[3], Pedro Marques[3]

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Introduction: Cardiac resynchronization therapy (CRT) significantly reduces mortality and hospitalizations in patients with heart failure and reduced ejection fraction (EF). Atrial fibrillation (AF) is a very common comorbidity in these patients, however, CRT benefit in AF patients has been controversial.

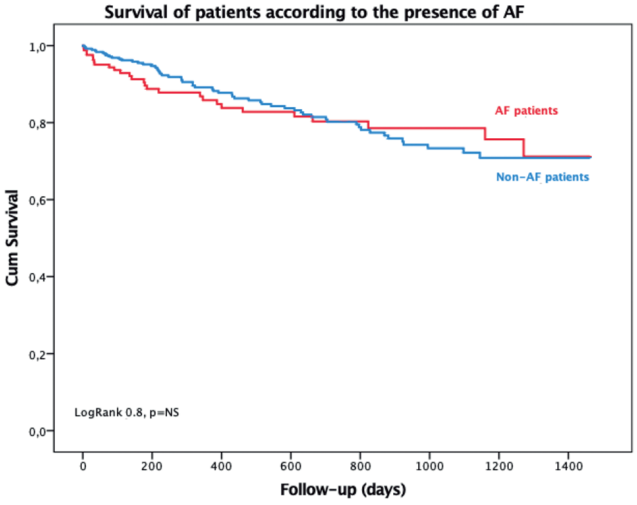
Objectives: To compare the prognostic impact of CRT in patients (pts) with and without AF.

Methods: Prospective, single-center study that included pts undergoing CRT implant since 2015. Clinical and echocardiographic evaluation were made before CRT implant and between 6-12 months post-implant. Pts with EF elevation ≥ 10% or LV end-systolic volume (ESV) reduction ≥ 15% were classified as responders. Patients with EF elevation ≥ 20% or ESV reduction ≥ 30% were classified as super-responders. All the parameters were compared between patients with and without AF. Prognostic impact of CRT was evaluated by comparing total mortality using the Cox regression and Kaplan-Meier methods.

Results: From 2015-2019, 566 CRTs were implanted (26.1% female, 72 ± 10.2 years old, follow-up duration 18.9 ± 15.8 months). From these patients, 166 patients (31%) had AF (73.5% males, mean age 72.2 ± 10.2 years, 37.3% ischemic, LVEF < 30% in 65.5%). The cardiovascular risk factors and comorbidities were similar in both populations (with and without AF), except for chronic kidney disease which was more frequent in AF pts (28% vs 17%, p = 0.012). The prevalence of complications and surgical revision were similar in both groups. The CRT response rate was similar in both groups (50% in AF group vs 59.6%, p = NS) as was the super-response rate (22.4% in FA pts vs 31.5%, p = NS). The 4-year survival rate of patients with AF was similar to non-AF (83.7% vs 84.3%).

Conclusions: Despite the controversy about the efficacy of CRT in AF pts, in our population the long-term survival and CRT response rates were comparable between patients with and without AF.

Population Characteristic	AF patients (N=166)	Non-AF patients (N=369)	P value
Age, years (mean ± standard deviation)	74.2±9.1	71.1±10.0	NS
Female gender, n (%)	42 (25.3%)	99 (26.8%)	NS
Ejection fraction < 30%, n (%)	93 (62%)	213 (64.7%)	NS
Comorbidities			
Hypertension, n (%)	149 (90.3%)	309 (84.4%)	NS
Dyslipidemia, n (%)	102 (62.2%)	213 (58.4%)	NS
Diabetes, n (%)	60 (36.6%)	143 (39.1%)	NS
CKD (GFR < 60mL/min/1.73m^2), n (%)	46 (27.7%)	63 (17.2%)	**0.012**
COPD, n (%)	20 (12.2%)	27 (7.4%)	NS
NYHA Functional Class			
II, n (%)	55 (53.4%)	135 (62.8%)	NS
III, n (%)	45 (43.7%)	71 (33%)	
Heart Failure Etiology			
Ischemic cardiopathy, n (%)	62 (39%)	129 (37%)	NS
Dilated cardiomyopathy, n (%)	89 (56%)	199 (57%)	NS
Valvular cardiopathy, n (%)	6 (3.8%)	10 (2.9%)	NS
Device Type			
CRT-P, n (%)	31 (33%)	212 (45%)	**0.046**
CRT-D, n (%)	63 (67%)	260 (55%)	



P 245. WOMEN AS CANDIDATES FOR CRT-ARE THEY LESS BUT BETTER?

Nelson Cunha [1], Afonso Nunes-Ferreira[2], Pedro Silvério António[2], Inês Aguiar-Ricardo[2], Joana Rigueira[2], Rafael Santos[2], Tiago Rodrigues[2], Sara Couto Pereira[2], Pedro S. Morais[2], Joana Brito[2], Pedro Alves da Silva[2], Beatriz Valente Silva[2], Fausto J. Pinto[2], João de Sousa[1], Pedro Marques[1]

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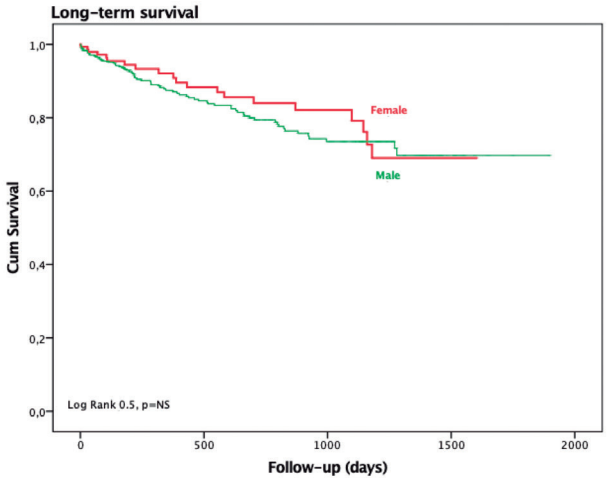
Introduction: Women have been under-represented in trials of cardiac resynchronization therapy (CRT). Most available data suggest that CRT has a greater clinical benefit in women than in men. However, further studies are needed to investigate the exact reasons for these results.
Objectives: To compare the prognostic impact and response rate of CRT in women and man.
Methods: Prospective study, single-center study that included pts undergoing CRT implant from 2015 to 2019. Clinical and echocardiographic evaluation were made before CRT implant and between 6-12 months post-implant. Pts with EF elevations≥ 10% or LV end-systolic volume (ESV) reductions ≥ 15% were classified as responders. Patients with EF elevations ≥ 20% or ESV reductions ≥ 30% were classified as super-responders. All the parameters were compared between women and man. Prognostic impact of CRT was evaluated as total mortality by the Cox regression and Kaplan-Meier methods.
Results: From 2015-2019, 561 patients were submitted to CRT implant with a follow-up duration of 18.9 ± 15.8 months. From these 148 (26.4%) were female (mean age 72.2 ± 10 years, 22.4% ischemic, LVEF < 30% in 70.2%). The cardiovascular risk factors and comorbidities were similar in both populations (women and men). In the female group, dilated cardiomyopathy was more frequent than in men (71% vs 50.8%, p < 0.01), with ischemic heart disease being the second most frequent etiology of heart failure. The frequency of LBBB was similar in both groups (63.9% in women and 57.0% in men, p = NS) however the QRS duration was higher in women (164 ± 17 vs 160 ± 24, p = 0.017). The baseline mean EF was similar (30.5 ± 10.3 ms in women and 30.3 ± 11.4 ms in men) but the ESV was lower (109.7 ± 59.9 vs 138.4 ± 64.6, p < 0.001).The prevalence of complications and need for surgical revision were similar in both groups. The rate of CRT responders was similar in both groups, although tendentially higher in women (64.3% in women vs 55.2% in men, p = NS). On the other hand, super-responder rate was statistically significant (38% in women vs 25.1% in men, p = 0.004). The long-term survival was similar in both groups.

Population Characteristic	Women (N=148)	Men (N=413)	P value
Age, years (mean ± SD)	72.2±10	72.12±9.8	NS
Comorbidities			
Hypertension, n (%)	119 (85%)	344 (86.8%)	NS
Dyslipidemia, n (%)	77 (55.8%)	239 (60.9%)	NS
Diabetes, n (%)	55 (39.8%)	148 (37.5%)	NS
CKD (GFR < 60Ml/min/1.73m^2), n (%)	23 (16%)	86 (21.8%)	NS
Atrial Fibrillation	42 (29.8%)	124 (31.5%)	NS
NYHA Functional Class			
II, n (%)	52 (57.8%)	149 (60.3%)	NS
III, n (%)	34 (37.8%)	90 (36.4%)	
Heart Failure Etiology			
Ischemic cardiopathy, n (%)	31 (22.4%)	171 (43.4%)	0.002
Dilated cardiomyopathy, n (%)	98 (71%)	200 (50.8%)	
Valvular cardiopathy, n (%)	5 (3.6%)	12 (3%)	
Electrocardiographic Characteristics			
Left Bundle Branch Block, n (%)	53 (63.9%)	118 (57.0%)	NS
QRS duration, ms (mean ± SD)	164 ± 17	160 ± 24	NS
Echocardiographic Characteristics			
LVEF, % (mean ± standard deviation)	30.5±10.3	30.3±11.4	NS
LVEF < 30 %, n (%)	92 (70.2%)	229 (24.3%)	NS
LVEF 30-40%, n (%)	36 (27.4%)	128 (43.7%)	NS
ESV	109.7±59.9	138.4±64.6	0.001
Device Type			
CRT-P, n (%)	79 (53.7%)	162 (39.5%)	0.003
CRT-D, n (%)	68 (46.2%)	248 (60.5%)	



P 245 Figure

Conclusions: The rate of super-responders was higher in women than in men. This may be explained by the higher prevalence of dilated cardiomyopathy in this subgroup of patients and by the fact that women have smaller hearts and a larger QRS duration at baseline, most likely to have a real LBBB. Long-term mortality of CRT was not gender related.

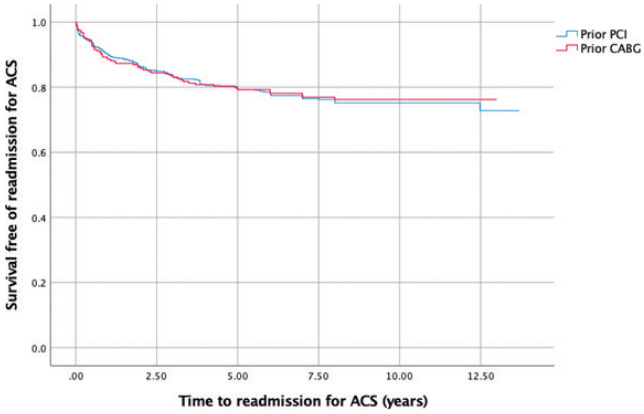
Painel 6 - Doença Coronária 10

P 246. ACUTE CORONARY SYNDROME FOLLOWING PRIOR PCI OR CABG-ARE ALL PATIENTS THE SAME?

James Milner[1], João André Ferreira[2], José Paulo Almeida[2], André Azul Freitas[2], Sofia Martinho[2], Cátia Ferreira[2], Sílvia Monteiro[1], Pedro Monteiro[1], Francisco Gonçalves[1], Natália António[1], Lino Gonçalves[2]

[1]Centro Hospitalar e Universitário de Coimbra/Hospitais da Universidade de Coimbra. [2]Centro Hospitalar e Universitário de Coimbra.

Introduction: Both prior PCI and prior CABG represent subsets of patients with increased risk of future cardiovascular events, and readmission for new acute coronary syndromes (ACS) is not uncommon. However, it is unclear whether both groups are at similar risk, and secondary prevention following CABG is not as well established. Further clarification is of utmost importance to adequately stratify risk and implement appropriate risk modification strategies.
Objectives: to evaluate in-hospital outcomes and long-term risk of readmission for ACS in patients with prior PCI or CABG.
Methods: Retrospective, observational study of 1,154 patients with a previous history of either PCI or CABG, admitted to a tertiary center coronary ICU due to acute coronary syndrome between 2004 and 2017. Patients were divided into 2 groups: Group A, with prior PCI (N = 883) and B, with prior CABG (N = 271). Baseline clinical and demographic characteristics were compared, as well as ACS-related variables. Primary outcomes were in-hospital mortality and re-admission due to acute coronary syndrome during long term follow-up.
Results: Mean follow-up was 7.0 ± 3.6 years. Patients with prior CABG were more frequently mal (86 vs 75%, p < 0.001) and were older than their counterparts (69 ± 10 vs 66 ± 12, p < 0.001). Prevalence of other cardiovascular risk factors were similar in both groups, but patients with a history of PCI were more often medicated with P2Y12 inhibitors, ACE inhibitors or ARBs, beta blockers and statins. Those with prior PCI presented with STEMI in 16% of cases, which happened only in 9% of CABG patients (p = 0.02), and CABG patients had higher GRACE scores at presentation (130 ± 32 vs 121 ± 36, p = 0.001). Following this index event, readmission due to new ACS during follow-up was similar in both groups (21%, p = 0.853), and both yielded similar Kaplan-Meier curves. However, in-hospital mortality during this index episode was higher in the CABG group (4.4 vs 2.5%, p = 0.049).



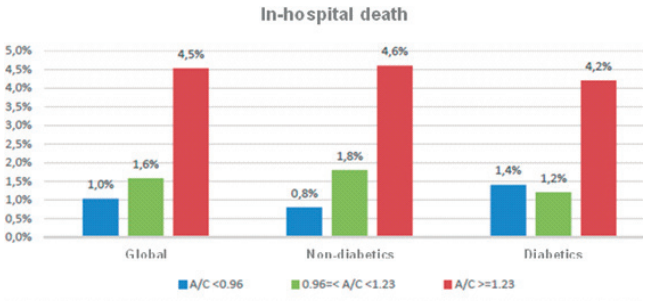
Conclusions: Following surgical revascularization, patients with acute coronary syndromes tend to present more often with non ST elevation-ACS than their PCI counterparts. Patients with prior PCI have implemented pharmacological strategies for risk reduction more often, which results in lower in-hospital mortality in future events.

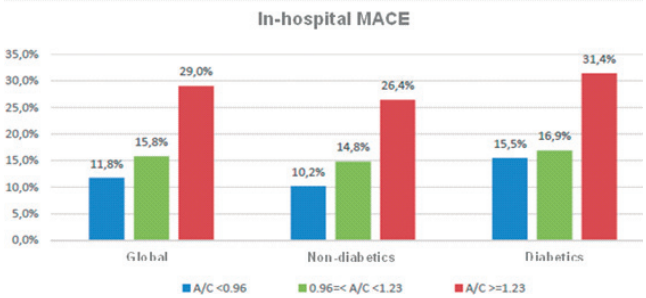
P 247. ACUTE TO CHRONIC GLYCEMIC RATIO CLINICAL VALUE IN ACUTE CORONARY SYNDROME

Fernando F. Gonçalves[1], José P. Guimarães[1], Sara C. Borges[1], José J. Monteiro[1], Pedro S. Mateus[1], J. Ilídio Moreira[1], On behalf of the investigators of the Portuguese Registry of Acute Coronary Syndromes[2]

[1]Centro Hospitalar de Trás-os-Montes e Alto Douro, EPE/Hospital de Vila Real. [2]CNCDC-Centro Nacional de Coleção de Dados em Cardiologia.

Introduction: Stress hyperglycemia (SH) is a prognostic marker in acute coronary syndrome (ACS). This study aimed to evaluate the clinical and prognostic value of the acute to chronic glycemic ratio (ACR) in ACS and compare it with SH.
Methods: This was a retrospective study of patients hospitalized for ACS periodically included in a national multicenter registry between October 2010 and January 2019. The "acute" glucose (Gl) value was assessed at admission and chronic blood glucose was calculated by the formula 28.7 × HbA1c-46.7. SH was defined as admission Gl ≥ 180 mg/dL. The endpoints evaluated consisted of in-hospital death/stroke/myocardial infarction (MACE) and mortality.





Results: Of a total of 5,501 patients, 33.7% were in the ACR lower tertile (< 0.96), 33.4% in the intermediate tertile (0.96-1.22) and 32.9% in the upper tertile (≥ 1.23). The upper tertile had more female patients, older patients and, therefore, less smokers and more hypertensive and diabetic patients. These patients had more multivessel coronary disease (53.5% vs 51.2% vs 58.3%, p < 0.001) and were less likely to have angioplasty performed (69.2% vs 71.6% vs 65.7%, p < 0.001). Left ventricular systolic function was also worse in the upper tertile (54 ± 12% vs 53 ± 12% vs 50 ± 13%, p < 0.001). The presence of SH also distributed patients similarly, with one exception. Despite the higher presence of multivessel disease with SH (50.7% vs 63.9%, p < 0.001), there were no significant differences in angioplasty (69.5% vs 67.1%, p = 0.083). During hospitalization, the higher the ACR, the higher the number of MACE (11.8% vs 15.8% vs 29%, p < 0.001) and mortality (1% vs 1.6% vs 4.5%, p < 0.001). SH was also associated with more adverse events (15.2% vs 28.2%, p < 0.001

and 1.7% vs 4.2%, p < 0.001, for both endpoints respectively). Overall, ROC curve analysis did not show superiority of ACR over SH for MACE (AUC 0.64 vs 0.63, p = 0.087). However, the ACR was better than SH for in-hospital death (AUC 0.70 vs 0.66, p = 0.010). In diabetic patients ACR was better than SH for MACE (AUC 0.63 vs 0.60, p = 0.005), but not for death (AUC 0.68 vs 0.66, p = 0.294). In non-diabetic patients there were no differences for either MACE (AUC 0.64 vs 0.64, p = 0.668) nor for death (AUC 0.70 vs 0.70, p = 0.573).
Conclusions: The ACR was able to identify patients with more severe coronary events. Moreover, it was a significant predictor of adverse events and, in some situations, it was a better prognostic indicator than SH.

P 248. METEOROLOGICAL TRIGGERING OF ST-ELEVATION MYOCARDIAL INFARCTION

Marta Fontes de Oliveira[1], Susete Vieira[2], Mariana Santos[2], Rui Magalhães[1], Ricardo Costa[1], André Luz[1], Severo Torres[1]

[1]*Centro Hospitalar do Porto, EPE/Hospital Geral de Santo António.*
[2]*Instituto de Ciências Biomédicas Abel Salazar.*

Introduction: Some studies have linked meteorological factors to the pathophysiology of ST-elevation Myocardial Infarction (STEMI). Since its impact in Portugal is unknown, we sought to evaluate if certain weather characteristics influence the STEMI-incidence over the past 7 years.
Methods: Retrospective analysis of a consecutive series of STEMI-patients confirmed by primary percutaneous coronary intervention at single center from January 2010 to December 2017 (2922 days). Meteorological data was obtained from IPMA-Instituto Português do Mar e Atmosfera-a government-lead institute, comprising the coverage of our region (aprox. 250,000 inhabitants). The following atmospheric variables were analyzed: atmospheric temperature (mean, minimum, maximum), relative humidity (RH, %), rainfall and atmospheric pressure. The statistical analysis was performed using Generalized Linear Models (GLM) with a Poisson distribution, and a series of models with multivariate analysis were considered for exposure at different days before the event. The effects (GLM coefficients) are presented as excess relative risk (ERR) for a unit drop in the temperature parameters and for a unit rise in the RH.
Results: 1,004 STEMI-patients confirmed by PCI had their data completed and were included in the study. We observed 25% more events in winter than in summer (ERR 25.1, 95%CI 4.5 to 49.7, p = 0.015). Minimum temperature at 2 days before (ERR 1.9%, 95%CI 0.5 to 3.3, p = 0.009) and RH 1 and 3 days before STEMI were associated with STEMI admission rates (ERR -0.6%, 95%CI -0.11 to -0.1, p = 0.023 and ERR 0.7%, 95%CI 0.2 to 1.3, p = 0.006, respectively). In multivariate analysis after adjustment for season of the year, RH 1 and 3 days before the event were independent predictors for STEMI admission. Other climate parameters such as temperature range, atmospheric pressure and precipitation were not associated with STEMI-incidence.
Conclusions: Lowest minimum temperatures 2 days before, lowest RH in the previous day and highest RH in the previous 3 days are associated with a higher incidence of STEMI. These features are aligned with some European cohorts and may drive the allocation of resources to accommodate expected rises in STEMI-incidence.

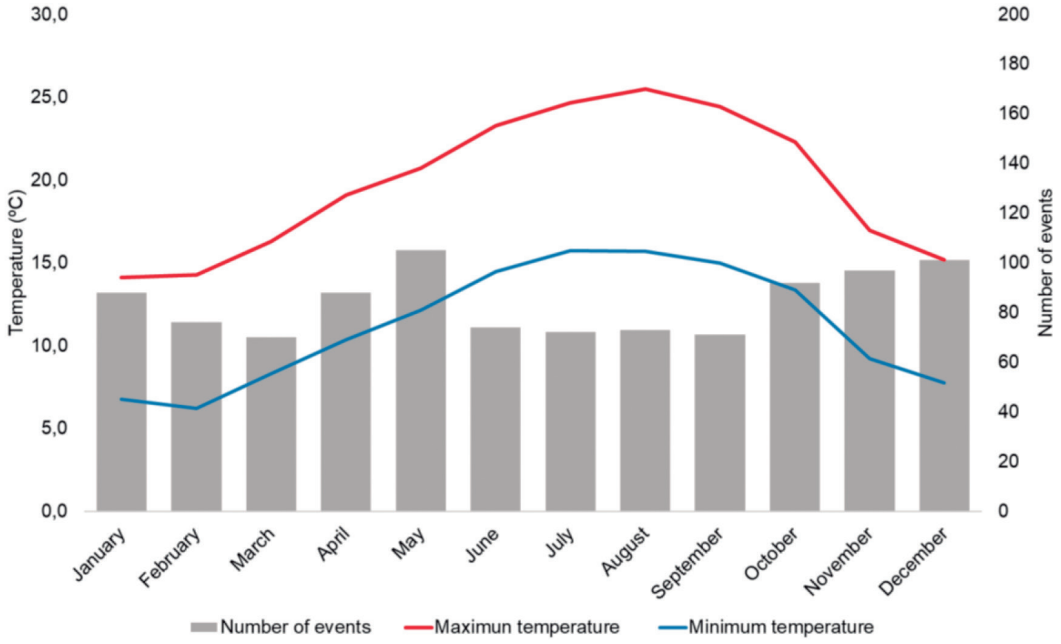
P 249. PREDICTORS AND OUTCOMES OF INFECTION IN PATIENTS WITH ST-ELEVATION MYOCARDIAL INFARCTION

Ricardo Costa[1], Mariana Santos[2], Susete Vieira[2], André Luz[1], Marta Oliveira[1], André Frias[1], Andreia Campinas[1], Mário Santos[1], Severo Torres[1]

[1]*Centro Hospitalar do Porto, EPE/Hospital Geral de Santo António.*
[2]*Instituto de Ciências Biomédicas Abel Salazar, Universidade do Porto.*

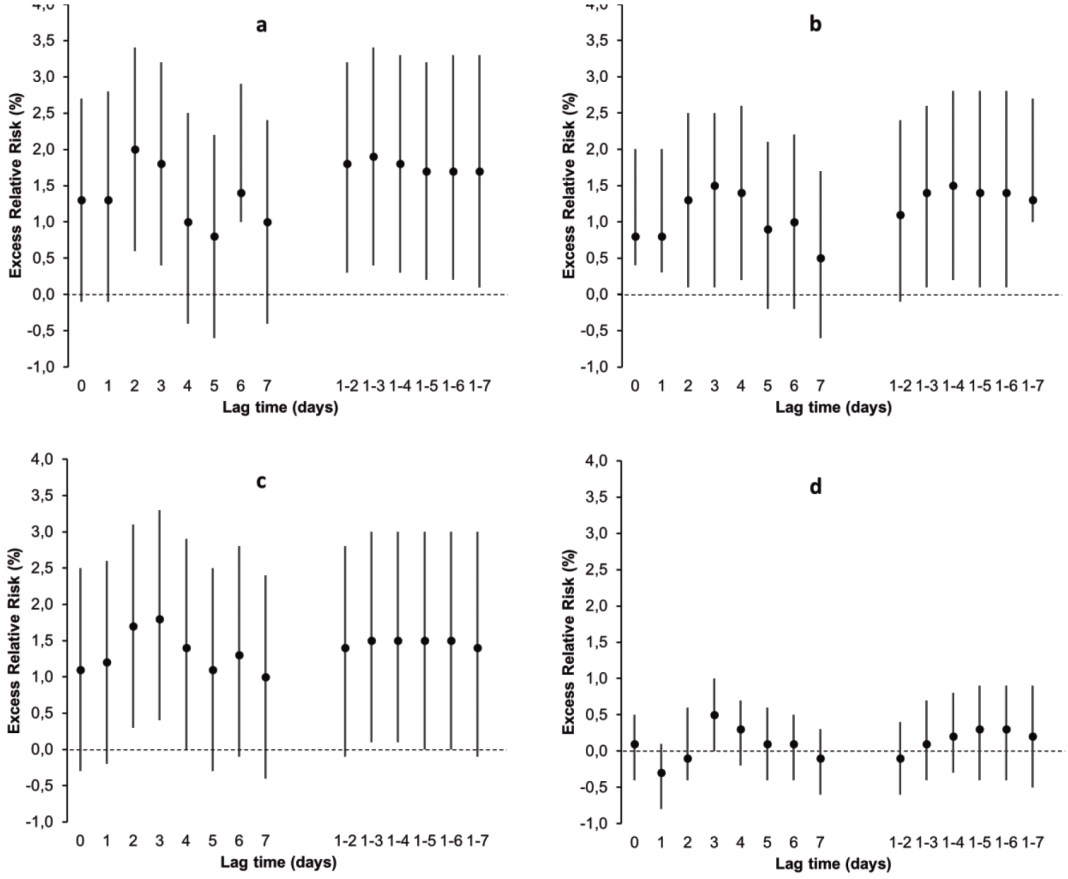
Introduction: Nosocomial infections are related to a heightened morbidity and mortality across a wide spectrum of hospitalized patients. The impact of nosocomial infection on patients admitted with ST-elevation Myocardial Infarction (STEMI) treated by primary percutaneous coronary intervention (pPCI) is scarce. We aimed to study the incidence and predictors of infection

Figure 1. Monthly variation of maximum and minimum temperature and the number of STEMI events.



P 248 Figure 1

Figure 2. Excess relative risk of STEMI during the 7 previous days and also 7 consecutive days before the event, following a 1 °C decrease of minimum temperature (a), maximum temperature (b), medium temperature (c) and a 1% decrease of relative humidity (d). Plots represent mean values and bars 95% confidence interval.



P 248 Figure 2

in a contemporary series of STEMI-patients and to ascertain its impact at 1-year incidence of major adverse cardio-cerebrovascular events (MACCE).
Methods and results: Medical charts from 1,119 STEMI-patients treated by pPCI from January 2008 to December 2018 were reviewed. 126 (11.1%) infections were diagnosed during hospital stay, mostly of respiratory (50.79%) and urinary (39.68%) tract origin. The median time until the diagnosis was 3 days (2-6). Insulin-treated diabetics were more than 3 times more likely to develop an infection during hospital stay (OR 3.41, 95%CI 1.53-7.56, p = 0.003). Other independent predictors of infection were presence of peripheral arterial disease (OR 2.74, 95%CI 1.52-4.95, p = 0.031), the need of an intra-aortic balloon pump insertion (OR 3.09, 95%CI 1.12-8.47, p = 0.029), age (OR 1.05, 95%CI 1.02-1.07, p < 0.001), lower systolic blood pressure (OR 0.99, 95%CI 0.99-1.00, p = 0.002) and higher peak creatine kinase (CK; OR 1.12, 95%CI 1.03-1.22, p = 0.011). On the contrary, pre-infarction angina was negatively related to infection (OR 0.56, 95%CI 0.33-0.95, p = 0.031). On a Cox-proportional hazards model, MACCE were independently related to peripheral arterial disease (HR 3.16, 95%CI 2.05-4.87, p < 0.001), age (HR 1.02, 95%CI 1.00-1.04, p = 0.037), lower haemoglobin (HR 0.85, 95%CI 0.77-0.94, p = 0.002) and lower systolic blood pressure on admittance (HR 0.99, 95%CI 0.98-1.00, p = 0.003), higher peak CK (HR 1.11, 95%CI 1.04-1.19, p = 0.002) and femoral approach (HR 1.85, 95%CI 1.30-2.64, p = 0.001), but not in-hospital infection (HR 1.24, 95%CI 0.80-1.94, p = 0.336).
Conclusions: In-hospital infection was relatively prevalent and was related to larger infarct size and co-morbidities. Mid-term prognosis is still dependant on traditional clinical features which usually accompany infection, but not infection *per se*.

P 250. EPICARDIAL FAT TISSUE: A NEW TOOL FOR IDENTIFICATION OF CORONARY ARTERY DISEASE PATIENTS?

João Ferreira[1], André Azul Freitas[2], Cátia Ferreira [2], Valdirene Gonçalves[1], José Almeida[1], James Milner[1], Sofia Martinho[2], Patrícia Alves[2], Vera Marinho[1], Rui Martins[2], Lino Gonçalves[2]

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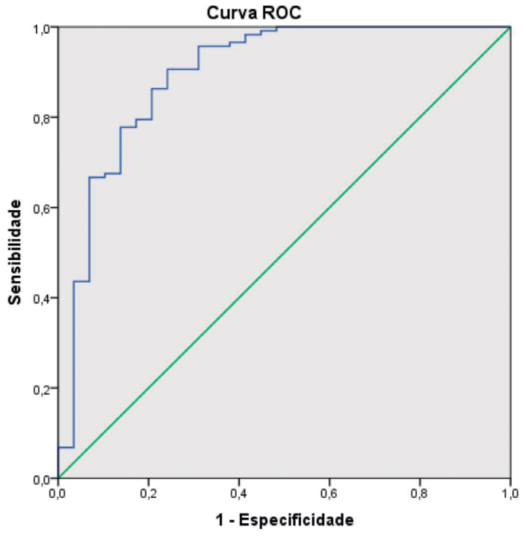
Introduction: Epicardial fat (EF), the true visceral fat depot of the heart, has been strongly correlated with both coronary artery disease (CAD) incidence and severity. However, the methods for its measurement were not always affordable. Its measurement by echocardiography is fast, accessible and easily reproducible, turning it into a promising clinical tool for assessing cardiovascular risk to predict the incidence of CAD.
Objectives: To determine the correlation between EF tissue dimensions measured by transthoracic echocardiography and the presence of CAD.
Methods: We prospectively analysed data from 196 consecutive patients admitted for acute coronary syndrome in our coronary care unit. All patients underwent diagnostic coronary angiography and echocardiogram during stay. EF dimensions were obtained with transthoracic echocardiography by measuring maximum EF diameter (mm) at the basal right ventricular free wall (PLAXB) level and mid-right ventricular free wall (PLAXM) level [in paraesternal long-axis view (PLAX)] and maximum right-ventricle free wall EF diameter at basal (PSAXB) level and papillary-muscle (PSAXM) level [in paraesternal short-axis view (PSAX)]. All measures were taken at end-

systole. Patients were divided in 2 groups according to the presence of significant CAD (sCAD) or not (nCAD), defined as having at least 1 diseased epicardial vessel with a stenosis > 50%.

Results: One-hundred and sixty-three (83.2%) had significant CAD. 22 patients (11.2%) were admitted for unstable angina, 60 patients (30.6%) for non-ST elevation myocardial infarction and 93 patients (47.4%) for ST-elevation myocardial infarction. Mean EF diameters were as follows: PLAXB (19.3 ± 5.1 mm), PLAXM (11.3 ± 2.6), PSAXB (10.6 ± 2.8), PSAXM (10.5 ± 2.8). We found a direct correlation between number of diseased epicardial coronary vessels and epicardial fat thickness in PLAXB (r = 0.506, p < 0.001), PLAXM (r = 0.372, p < 0.001), PSAXB (r = 0.445, p < 0.001) and PSAXM (r = 0.372, p < 0.001). EF was significantly different between groups: PLAXB (20.6 ± 4.4 vs 13.8 ± 3.8, p < 0.001), PLAXM (11.8 ± 2.5 vs 9.0 ± 1.9, p < 0.001), PSAXB (11.1 ± 2.7 vs 8.3 ± 2.3, p < 0.001) and PSAXM (11.0 ± 2.6 vs 8.2 ± 4, p < 0.001). Receiver operating characteristic curve analysis showed that the predictive value of mean right ventricular EF [(PLAXB+PLAXB)/2] for significant CAD was 0.895 (AUC = 0.895, 95%CI 0.818-0.972, p < 0.001). For a [(PLAXB+PLAXB)/2] value of 12.57 mm, sensitivity was 86.3% and specificity was 79.3%.



Área sob a curva

Variável(eis) de resultado de teste: gorduramediaPLAXBASALPSAXBASAL

Área	Erro Padrão[a]	Sig. assintótico[b]	Intervalo de Confiança 95% Assintótico	
			Limite inferior	Limite superior
,895	,039	,000	,818	,972

a. Sob a suposição não paramétrica

b. Hipótese nula: área real = 0,5

Figure 1. ROC curve and sensibility and specificity

Receiver operating characteristic curve analysis showed that the predictive value of mean right ventricular EF [(PLAXB+PLAXB)/2] for significant CAD was 0.895 (AUC=0.895, CI 95% 0.818-0,972, p<0.001). For a [(PLAXB+PLAXB)/2] value of 12.57 mm, sensitivity was 86.3% and specificity was 79.3%.

Conclusions: In a population of high suspicion of acute coronary syndromes, echocardiographic EF is a sensitive and specific marker of the presence of significant coronary disease and could become an important tool for coronary risk prediction.

P 251. PEAK VERSUS AREA UNDER THE CURVE OF CARDIAC TROPONIN I VALUES FOR ESTIMATION OF INFARCT SIZE

Pedro Carvalho[1], Diana Carvalho[1], Lisa Ferraz[1], José Luis Martins[1], Manuela Vieira[1], José Mesquita Bastos[1], Ana Briosa[1], Vera Afreixo[2], Juliana Reis[2]

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[2]Universidade de Aveiro.

Introduction: Left ventricular ejection fraction (LVEF) is one of the most important variables to predict functional class and prognosis after myocardial infarction (MI) and relates to infarct size. Peak cardiac troponin I (cTnI) levels are frequently used in clinical practise as a prognostic marker after MI. However, it is affected by infarct type-ST/Non-ST elevation MI (STEMI/NSTEMI)-and whether angioplasty (PCI) was performed.

Objectives: The authors hypothesised that an estimate of total cTnI release during MI hospitalization, assessed by the area under the curve (AUC), would provide a better estimate than peak cTnI for infarct size, evaluated through LVEF at discharge.

Methods: We collected data regarding demographics, cTnI measurements and LVEF at discharge of consecutive MI patients admitted at our hospital. We excluded patients with severe wall motion abnormalities unrelated to the culprit vessel, prior LVEF < 50% or history of previous MI causing wall motion abnormalities. Statistical analysis was performed in SPSS®, using Spearman's rank correlation coefficient and ROC curves to assess which of the following better predicted LVEF: AUC of cTnI estimated by the trapezoid equation or peak cTnI.

Image 1: ROC curve evaluating accuracy for area under the curve of troponin I for predicting LVEF at discharge

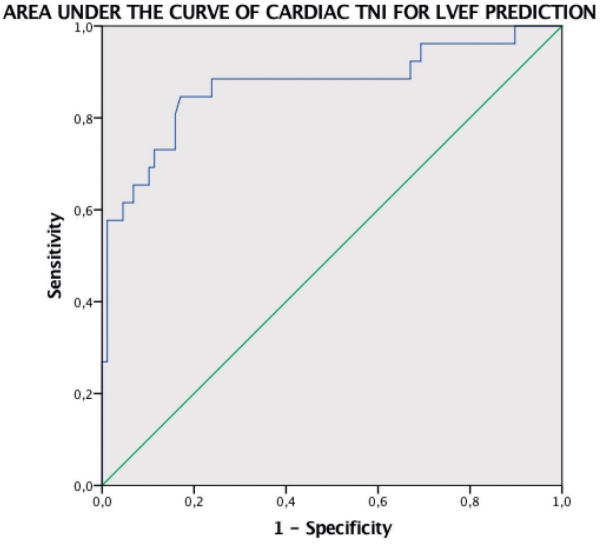
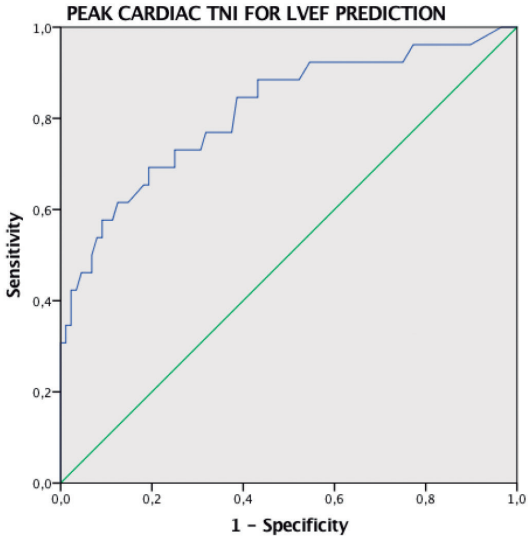


Image 2: ROC curve evaluating accuracy of peack cardiac troponin I for predicting LVEF at discharge



Results: We included 42 STEMI and 72 NSTEMI consecutive patients. Median age was 64.5 years (IQ 56-75). 20.2% developed heart failure during hospitalization, median peak cTnI was 27 ng/mL (IQ 10-58) and median cTnI AUC was 1057 (IQ 398-2,600). PCI was performed on 67% of patients (88% for STEMI and 52% for NSTEMI). Median LVEF at discharge was 58% (IQ 50-64%). There was a strong, negative correlation between AUC of cTnI and LVEF, which was statistically significant (r_s = -0.600, p = 0.000). Peak cTnI had slightly weaker negative correlation, but also statistically significant (r_s = -.544, p = 0.000). ROC curves showed good accuracy of both AUC of cTnI (AUC: 0.869; CI: 0.774-0.964; p = 0.000, Figure 1) and peak TnI (AUC: 0.816; CI 0.714-0.918; p = 0.000-Figure 2) for prediction of LVEF < 50%. However, when we analysed only patients who performed PCI, AUC troponin had a statistically significant negative correlation (r_s = -0.599; p = 0.000) but peak cTnI did not (r_s = -0.227, p = 0.197).
Conclusions: Both peak cTnI and AUC cTnI give a good estimation of infarct size, evaluated through LVEF at discharge. However, AUC cTnI has a better performance for patients who had PCI, since these patients have higher peak values, which doesn't always translate to reduced LVEF. Perhaps peak cTnI is too simple to evaluate infarct size in all MI patients. For instance, in the setting of primary PCI, there are other premises to account. AUC cTnI could be a useful clue in this setting.

Painel 7 - Doença Coronária 11

P 252. IS TERRITORIAL LONGITUDINAL STRAIN ABLE TO PREDICT THE CORONARY ARTERY DISEASE CULPRIT LESION IN ACUTE CORONARY SYNDROMES?

Carolina Saleiro[1], Diana de Campos[1], Rogério Teixeira[2], Ana Rita M. Gomes[1], João Lopes[1], José Pedro Sousa[1], Luís Puga[1], Dilma Fernandes[1], Joana Maria Ribeiro[1], Marco Costa[1], Lino Gonçalves[2]

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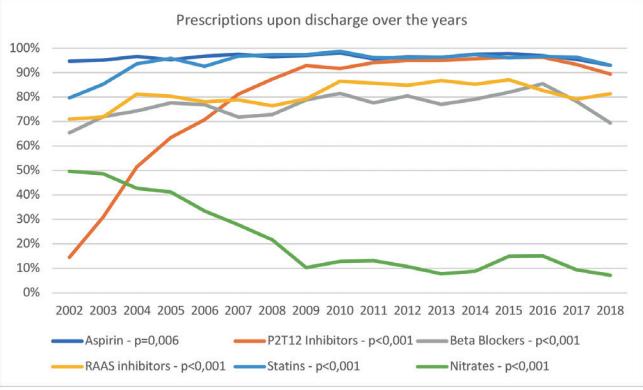
Introduction: Global Longitudinal strain (GLS) is emerging as an accurate parameter for the assessment of early left ventricular dysfunction. Like wall motion abnormalities, territorial longitudinal strain (TLS) may have a role to predict the culprit coronary artery in the setting of an acute coronary syndrome (ACS). Nevertheless, the role of TLS in this particular field is still unclear.
Objectives: To assess the ability of 2D TLS to predict coronary artery culprit stenosis in ACS.
Methods: Patients admitted to a single coronary care unit with a diagnosis of ACS had their clinical, angiographic and echocardiographic data evaluated. GLS was retrospectively assessed in a single software, in a total of 85 patients. TLS was calculated for each coronary artery (left anterior descending artery (LAD), left circumflex artery (LCX) and right coronary artery (RCA) as the average strain in segments in the theoretical perfusion territory of the artery. The absolute TLS value |x| was used for a simpler interpretation. ROC analysis was used to determine the ability of TLS to distinguish patients with a given coronary artery significant stenosis (defined as ≥ 75% stenosis). The cut-off value to predict stenosis was derived from the Youden index.
Results: Eighty percent of the patients were male, with a mean age 65 ± 11 years old. The majority (48%) was admitted with non-ST elevation myocardial infarction. Thirty-five had multivessel vessel disease; 54% of the patients had LAD stenosis ≥ 75%; 27% had LCX stenosis; and 44% had RCA stenosis. The average TLS for LAD territory was 16.4 ± 5.2%, and the area under the curve (AUC) was 0.71 (95%CI 0.60-0.82, p = 0.001). Mean TLS for RCA segments was 15.2 ± 4.7% with an AUC of 0.67 (95%CI 0.55-0.79, p = 0.008). Only TLS in LCX territory could not predict LCX stenosis, with an AUC 0.47 (95%CI 0.34-0.63, p = 0.85). The best TLS cut point to predict LAD stenosis was -16.4% and for RCA was -13.2%. Wall motion abnormalities predicted only correctly stenosis in the LAD territory: AUC 0.70 (95%CI 0.59-0.81, p = 0.002).
Conclusions: Territorial longitudinal strain efficiently identified the culprit lesion in the LAD and RCA but not to the LCX territories. It seems to add extra value in the acute setting, primarily by better identifying RCA lesions when compared to with wall motion abnormalities.

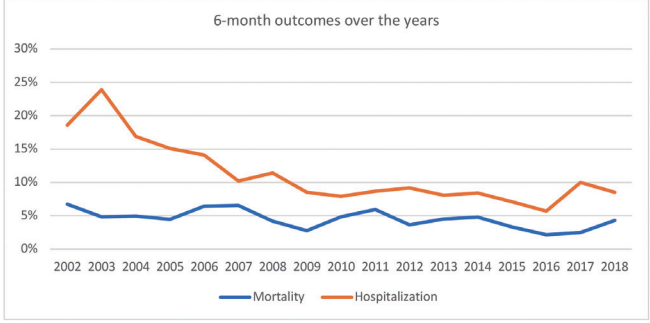
P 253. EVOLUTION OF HOSPITAL DISCHARGE MEDICATION AND 6 MONTHS OUTCOMES OF ST-SEGMENT ELEVATION MYOCARDIAL INFARCTION PATIENTS IN PORTUGAL OVER THE YEARS

João Sousa Bispo[1], Teresa Mota[2], Raquel Fernandes[3], Pedro Azevedo[2], João Guedes[2], Daniela Carvalho[2], Dina Bento[2], Nuno Marques[1], Jorge Mimoso[2], Ilídio de Jesus[3]

[1]Centro Hospitalar do Algarve, EPE/Hospital de Faro. [2]Centro Hospitalar e Universitário do Algarve. [3]Centro Hospitalar e Universitário de Coimbra.

Objectives: To assess the evolution of hospital discharge management, 6 months hospitalization and mortality over the years of all patients admitted with ST segment elevation myocardial infarction (STEMI) in Portugal.
Methods: A nationwide electronic prospective registry that included all patients admitted to Portuguese hospitals with a diagnosis of Acute Coronary Syndrome since 2002 until 2018 was used to collect all data relative to patients admitted with a STEMI diagnosis during that time frame. Data on demographic data, clinical status, revascularization strategy, discharge medication and 6 months hospitalization and mortality were obtained. We compared the data and its evolution over the years to assess for trends. For statistical analysis, Qui-square tests were used to assess trends in categorical variables, and Kruskal-Wallis tests were used to assess trends in numerical variables. A p-value < 0.05 was considered statistically significant.
Results: A total of 23807 patients were admitted for STEMI in Portuguese hospitals, 74.3% were male and average age of 63.9 ± 13.6 years. We report a progressive and significant increase the use of primary angioplasty versus fibrinolysis (24.3% to 98.4%, p < 0.001), in coronary angioplasties (36.4% to 73.2%, p < 0.001), in the use of drug-eluting stents (0% to 70.1%, p < 0.001), and a decrease in the patients that underwent surgery (6.8% to 1.3%, p < 0.001) and intra-aortic balloon pump (1.8% to 0%, p = 0.009), resulting in a decrease in in-hospital mortality from 9.9% to 6.1% (p < 0.001). At discharge,





P 253 Figure

we note a progressive increase in the prescription of P2Y12 inhibitors (21.1% to 95.2%, p < 0.001), beta-blockers (68.8% to 83.8%, p < 0.001), RAAS inhibitors (69.5% to 86.7%, p < 0.001) and statins (79.6% to 94.9%, p < 0.001), while the prescription of aspirin (94.1% to 94.8%, p = 0.428), calcium channel blockers (5.3% to 5.6%, p < 0.684) stayed stable, and there was a decrease in the prescription of nitrates (52.9% to 5.8%, p < 0.001). Hospital admissions at 6 months consistently and progressively reduced over time (18.6% to 8.5%, p < 0.001) as well as mortality (6.7% to 4.3%, p < 0.001).
Conclusions: Post discharge treatment of STEMI patients in Portuguese hospitals has evolved according to guidelines, with higher prescription of medication proven to reduce outcomes, resulting in lower hospitalization rates and mortality.

P 254. FRAILTY AND ST-ELEVATION MYOCARDIAL INFARCTION-IMPROVED OUTCOMES AFTER AN INVASIVE STRATEGY

Diogo Santos-Ferreira[1], Hélder Santos[2], Guilherme Pessoa-Amorim[3], André Azul Freitas[4], Adriana Belo[5], Cristina Gavina[6], Rui Terenas Baptista[4], Sílvia Monteiro[6], em nome dos investigadores do Registo Nacional de Síndromes Coronários Agudos[5]

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Introduction: Frailty is common in patients presenting with ST-segment elevation myocardial infarction (STEMI). Current guidelines recommend an invasive approach regardless of functional status. However, it is uncertain whether the potential benefits of this strategy outweigh associated risks in this population.
Methods: We conducted a retrospective multicenter nationwide analysis of 5,422 STEMI episodes between 2010-2019. A deficit-accumulation model was used to create a frailty index (FI), comprising 22 features (not including age). Frailty was initially defined as FI > 0.25.
Results: A total of 511 (9.4%) STEMI patients were considered frail. Frailty was associated with increased Killip-Kimball class and GRACE score. Coronariography, percutaneous coronary intervention (PCI) and coronary artery bypass graft were less frequently performed in frail patients, who were offered radial access less often, and had multivessel disease more frequently. In-hospital use of P2Y12 inhibitors, beta-blockers, and ACEIs/ARBs was also less common. Frail patients had longer in-hospital stay and increased in-hospital all-cause and cardiovascular (CV) mortality. At discharge, aspirin, P2Y12 inhibitors and beta-blockers were less frequently prescribed. After 1-year, frail patients had increased all-cause and CV hospitalization and all-cause mortality. Using receiver-operator-characteristics curve analysis, a FI cutoff of 0.11 yielded the best accuracy to predict all-cause 1-year mortality (area under the curve: 0.629, p < 0.001) this cutoff was subsequently used to define frailty. Coronariography and PCI were associated with improved in-hospital and 1-year outcomes, regardless of frailty status or GRACE score (p < 0.001 for all comparisons). Although frailty status modified the risk reduction from coronariography in in-hospital outcomes (Wald test p < 0.05), the prognostic benefit of coronariography in 1-year outcomes, and PCI in both in-hospital and 1-year outcomes, remained unchanged (Wald test p > 0.05 for all comparisons).
Conclusions: Frail STEMI patients are less frequently offered guideline-recommended therapy and invasive procedures. Coronariography and PCI are associated with short- and long-term prognostic benefits irrespective of frailty status or GRACE score. Increased adherence to current recommendations might improve clinical outcomes in frail STEMI patients.

P 255. OPTIMAL TIMING OF INVASIVE STRATEGY IN PATIENTS WITH DIABETES AND NSTE-ACS

Ana Neto[1], Cláudio Espada-Guerreiro[2], Daniel Faria[3], Daniel Nascimento Matos[4], Rui Baptista[5], Cristina Gavina[5], Sílvia Monteiro[6], em nome dos investigadores do Registo Nacional de Síndromes Coronárias Agudas[7]

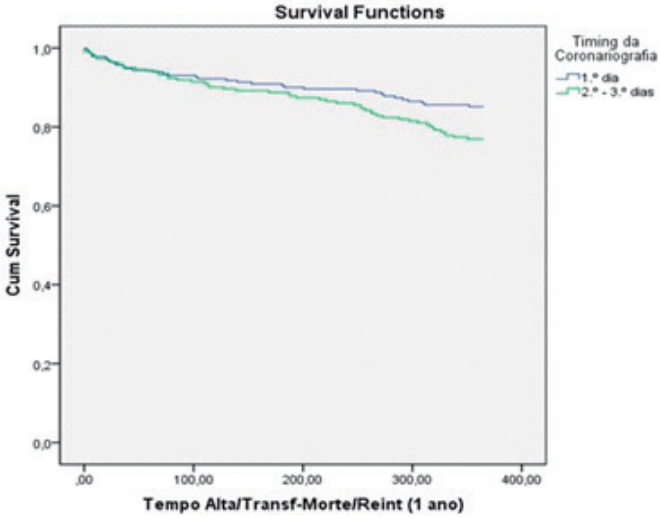
[1]Centro Hospitalar do Tâmega e Sousa, EPE/Hospital Padre Américo, Vale do Sousa. [2]Centro Hospitalar de Vila Nova de Gaia/Espinho. [3]Hospital Prof. Doutor Fernando Fonseca. [4]Centro Hospitalar de Lisboa Ocidental, EPE/Hospital de Santa Cruz. [5]. [6]Centro Hospitalar e Universitário de Coimbra/Hospitais da Universidade de Coimbra. [7]CNCDC-Centro Nacional de Coleção de Dados em Cardiologia.

Introduction: An immediate invasive strategy is warranted for all very high-risk non-ST-elevation acute coronary syndrome (NSTE-ACS) patients (pts). For all other pts, an invasive strategy within 24-72 hours is recommended depending on their risk stratification. Although being considered a high-risk subgroup of pts, diabetes is not included in the GRACE risk score nor is it a

Case Processing Summary

Timing da Coronariografia	Total N	N of Events	Censored	
			N	Percent
1.º dia	231	34	197	85,3%
2.º - 3.º dias	222	51	171	77,0%
Overall	453	85	368	81,2%

p-Valor do Teste LogRank 0,034



P 255 Figure

criterion for early (< 24 hours) coronary angiography. The aim of this study was to assess if a routine early invasive strategy should be preferred in NSTE-ACS pts with diabetes.

Methods: We performed a retrospective analysis of diabetic pts admitted with NSTE-ACS included in a nationwide registry of ACS between 2010 and 2019, whom were in Killip ≤ III and had a GRACE score ≤ 140 on admission. A 1-year (1y) follow-up was made through registry consultation and phone call by a Cardiologist. Patients were compared according to the timing of angiography: first 24h (G1) vs 48-72h (G2). The primary endpoint was a composite of all-cause mortality and hospital admissions from any cause. Secondary endpoints were all-cause mortality, cardiovascular mortality and hospital admissions.

Results: A total of 995 pts were included (26.9% female, mean age 63 ± 10 years), 522 (52.5%) of whom were submitted to early angiography (G1). G1 pts had lower prevalence of previous PCI (19.2% vs G2 24.8%, p = 0.033), chronic heart failure (1.5% vs G2 4.2%, p = 0.011), peripheral artery disease (5.2% vs G2 8.9%, p = 0.023) and chronic kidney disease (2.9% vs G2 8.9%, p = 0.026). Chest pain was the predominant presenting symptom in both groups (98.1 vs G2 94.5%, p = 0.003). There were no differences between groups regarding hemodynamic status or Killip class at presentation. Concerning in-hospital treatment, G1 had more femoral approach for angiography (21.5 vs G2 25.9%, p = 0.027). G1 pts had fewer heart failure sings during hospitalization (2.7 vs G2 5.7%, p = 0.017). There were no differences in medication options during in-hospital course. G1 pts had fewer 1y FUP primary outcome (14.7 vs G2 23.0%, p = 0.034), particularly because of a lower incidence of hospital admissions during FUP (14.0 vs G2 21.4%, p = 0.053).

Conclusions: In a diabetic population with NSTE-ACS without high-risk features (GRACE ≤ 140 and Killip ≤ III), an early invasive strategy appears to be associated with a lower rate of all-cause death and hospital admissions, mostly attributable to a lower rate of all-cause hospital admissions.

P 256. HAEMORRHAGIC RISK OF ONCOLOGY PATIENTS WITH MYOCARDIAL INFARCTION

Tânia Branco Mano[1], Ana Teresa Timóteo[1], Sílvia Aguiar Rosa [1], Rui Cruz Ferreira[1], em nome dos investigadores do Registo Nacional de Síndromes Coronárias Agudas[2]

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Introduction: The approach of acute coronary syndrome (ACS) in oncology patients (pts) is particularly challenging due to higher haemorrhagic risk.

Objectives and methods: Retrospective analysis of pts included in an ACS registry between October 2010 and September 2019 with cancer (active or diagnosed in the last 5 years). The aim was to evaluate the safety and efficacy of single vs dual antiplatelet therapy (DAPT), anticoagulation and revascularization strategy. Primary safety endpoint: major haemorrhagic events (MHE). Secondary efficacy endpoints: ischemic events, intra-hospital (IH) mortality; combined efficacy endpoint of IH mortality, reinfarction and ischemic stroke.

Results: 934 pts (5%) of a total of 18,845 pts with ACS had diagnosis of cancer. Compare to pts without malignancy, oncology pts were older (73 ± 11 vs 66 ± 14 years, p < 0.001), had more atrial fibrillation (AF) (10% vs 6.9%, p < 0.001), lower left ventricle ejection fraction (LVEF) (49 ± 12 vs 51 ± 12, p < 0.001), underwent invasive coronary angiography (ICA) (78.5% vs 88.3%, p < 0.001) and angioplasty (59.4% vs 68.8%, p < 0.001) less often. Oncology pts presented more events: MHE (2.9% vs 1.5%, p < 0.001), mortality (5.8% vs 3.4%, p < 0.001) and combined endpoint (7.4% vs 4.9%, p < 0.001). Within the oncology population: pts with MHE (N = 27) had more previous haemorrhagic events (22% vs 4%, p < 0.001), AF (27% vs 9.5%, p = 0.011), higher creatinine level (1.8 vs 1.1 mg/dL, p < 0.001), ST-Elevation Myocardial Infarction (STEMI) (59% vs 40%, p = 0.049), more use of anticoagulation (15% vs 4.5%, p = 0.037) although less use of DAPT (74% vs 89.5%, p = 0.038) or acetylsalicylic acid (ASA) (85% vs 98%, p = 0.013) and higher IHmortality (22.2% vs 5.3%, p = 0.003). In multivariate analysis, previous haemorrhagic events, AF, STEMI and no ASA were independent predictors of MHE. Pts who reached combined endpoint (N = 69) were older (78 ± 10 vs 72 ± 10 years, p < 0.001), had more renal impairment (22% vs 10%, p = 0.001), thrombocytopenia (25% vs 12.5%, p = 0.008), STEMI (59% vs 40%, p = 0.001), Killip class > I (46% vs 18%, p < 0.001), lower LVEF (42 ± 14% vs 49 ± 12%, p < 0.001), less prescribe with antiplatelet therapy: no antiplatelet (4.3% vs 0.6%, p = 0.015), single (17.4% vs 9.5%, p = 0.015) or dual (78% vs 90%, p < 0.001) and with neurohormonal therapy, less submitted to ICA (54% vs 80.5%, p < 0.001) and a trend to less angioplasty (49% vs 60%, p = 0.074). In multivariate analysis, STEMI, Killip > I, creatinine > 2 mg/dL, thrombocytopenia, LVEF < 40%, no ACE inhibitors therapy and no ICA were independent predictors of the combined endpoint (Table).

Combined endpoint (mortality, reinfarction and ischemic stroke) of oncology ACS patients

Variable	Combined Endpoint (N = 69)	Without Combined Endpoint (N = 865)	P value	OR	95%CI
Male gender (%)	68.1	69.6	0.797	0.93	0.55-1.58
Age (years)	78 ± 10	72 ± 11	< 0.001	-	-
Previous ACS (%)	22.1	23.7	0.756	0.91	0.50-1.65
Previous Heart Failure (%)	13.2	9.1	0.255	1.53	0.73-3.21
Previous stroke (%)	13.2	8.3	0.160	1.69	0.81-3.56
Renal impairment (%)	22.4	9.9	0.001	2.63	1.42-4.87
STEMI (%)	59.4	39.4	0.001	2.25	1.37-3.71
Killip class >I (%)	46.4	18.4	< 0.001	3.84	2.32-6.36
Atrial fibrillation (%)	17.4	9.4	0.034	1	1.20-1.87
Minimum haemoglobin during hospitalization (mg/dL)	11 ± 1.9	11.6 ± 2	0.022	-	-
Platelet < 150,000/mm^3 (%)	24.6	12.5	0.008	2.28	1.22-4.24
Maximum creatinine level (mg/dL)	2.3 ± 1.7	1.5 ± 1.5	< 0.001	-	-
BNP (pg/ml)	1269 ± 1200	603 ± 784	0.002	-	-
Mean LVEF (%)	42 ± 14	49 ± 12	< 0.001	-	-
Coronariography realization (%)	52.6	80.5	< 0.001	0.48	0.41-0.57
Angioplasty (%)	49.3	60.2	0.074	0.64	0.39-1.05
> 50% stenosis (%)					
Left main trunk	20	10.8	0.100	2.07	0.87-4.92
1 vessel disease	35.3	38	0.751	0.89	0.43-1.83
Multivessel disease	29.4	25	0.229	1.53	0.76-3.07
During hospitalization (%)					
ASA	91.3	97.9	0.006	0.22	0.09-0.58
P2Y2 inhibitors	82.6	91.4	0.015	0.44	0.23-0.87
Single AAG	17.4	9.5	< 0.001	2.01	1.04-3.90
Dual AAG	78.3	89.9	< 0.001	0.40	0.22-0.74
Oral Anticoagulation	4.8	3.6	0.049	1.36	1.00-1.86
EV Anticoagulation*	85.5	87	0.717	0.88	0.44-1.77
Beta-blockers	52.2	79.3	< 0.001	0.28	0.17-0.47
ACE inhibitors or ARB	53.6	85.8	< 0.001	0.19	0.12-0.32
Statin	73.9	94.2	< 0.001	0.17	0.09-0.32
Multivariate analysis					
STEMI	-	-	< 0.001	3.74	1.84-7.62
Killip class > I	-	-	0.030	2.21	1.08-4.52
Creatinine >2 mg/dL	-	-	0.002	3.11	1.53-6.30
Platelet < 150,000/mm^3	-	-	0.003	3.29	1.50-7.21
ACE inhibitors	-	-	0.008	0.40	0.20-0.79
Coronariography realization	-	-	< 0.001	0.24	0.12-0.48
LVEF < 40%	-	-	0.009	2.54	1.26-5.09

AAG: antiaggregation therapy; ACE - Angiotensin-converting enzyme; ACS: Acute Coronary Syndrome; ARB - angiotensin-receptor blockers; ASA - acetylsalicylic acid; BNP: brain natriuretic peptide; EV: Endovenous; LVEF: left ventricle ejection fraction. *Unfractionated Heparin, enoxaparin, fondaparinux and bivalirudin.

Conclusions: Oncology pts had worse prognosis than general population with ACS. MHE were mainly related to previous haemorrhagic event and AF, associated with anticoagulation strategy. On the other hand, IH mortality, reinfarction and ischaemic stroke were associated with lower use of antiplatelet and neurohormonal therapy and ICA.

P 257. SMOKERS' PARADOX IN ACUTE CORONARY SYNDROME: REALITY OR FICTION?

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Introduction: Smoking is a recognized and an important risk factor associated with acute coronary syndrome (ACS). Ischemia pre-exposition of smokers has been used to explain a paradoxally benefic effect of smoking in post-ACS major complications and survival outcomes. However, other clinical factors may eventually explain this apparently benefic effect.
Objectives: Evaluate, between smokers and non-smokers ACS patients (pts), the incidence of mechanical complications (MC), as they are a major determinant of prognosis.
Methods: Retrospective study based on the Portuguese National Registry ACS, including patients who were admitted with the diagnoses of ACS between October 2010 and January 2019. Two groups (smokers *vs* non-smokers) were compared, based on the presence or absence of a mechanical complication (MC) after ACS. Patients whose smoking status was unknown were excluded. Papillary muscle rupture, interventricular communication and septum rupture were MC considered.
Results: Of a total of 19,430 patients admitted with ACS in this period, only 1,614 were considered after applying exclusion criteria. There were 4,324 smokers (31.8%), and 19 of them (0.4%) developed a MC. In the non-smokers group more pts had MC: 99 of 9220 (1.1%), OR 0.41 (0.25-10.67), p < 0.001. Demographic and clinical patient characteristics of both groups are shown in table 1. Smokers were younger and had less cardiovascular comorbidities and less time since symptoms until 1st medical contact.

Clinical and demographic characteristics of two groups of patients admitted with ACS diagnosis. HTA- hypertension; DM- diabetes mellitus type 2, STEMI- ST elevation myocardial infarction; LAD-left anterior descendent artery P- Value< 0,05 statistic significance considered

	Smokers	Non-smokers	P- value
Sex (% masculine gender)	87,3	64,1	< 0.001
Age (mean in years)	55	70	< 0.001
HTA (%)	44.9	73.2	< 0.001
DM (%)	15.5	32.3	< 0.001
Dyslipidemia (%)	47.3	53.5	< 0.001
STEMI (%)	59.2	46.4	< 0.001
> 50% LAD stenosis	67.8	58.5	< 0.001
Time symptoms-1st medical contact (mean in minutes)	298	378	< 0.001
Mortality (%)	1.3	4.5	< 0.001
Total of patients (%)	4,324	9,220	
Total of MC (%)	19 (0,4%)	99 (1,1%)	< 0.001

Conclusions: Smokers had fewer post-ACS MC. However, this data analysis show that other important demographic and clinical differences must be considered: younger age, less cardiovascular comorbidities and less time since symptoms until 1st medical contact in the smokers group are some of them.

Painel 8 - Doença Coronária 12

P 258. BLEEDING PREDICTORS IN ACUTE CORONARY SYNDROME: DOES THE AGE OR CLINICAL PRESENTATION MATTERS?

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Introduction: Bleeding is a quite common non-cardiac complication of acute coronary syndrome (ACS) and is associated with a negative prognosis impact.
Results: To determinate the predictors of inhospital major bleeding (IHMB) in ACS and to evaluate whether they differ according to age and clinical presentation.
Methods: A multicentric retrospective study which analysed 25,524 patients (pts) with ACS, 25141 without and 383 with IHMB. By multivariate analysis we determined IHMB predictors and evaluated the differences between age groups (< 80 years; ≥ 80 years) and clinical presentation- ST elevation myocardial infarction (STEMI) or non-ST elevation ACS (NSTEACS).
Results: By multivariate analysis we found 15 significant IHMB predictors (pvalue < 0.05): age ≥ 75 years, hypertension, previous angina, pulmonary disease, previous bleeding, atypical presentation (without pain), cardiac arrest, admission heart rate (HR) > 100 bpm, Killip4 at admission, ST-elevation, admission haemoglobin (Hb) < 10 g/dL, aspirin or Vitamin K antagonist (VKA) or ivabradine as previous medication and glycoprotein IIb/IIIa inhibitors (GPIIb/IIIa) use. Then, we made a sub-analysis in STEMI pts which revealed that IHMB predictors of pts < 80 years were: female gender, age ≥ 75 years, chronic kidney disease (CKD), active neoplasm, previous bleeding, atypical presentation, cardiac arrest, admission HR > 100 bpm, Killip IV on admission and GPIIb/IIIa use. By contrast, IHMB predictors of pts with ≥ 80 years were: valvular disease, atypical presentation, aspirin as previous medication and GPIIb/IIIa use. Finally, we made a sub-analysis in NSTACS pts which revealed that IHMB predictors of pts < 80 years were: previous angina, CKD, previous bleeding, cardiac arrest, Killip≥ 2 at admission, admission Hb < 10 g/dL and VKA as previous medication. Conversely, IHMB predictors of pts with ≥ 80 years were previous bleeding, cardiac arrest and absence of normal QRS. In addition, by multivariate analysis we found that IHMB had an impact on inhospital mortality (OR = 2.2; p value < 0.001), however, by Cox regression there wasn't an impact on 1-year mortality.
Conclusions: This study suggests that IHMB has impact on inhospital mortality and that its predictors differ with age and clinical presentation. The most powerful predictor was previous bleeding. Considering the importance of IHMB, increased efforts are needed to tailor antithrombotic therapy according to age, renal function and other comorbidities.

P 259. ACUTE CORONARY SYNDROME AND STRESS: IS THERE A RELATIONSHIP?

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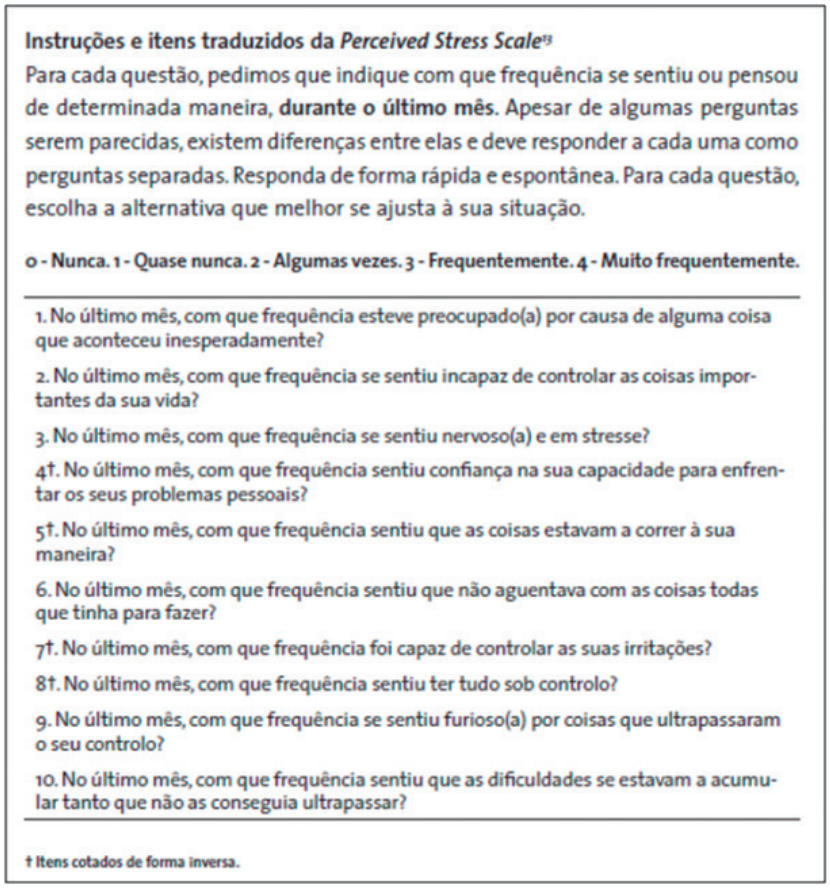
Introduction: Acute Coronary syndrome (ACS) is a result of a complex physiological process with several dynamic factors that can influence its manifestation. Some authors advocate that stress can be a critical risk factor in ACS. The Perceived Stress Scale (PSS-10) is one of the best instruments to estimate stress in clinical practice.
Objectives: Evaluate the perceived stress levels in patients admitted for ACS.
Methods: Single-centre prospective study, engaging patients hospitalized with ACS between 20/03/2019-15/12/2019. All patients completed the PSS-



Instruções e itens traduzidos da *Perceived Stress Scale*[13]

Para cada questão, pedimos que indique com que frequência se sentiu ou pensou de determinada maneira, **durante o último mês**. Apesar de algumas perguntas serem parecidas, existem diferenças entre elas e deve responder a cada uma como perguntas separadas. Responda de forma rápida e espontânea. Para cada questão, escolha a alternativa que melhor se ajusta à sua situação.

0 - Nunca. 1 - Quase nunca. 2 - Algumas vezes. 3 - Frequentemente. 4 - Muito frequentemente.

1. No último mês, com que frequência esteve preocupado(a) por causa de alguma coisa que aconteceu inesperadamente?
2. No último mês, com que frequência se sentiu incapaz de controlar as coisas importantes da sua vida?
3. No último mês, com que frequência se sentiu nervoso(a) e em stresse?
4†. No último mês, com que frequência sentiu confiança na sua capacidade para enfrentar os seus problemas pessoais?
5†. No último mês, com que frequência sentiu que as coisas estavam a correr à sua maneira?
6. No último mês, com que frequência sentiu que não aguentava com as coisas todas que tinha para fazer?
7†. No último mês, com que frequência foi capaz de controlar as suas irritações?
8†. No último mês, com que frequência sentiu ter tudo sob controlo?
9. No último mês, com que frequência se sentiu furioso(a) por coisas que ultrapassaram o seu controlo?
10. No último mês, com que frequência sentiu que as dificuldades se estavam a acumular tanto que não as conseguia ultrapassar?

† Itens cotados de forma inversa.

P 259 Figure

10 during its hospitalization period. PSS-10 was validated in the Portuguese population by Trigo, *et al*, with 10 questions and 5 possible answers (Figure) in which each question was punctuated between 0 and 4 (maximum 40 points), allowing us to estimate the level of stress in context of physical disease. The pathological stress level was established in the Portuguese population as > 20 points in males and > 22 points in females. Frailty was defined as a presence of at least 5 of the follow comorbidities: smoker, arterial hypertension, diabetes, dyslipidemia, ischemic cardiomyopathy, valvopathy, stroke, heart failure, chronical kidney disease, peripheral artery disease, dementia, neoplasia and chronic obstructive pulmonary disease. t-Student tests were used to compare categorical and continuous variables between groups and the Portuguese population. Linear regression was used to establish the relation between the frailty and the stress levels.
Results: 128 patients with ACS were included, 27.35% presented ST-Elevation Myocardial Infarction (STEMI), 38.28% of the ACS were female, mean age 64.51 ± 12.78 years and a medium PSS punctuation of 20.02 ± 6.81. According with Trigo, et al, female Portuguese population presented a medium 13.6 ± 6.3 points and females with previous history of ACS had 20.8 ± 9.8 points. On the other hand, male Portuguese population presented a medium 16.6 ± 6.3 points and males with previous history of ACS had 13.4 ± 7.9 points. Our female population with ACS presented 23.26 ± 6.28 points on the PSS-10 punctuation, revealing significant differences compared to stable coronary disease and the general population. As well as ACS male with 17.81 ± 6.27 points, p < 0.001, compared to general and stable coronary disease population. Both genders had significant differences in the ACS, p < 0.001. Regarding STEMI patients had 18.72 ± 8.50 points while non-STEMI patients presented 20.93 ± 6.12 points, p = 0.128. ACS frail patients had 20.59 ± 6.48 points compared to non-frail 20.93 ± 6.12 points, p = 0.816, nevertheless higher stress levels compared to the general population, p < 0.001. Frailty was a predictor of higher stress levels in ACS patients (R2 0.63), p = 0.004.
Conclusions: ACS presented higher stress levels on PSS-10, suggesting a relationship between stress levels and ACS manifestation. Frailty was higher PPS-10 punctuation.

P 260. GLOBAL LONGITUDINAL STRAIN AS A PREDICTOR OF CARDIOVASCULAR EVENTS AND MORTALITY AFTER MYOCARDIAL INFARCTION

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Introduction: Global longitudinal strain (GLS) is an earlier marker of systolic dysfunction than other methods used in routine clinical practice, such as ejection fraction (EF). This study aimed to compare the impact of different measures of left ventricle systolic function on prognosis of patients presenting with acute myocardial infarction (AMI).
Methods: Retrospective analysis of 170 patients admitted due to AMI. We included EF measurement using Simpson biplane, lateral mitral annulus plane systolic excursion (MAPSE), GLS measured by "speckle tracking", systolic index of contractility (dp/dt) and cardiac output (CO) assessed by pulsed-wave doppler in the analysis. All measurements were made by the same operator. Mann-Whitney U was used for univariate analysis and logistic regression for multivariable analysis. Kaplan-Meier survival plots and Cox-regression analysis were performed to assess differences in 6-month (6MM) and 12-month mortality (12MM), and in the combined endpoint of cardiovascular event or death at 12 months (12CVM). ROC curve analysis was performed to evaluate mortality descrimination with systolic function measures.
Results: Mean patient age was 64 (± 14) years; 74% were men. 49% had ST elevation AMI. Mean EF was 49% (± 10), GLS -14 (± 5.1), dp/dt 1,009 mmHg/s (± 345), MAPSE 11.1 (± 2.6), CO 4.3 l/min (± 1.4). 6MM and 12MM were 4.6% and 15%, respectively. A statistically significant association between 6MM was found in univariate analysis for GLS only (p = 0.04). A significant association with 12MM in univariate analysis was noted for EF, MAPSE and GLS (p < 0.001). There was an association in univariate analysis between EF (p = 0.019), MAPSE (0.006), GLS (< 0.001) and 12CVM. In multivariable

analysis, GLS was the only variable independently associated with 12MM (Exp(B): 0.663, p = 0.009) and 12CVM (Exp(B): 0.779, p = 0.025). Kaplan-Meyer survival plots revealed that a compromised GLS (< -16) was associated with significantly increased 12MM (24.7% vs 2.4%, χ^2: 9.085, p = 0.003) and 12CVM (27.6% vs 9.6%, χ^2: 5.003, p = 0.025). When stratified by EF > 40%, GLS was still a statistically significant predictor of 12MM (22.7% vs 2.4%, χ^2: 7.999, p = 0.005) in this subgroup. Cox-regression analysis including GLS and other variables such as age, number of affected coronary vessels and EF, demonstrated a statistically significant association between 12MM and GLS (HR: 0.62, p = 0.007), as for 12CVM (HR: 0.69, p = 0.003). After AMI, for each positive unit increase in GLS, hazard of 12CVM and 12MM decreases by 69% and 62%, respectively. ROC curve analysis revealed excellent discrimination power for 12MM prediction of GLS (AUC: 0.85, p < 0.001).
Conclusions: GLS is an independent predictor of 12MM and 12CVM in patients presenting with AMI. Its discriminating ability outperforms other measures of systolic function, including EF. Routine measurement of GLS should be considered in these patients.

P 261. GENDER IN NON- ST ELEVATION MYOCARDIAL INFARCTION AND UNSTABLE ANGINA: IS THERE ANY EQUALITY?

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Joana Ribeiro[1], Carolina Lourenço[1], Lino Gonçalves[1],
em nome dos investigadores do registo nacional SCA-ProACS[2]

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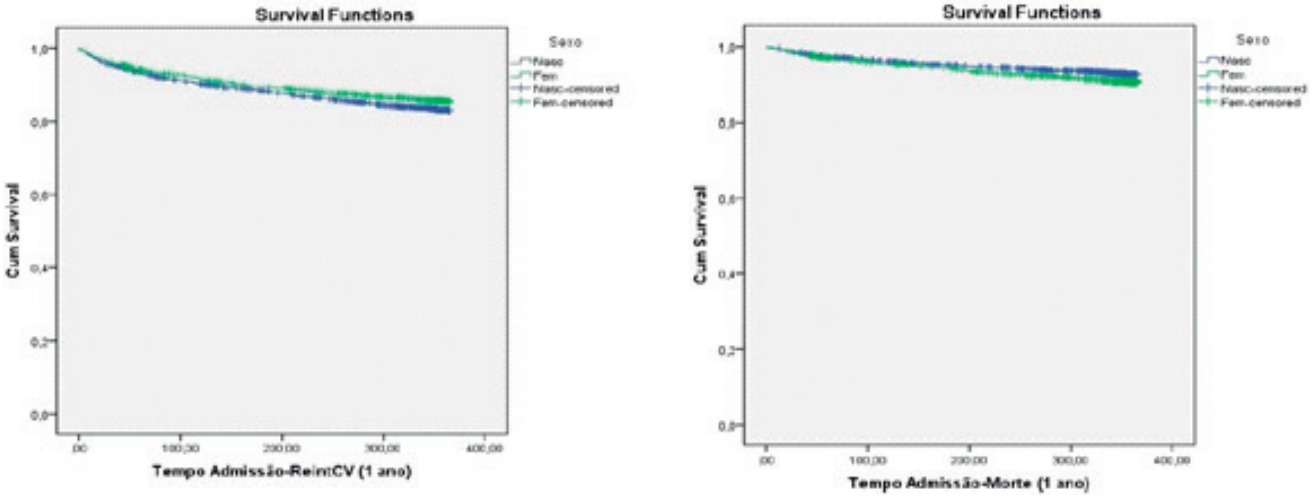
Introduction: Historically, women (W) with acute coronary syndrome (ACS) have worse outcomes compared with men (M). This fact may occur due to gender-specific differences in the presentation and management of patients (P), which were mainly observed in studies dealing with ST-segment elevation infarction (STEMI). There seems to be a gap of knowledge in gender-specific differences in non- ST elevation myocardial infarction (NSTEMI) and unstable angina (UA).
Objectives: Assess gender-specific differences in presentation, treatment and outcomes in NSTEMI and UA patients.
Methods: A retrospective cohort study from consecutive ACS patients enrolled in a multicentre national registry from October 2010 to December 2018 was conducted, identifying 11,394 P admitted with NSTEMI or UA. Demographic, clinical and treatment variables were compared between male gender and female gender P. A Cox multivariate regression was performed to evaluate predictor factors of stablished endpoints: mortality at 1-year (1y) and cardiovascular (CV) hospitalization at 1-year.
Results: A total 11,394 P were included, 8,145 M (71.5%) and 3,249 W (28.5%), mean age of 68 ± 13. W, comparing with M, had higher age (72 ± 12 vs 66 ± 13, p = 0.001), higher prevalence of hypertension (85% vs 72%, p = 0.001) and diabetes (41% vs 34%, p = 0.001) and longer time from symptoms to hospital admission (360 minutes vs 297 minutes, p = 0.001). Chest pain was less frequent as first symptom in W (85.6% vs 91.3%, p = 0.001). In medical treatment, W had higher chance of not having administration of a loading dose of P2Y12 inhibitor (22.1% vs 18.1, p = 0.001) and of being medicated with clopidogrel (85.7% vs 82.1%, p = 0.002). At discharge, W were less frequently medicated with an angiotensin-converting enzyme (ACE) inhibitor or an angiotensin II receptor blocker (82.6% vs 84.4, p = 0.028). Coronary angiography was less frequently performed in W (77.3% vs 85.7%, p = 0.001) and showed no coronary disease more frequently in the female gender (12.4% vs 4.8%, p = 0.001). In-hospital mortality was higher in W (2.9% vs 2.1%), but in the multivariate analysis the female gender was not an independent predictor of in-hospital mortality (OR 1.05 [0.67-1.65], p = 0.823). 1-year mortality was higher in W (9.2% vs 7.3%) and 1-year CV hospitalization was higher in M (16.8% vs 14.4%). After adjusting for covariates in Cox regression analysis, difference was still significant for mortality (HR = 1.274 [1.038-1.564], p = 0.02) and hospitalization (HR = 0.852 [0.726-0.998], p = 0.047).
Conclusions: In this NSTEMI and UA cohort, there are important gender-specific differences in comorbidities, diagnosis, management and outcomes. Gender was an independent predictor of 1-year mortality and 1-year CV hospitalization, but not an independent predictor for in-hospital mortality.

P 262. FIVE YEARS EXPERIENCE OF DRUG-COATED BALLOON ANGIOPLASTY IN THE TREATMENT OF CORONARY ARTERY DISEASE.

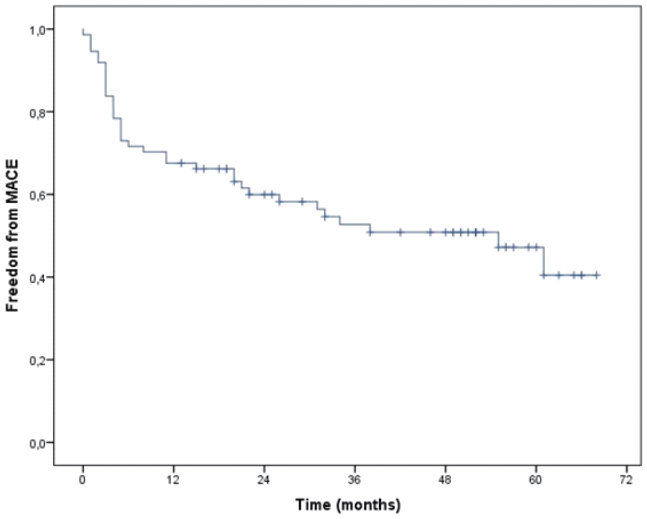
C. Xavier Resende[1], Marta Silva[2], Francisca Saraiva[2], Rui André Rodrigues[2], Pedro Diogo[2], Sofia Torres[2], Alzira Nunes[2], Paulo Araújo[2], Ricardo Pinto[2], Tânia Proença[2], João Miguel Carvalho[1], João Carlos Silva[2], Maria Júlia Maciel[2]

[1]Centro Hospitalar de S. João, EPE. [2]Centro Hospitalar Universitário de São João.

Introduction: Drug-coated balloons (DCBs) have been used in percutaneous coronary interventions (PCI) in different clinical scenarios. Their role in the treatment of in-stent restenosis (ISR) has been recognized by European Society of Cardiology. Despite lack of recommendations in other settings, this emerging technology gained interest in the treatment of *de novo* lesions, namely in small vessel disease (SVD) and bifurcations, and some studies, including clinical trials, have shown encouraging results. Nevertheless, the use of DCBs is still a matter of debate and more data are needed to proof short and long-term efficiency.
Objectives: To evaluate in which clinical scenarios DEBs PCI were used and what were the overall outcomes.



P 261 Figure



Methods: Single center retrospective cohort including all patients (pts) who underwent paclitaxel DCB revascularization from January 2014 to December 2018. Baseline clinical and procedural characteristics were collected through clinical records. Major adverse cardiac events (MACE) were defined as the composite of all-causes of death, acute coronary syndrome (ACS) and restenosis of DCB treated vessel. Kaplan Meier curves were used to estimate cumulative survival and freedom from MACE. The mean follow-up time was 3 years, maximum of 5.6y (16% lost to follow-up).
Results: We analyzed 88 pts (72% male), mean age of 66 ± 10 years. The most prevalent cardiovascular risk factor was arterial hypertension (75%), followed by dyslipidemia (70%), diabetes (31%) and smoking (31%). DCB PCI was performed in ISR in 70.5% or due to SVD (29.5%). The majority of patients (93%) had a previous revascularization treatment (68 with PCI and 14 with bypass graft surgery) and 62% of pts ACS history. DCB PCI was more frequently used in the setting of ACS (NSTEMI: 36%; STEMI: 21%; unstable angina: 19%) than in stable angina (23%). Anterior descending artery was the most frequently treated vessel (44.3%) followed by right coronary (33%) and circumflex arteries (19.3%). All pts had a TIMI 3 flow at the end of the procedure except for 3 pts who needed a bailout stent treatment: one due to dissection and two due to residual stenosis. Cumulative survival and freedom from MACE (Figure) at 1, 3 and 5 years of follow-up were 92%, 87% and 87% and 68%, 53% and 47%, respectively and we found no differences between ISR and SVD treated groups (p = 0.656). (MACE consisted in ACS in 30% pts; restenosis of DCB treated vessels in 30% and death in 13%).
Conclusions: In our cohort DEBs were used more often in the setting of ISR as recommended in the ESC guidelines. Despite a high procedure success rate, we observed a low freedom from MACE at 3 yrs, that may be explained by the high risk population represented.

P 263. NEW ONSET PAROXYSMAL ATRIAL FIBRILLATION OCCURRENCE DURING HOSPITAL ADMISSION FOR ACUTE MYOCARDIAL INFARCTION IS NOT ASSOCIATED WITH ATRIAL FIBRILLATION RECURRENCE DURING FOLLOW-UP

José Maria Farinha[1], Marta Fonseca[1], Leonor Parreira[1], Rita Marinheiro[1], Ana Esteves[2], Joana Ferreira[1], António Pinheiro[1], Dinis Mesquita[1], Rui Caria[1]

[1]Centro Hospitalar de Setúbal, EPE/Hospital de São Bernardo. [2]Hospital de São Bernardo.

Introduction: Acute myocardial infarction (AMI) patients with atrial fibrillation (AF) have a worse short- and long-term prognosis. However, it is not known if a transient self-terminating short episode of AF during admission is associated with an increased risk for future AF.

Patient Characteristics	No AF (n = 505)	AF (n = 6)	*p*-value
Age in years, mean ± SD	67.6 ± 13.0	68.0 ± 17.0	0.946
Male gender, n (%)	357 (70.7)	1 (16.7)	0.010
BMI, median (IQR)	27.2 (24.8 – 30.1)	28.8 (22.8 – 34.4)	0.662
Smoker, n (%)	155 (30.7)	1 (16.7)	0.672
Hypertension, n (%)	340 (67.3)	5 (83.3)	0.669
Dyslipidemia, n (%)	272 (53.9)	5 (83.3)	0.226
Diabetes mellitus, n (%)	146 (28.9)	2 (33.3)	>0.999
Chronic Kidney Disease, n (%)	47 (9.3)	1 (16.7)	0.448
Cerebrovascular Disease, n (%)	39 (7.7)	0 (0.0)	>0.999
Previous Heart Failure, n (%)	17 (3.4)	2 (33.3)	0.018
Previous Coronary Artery Disease, n (%)	188 (37.2)	3 (50.0)	0.676
Previous PCI, n (%)	62 (12.3)	1 (16.7)	0.548
Previous CABG, n (%)	18 (3.6)	1 (16.7)	0.204
ST-Elevation Myocardial Infarction, n (%)	242 (47.9)	2 (33.3)	0.688
Diagnostic Coronary Angiography, n (%)	487 (96.4)	6 (100.0)	>0.999
1 vessel CAD, n (%)	105 (21.6)	1 (16.7)	>0.999
2 vessels CAD, n (%)	76 (15.6)	0 (0.0)	0.597
3 vessels CAD, n (%)	146 (30.0)	2 (33.3)	>0.999
Left Main Trunk CAD, n (%)	44 (9.0)	1 (16.7)	0.439
CABG stenosis, n (%)	7 (1.4)	1 (16.7)	0.092
PCI/CABG, n (%)	400 (82.1)	5 (83.3)	>0.999
LVEF > 50%, n (%)	328 (67.4)	3 (50.0)	0.378
LVEF 41 – 50%, n (%)	72 (14.8)	2 (33.3)	0.250
LVEF 30 – 40%, n (%)	50 (10.3)	0 (0.0)	>0.999
LVEF < 30%, n (%)	18 (3.7)	1 (16.7)	0.242
LVEF ≤ 40%, n (%)	68 (14.0)	1 (16.7)	>0.999
Killip and Kimball class > I, n (%)	35 (7.2)	0 (0.0)	>0.999
AF during admission	13 (2.6)	0 (0.0)	>0.999

P 263 Figure

Objectives: The aim of this study was to assess the risk for AF recurrence during follow-up, after a first short and self-terminating AF episode during admission for AMI.
Methods: We retrospectively studied consecutive patients admitted with AMI between 2011 and 2013. We excluded patients with previous diagnosed AF. We compared 2 groups of patients: with new onset AF and without AF. We analysed clinical characteristics, in-hospital evolution, and AF recurrence during follow-up.
Results: We studied 511 patients. Six patients had recurrent AF. During a mean follow-up time of 24.2 ± 11.5 months, 63/511 patients died. Patients with recurrent AF were more frequently females (p = 0.010) and had more frequently a previous diagnosis of heart failure (p = 0.018) (Table). New onset paroxysmal AF occurrence was not associated with AF recurrence during follow-up (p > 0.999) (Table).
Conclusions: In this group of patients, a brief and spontaneously terminated episode of paroxysmal atrial fibrillation during admission for AMI was not associated with AF recurrence during follow-up. Probably these patients would not have an indication for long term anticoagulation.

Painel 9 - Doença Valvular 7

P 264. BEING A WOMAN-A DISADVANTAGE IN APICAL HYPERTROPHIC CARDIOMYOPATHY?

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Introduction: Recent data, including that from a Portuguese-based population registry, revealed that in Hypertrophic Cardiomyopathy (HCM) females appear to have a worse prognosis than males. In addition women are also more symptomatic. When particularizing to apical HCM (ApHCM) although data are also scarce, they seem to point in the same direction.
Objectives: To study if there are particularities in women that allow them to differentiate from men regarding the presentation, clinical and prognostic evolution in a group of patients (pts) with ApHCM of large European country-based nationwide HCM registry.
Methods: Of the 1,090 pts of the national registry 10.3% had ApHCM with a mean age of 56.4 ± 16.5 years. Of those 107 pts, 45 were women (13.5% of women included). During the follow-up (median of 3 years) 9.8% of the pts died. A comparative analysis (women versus (vs) men) was done regarding all registry data. Kaplan-Meier survival curves were assessed via log-rank test.
Results: In this population women were more symptomatic at diagnosis (68.3 vs 44.1%; p = 0.017), presenting more frequently with heart failure (HF) (43.2 vs 17.0%; p = 0.006) and palpitations (27.0 vs 9.4%; p = 0.028). They are also more symptomatic at first hospital evaluation (82.2 vs 39.3%; p < 0.0001), but have less history of coronary heart disease (CAD) (0 vs 22.8%; p = 0.001). Women have a higher degree of diastolic dysfunction (grade 2-73.7 vs 29.2%; p = 0.008) on echocardiography and higher levels of B-type natriuretic peptide (BNP) at diagnosis (1,080 vs 342 pg/dL; p = 0.008), but less often fibrosis on cardiac magnetic resonance imaging (MRI) (44.0 vs 92.2%; p < 0.0001). At follow-up women remained more symptomatic (65.8 vs 30.9%; p = 0.001), namely with more complaints of palpitations (26.3 vs 3.36%; p = 0.002) and more frequent hospitalizations due to HF (37.5 vs 0%; p = 0.042) There were no differences regarding mortality (9.1 vs 1.6%; p = 0.075).
Conclusions: Although there were no significant differences in survival (possibly due to the reduced number of events), we could say that in this population of pts with ApHCM, being a woman seems to be a disadvantage, as women are more symptomatic (since diagnosis and also at follow-up) and have higher BNP values, maybe because they have also, higher degrees of diastolic dysfunction. Compared to men, they only have less history of CAD and less often fibrosis on cardiac MRI, but these differences seem to have neither clinical nor prognostic relevance.

P 265. PREDICTORS OF ATRIAL FIBRILLATION OCCURRENCE IN PATIENTS WITH HYPERTROPHIC CARDIOMYOPATHY

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Introduction: Patients with hypertrophic cardiomyopathy (HCM) are at increased risk of dysrhythmias, especially atrial fibrillation (AF).
Objectives: The aim of this study was to evaluate the incidence of AF in HCM patients (P) and to determine predictors of AF.
Methods: Retrospective analysis of HCM P at a single tertiary center. Baseline clinical, echocardiographic and cardiovascular magnetic resonance (CMR) characteristics were collected. On follow up AF was identified by electrocardiogram and/or 24hours Holter monitoring.

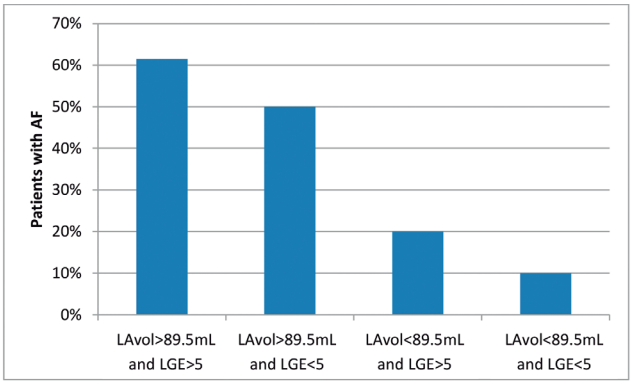

Figure 1. Proportion of patients with AF according to LAvol >89.5mL and LGE involving >5 segments

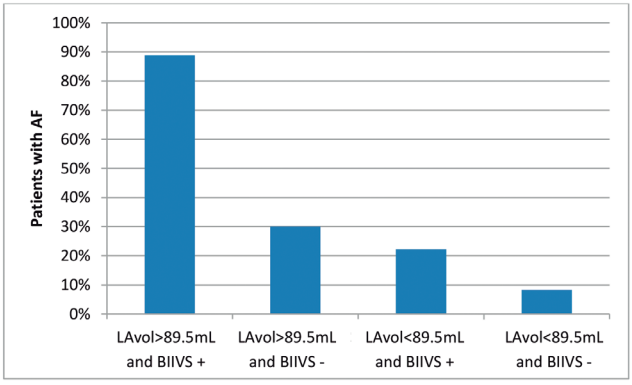

Figure 2. Proportion of patients with AF according to LAvol >89.5mL and presence of LGE in BIIVS

Results: 61P (59% male) were included, with a mean age of 58 ± 2 years. 27.9% had angina (all of them CCS 2), 34.4% were in NYHA II and 14.8% in NYHA III, 8.2% had syncope and 39.3% had palpitations. A family history of sudden cardiac death (SCD) or cardiomyopathy was present in 40.4% of the cases. The mean HCM risk SCD score was 3.35 ± 0.28%. On echocardiography left atrium (LA) diameter was 44.86 ± 0.87 mm, LA volume (LAvol) was 89.97 ± 5.39 mL (indexed LAvol 46.05 ± 2.55 mL/m^2), interventricular septum (IVS) was 16.83 ± 0.663 mm, left ventricle (LV) mass was 290.94 ± 13.897 g and maximum wall thickness (MWT) was 20.59 ± 0.596 mm. 77% P had LA enlargement. 88.5%P had late gadolinium enhancement (LGE) in CMR with a median number of 5 ± 7 segments involved. AF developed in 23P (37.7%), with a mean age of 58 ± 3 years. Predictors of AF development were NYHA III (p = 0.007), risk score (p = 0.007), LA diameter (p = 0.007),

LAvol (p = 0.005) and indexed LAvol (p = 0.002), MWT (p = 0.0015), LGE in more than 5 segments (p = 0.029) and LGE in the inferior basal and inferior median IVS (p = 0.033 and p = 0.042). The only independent predictor was LAvol (p = 0.0012), with an area under the curve of 0.755 and a cut off of 85.9 mL being the best predictor (p = 0.004). Combining LAvol > 85.9 mL with LGE involving > 5 segments and LAvol > 85.9 mL with LGE in inferior basal IVS (IBIVS) a statistically significant difference between groups was achieved (p = 0.009 in the combined predictor LAvol + LGE > 5 segments and p = 0.002 in the combined predictor LAvol + LGE in IBIVS) (Figures). In a multivariable analysis including these 2 combined predictors and LAvol alone the only independent predictor was the combination of LAvol + IBIVS involvement.

Conclusions: AF is frequent in patients with HCM and develops in younger ages than in general population. NYHA III, risk score, LA diameter, LAvol, MWT, LGE > 5 segments and LGE in IBIVS and in IMIVS were predictors of AF, with LAvol being the independent predictor. The combination of LAvol with LGE > 5 segments and LAvol with LGE in IBIVS presented stronger predictor value comparing with these characteristics alone.

P 266. TRANSTHYRETIN CARDIAC AMYLOIDOSIS: INSIGHTS FROM A TERTIARY HOSPITAL

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Introduction: Transthyretin amyloid cardiomyopathy (ATTR-CM) is an under-recognized cause of heart failure (HF) in older adults. Advances in non-invasive diagnosis coupled with demonstration of efficacy of specific therapies has been shifting that paradigm. The aim of this study was to describe the main clinical characteristics of our cohort of patients with ATTR-CM.

Methods: Single-centre prospective registry enrolling consecutive patients with ATTR-CM diagnosed since 2019. Demographic, clinical, electrocardiographic (ECG), echocardiographic (TTE) and treatment data were assessed. ATTR-CM was diagnosed histologically or non-invasively (i.e., 99mTc-HMDP bone scan with Perugini grade 2 or 3). Patients with light-chain amyloidosis were excluded from analysis.

Table 1. *Main Characteristics of ATTR-CM patients on tafamidis treatment* (n=7)

Demographics	
Age, mean ± SD (years)	80.8 ± 4.9
Male sex, n (%)	6 (85.7%)
Non-invasive diagnosis, n (%)	4 (57.1%)
Clinical	
NYHA class, n (%)	II – 6 (85.7%); III – 1 (14.3%)
Hypertension, n (%)	5 (71.4%)
Blood tests	
eGRF, mean ± SD (mL/min/m²)	56.7 ± 21.8
NT-proBNP, mean ± SD (pg/mL)	5784.8 ± 2411.3
Electrocardiographic findings	
Atrial fibrillation, n (%)	5 (71.4%)
Sokolow-Lyon index, mean ± SD (mm)	19.1 ± 9.2
Pseudoinfarct pattern, n (%)	5 (71.4%)
Low voltage criteria, n (%)	4 (57.1%)
Echocardiographic findings	
Left ventricular ejection fraction, mean ± SD (%)	49.0% ± 12.2
Interventricular septum thickness, mean ± SD (mm)	24.6 ± 5.3
Pericardial effusion, n (%)	4 (57.1%)

Results: Overall, 18 patients (mean age 81 ± 5.7 years-old, 77.8% males, 66.7% hypertensive; 44.4% NYHA II) were included. Of these, 13 patients were diagnosed non-invasively and 5 invasively. The clinical profile leading to ATTR-CM diagnosis was HF in most of the cases (n = 15, 83.3%). Nine patients were previously misdiagnosed (e.g., "hypertensive cardiopathy" in 6 cases). Severe aortic stenosis was concomitantly diagnosed in 2 patients. Carpal tunnel syndrome was the most common extra-cardiac associated feature (n = 3, 16.7%). There were no cases of monoclonal gammopathy of undetermined significance. Atrial fibrillation (61.1%) and pseudo-infarct pattern (n = 7, 38.9%) were the most common ECG findings. Six patients (33.3%) had low-voltage criteria, while one showed left ventricular hypertrophy criteria on ECG. Two patients developed symptomatic bradyarrhythmia, requiring permanent pacemaker implantation. On TTE, mean left ventricular ejection fraction was 45.2 ± 13.8% and global longitudinal strain -8.3 ± 1.9%, having observed an apical sparing pattern in 13 (72.2%) patients. Mean interventricular septum thickness was 20.9 ± 5.5 mm. Pericardial effusion was present in 50%. CMR were performed in 6 patients, corroborating TTE and HDMP-scan findings in all cases. Furthermore, 7 patients were started on tafamidis 61 mg as compassionate therapy (Table).

Conclusions: Over the course of one year, 18 patients were diagnosed with ATTR-CM patients in our center. A considerable number of cases were in the initial stages of the disease, and accordingly were started on disease-modifying treatment, as per ATTR-ACT trial criteria.

P 267. LONG-TERM FOLLOW-UP OF ICD THERAPIES IN HYPERTROPHIC CARDIOMYOPATHY: A LARGE SINGLE CENTRE EXPERIENCE

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Introduction: Hypertrophic cardiomyopathy (HCM) is associated with a high risk of ventricular arrhythmias (VA) and sudden cardiac death (SCD), treatable with an implantable cardioverter defibrillator (ICD).

Objectives: Evaluation of indications for ICD in HCM patients (P) and outcomes during a long-term follow-up (FU) after implantation.

Material and methods: Retrospective analysis of consecutive HCM P submitted to ICD implantation in a tertiary centre between 1996 and 2018. Characterization of clinical indications for ICD, long-term evaluation of ICD performance and total mortality.

	Primary Prevention (n=49)	Secondary Prevention (n=17)	*p value*
Maximal wall thickness (mm)	22.2±6.6	18.5±5.0	0.105
Obstructive HCM (%)	28.6	17.6	0.293
Antiarrhythmic therapy after ICD (%)			
• **Beta-blocker**	74.3	66.7	0.469
• **Calcium channel blocker**	8.6	11.1	0.614
• **Sotalol**	11.4	0	0.386
• **Beta-blocker plus amiodarone**	0	22.2	0.038
• **No therapy**	5.7	0	0.629
ICD events (%)			
• **NSVT**	28.3	18.8	0.347
• **VT**	8.7	0	0.293
• **VF**	4.3	6.3	0.599
• **Electrical storm**	2.2	0	0.742
ICD appropriate therapies (n)			
• **ATP**	0.18±0.49	0.13±0.50	0.486
• **Shocks**	2.60±10.3	0.5±1.7	0.624
ICD inappropriate shocks (%)	10.9	0	0.595
Mean time to first event (years)	4.0±3.7	8.8±5.6	0.050
All-cause mortality (%)	12.2	23.5	0.228

Results: 66P were enrolled (47.7 ± 18.2 years, 72.7% male). In 74.2%, ICD was implanted for primary prevention, mainly based on HCM risk-SCD score (mean 6.7 ± 1.8%; 66.7% > 6%). Familial history of SCD was present in 51.5%, non-sustained (NS) ventricular tachycardia (VT) in 32.1%, and syncope in 14.8%. In the remaining P (25.8%), ICD was implanted due to syncopal VT (21.2%) or ventricular fibrillation (VF)/aborted SCD (4.6%). Subcutaneous ICD was used in 10.6% of the cases. During a FU of 7.0 ± 5.5 years, ICD detected VA events in 38.7% (NSVT-25.8%, VT-6.5%, VF-4.8%, arrhythmic storm-1.6%), with a mean time since ICD implantation to the first VA of 4.7 ± 4.3 years. One out of five patients had > 1 VA event. Regarding ICD therapies: 11.7% received anti-tachycardia pacing, 16.1% had appropriate shocks, and 7.6% received inappropriate shocks (sinus tachycardia-1, atrial fibrillation-4). Mean time to the first VA was shorter in primary prevention implantation (p = 0.05). There were no statistically significant differences between primary and secondary prevention groups regarding the type of VA, number of delivered ATP or shocks, and all-cause mortality (15.2%).
Conclusions: Most P had ICD for primary prevention, with a 4.0% annual appropriate therapy rate, and a low incidence of innapropriate shocks. There was a near-equal occurrence of VA, appropriate therapy and mortality in both primary and secondary prevention groups.

P 268. DESCRIBING MYOCARDITIS IN THE ERA OF CARDIAC MRI

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Hospital de Braga.

Introduction: Acute myocarditis (AM) is challenging diagnosis, due to its non-specific symptoms that mimic conditions like acute myocardial infarction. Endomyocardial biopsy (EMB) is the gold standard for the diagnosis of definite AM. However, with the availability of cardiac magnetic resonance (CMR), EMB is used in a limited number of cases.
Methods: Single-center descriptive analysis of individuals hospitalized in our Cardiology department with diagnosis of AM between Nov/2016-Nov/2019. All patients had CMR-supported AM diagnosis (signal intensity increase in T2-weighted images; late gadolinium enhancement -LGE- with non-ischemic distribution).
Results: A total of 82 patients were included, 82% male (n = 67) and 18% female (n = 15). Mean age was 32.77 yo (17-76) and mean hospital stay was 4.6 days. At admission, 26% of patients had no other complaints besides chest pain, while 30% reported gastrointestinal and 26% reported respiratory symptoms. Twenty-five patients were on antibiotics; the most commonly reported infection was acute tonsillitis (n = 15). Pericarditis was diagnosed in 36% of patients. Mean troponin I peak was 15.8 (0.14-95.4) ng/mL; mean NT-proBNP was 806 (63-5,712) pg/mL. Inflammatory markers were elevated in 97.6% of patients. ECG abnormalities were found in 68% patients, mostly ST-segment elevation (49%), PQ segment depression (20%) and T-wave inversion (12%). Regarding echocardiography, 78% of patients (n = 64) had preserved LV function (LVEF > 50%), while 12 had mild, 4 had moderate and 1 had severe dysfunction. For diagnostic workup, 30% of patients underwent coronary angiography, with no significant coronary disease found. EMB was performed in 1 patient (fulminant myocarditis and severe LV dysfunction). CMR revealed LV systolic dysfunction in 15.9%. LGE was more common in the lateral wall (n = 38), followed by inferior (n = 27) and anterior (n = 11) walls. Tissue edema was described in 50% cases; pericardial effusion was found in 8.5%. About treatment, 87% of patients received NSAIDs, 38% beta-blockers, 33% ACEI/ARBs and 13% colchicine. One patient required immunomodulatory and inotropic drugs. No in-hospital deaths were registered. At mean follow-up of 10 months, 2 patients had recurrence of AM; 3 patients maintained LV dysfunction. One ICD was implanted, and 1 heart transplant was performed.
Conclusions: In our series, acute myocarditis was common in young male patients with few/no comorbidities, following gastrointestinal/respiratory symptoms. About 1/5 had some degree of LV systolic dysfunction. Most patients had a short and uncomplicated course.

P 269 CG CHANGES AND LEFT VENTRICULAR HYPERTROPHY CRITERIA IN HYPERTROPHIC CARDIOMYOPATHY PHENOTYPES

Inês Oliveira, Ana Neto, Isabel Cruz, Daniel Seabra, Rui Pontes dos Santos, João Azevedo, Aurora Andrade, Paula Pinto

Centro Hospitalar do Tâmega e Sousa, EPE/Hospital Padre Américo, Vale do Sousa

Introduction: Hypertrophic cardiomyopathy (HCM) is defined by the presence of increased left ventricular (LV) wall thickness (LVWT) that is not solely explained by abnormal loading conditions. The standard 12-lead ECG can be normal at presentation but generally shows a variable combination of LV hypertrophy (LVH), ST- and T-wave abnormalities, and pathological Q-waves. LVH is mainly determined by an increase in LV mass, which can be estimated by the electrical voltage changes detected on the surface ECG.
Objectives: To characterize a cohort of HCM patients (pts) who underwent cardiac magnetic resonance (CMR) and identify ECG and imaging differences between HCM phenotypes.
Methods: Unicentric, retrospective analysis of pts with HCM diagnosis who underwent CMR between 1/2013 and 9/2019. Patients (pts) were compared according to 3 phenotypes: non-obstructive (G1), obstructive (G2) or apical phenotype (G3). ECG and imagiological features were analysed. Three LVH criteria were measured: Sokolow-Lyon voltage criteria (S wave in V1 plus the R wave in V5 or V6), modified Cornell Criteria (R wave in aVL) and Peguero-Lo Presti criteria (deepest S wave in any lead and S wave in V4). Each criterion was evaluated on different phenotypes and assessed whether if it met criteria for LVH.
Results: Out of the 781 CMR studies evaluated, 59 pts were found to have HCM (7.6%) with a mean age of 62.1 ± 11.4 years. G1 had 35 pts (59.3%), G2 12 pts (20.3%) and G3 12 pts (20.3%). G3 pts had lower prevalence of strain pattern (G3 8.3% vs G2 50.0% vs G1 38.2%, p = 0.037), but higher prevalence of negative T wave inversion (G3 83.3% vs G2 8.3% vs G1 38.2%, p < 0.001). There were no differences between groups regarding Sokolow-Lyon criteria nor modified Cornell Criteria. G1 had higher prevalence of Peguero-Lo Presti LVH criteria (G1 74.3% vs G2 50.0% vs G3 16.7%; p = 0.002). G2 pts had higher LV mass (G2 104.5 ± 25.5 g/m^2, p = 0.002), and higher LV mass was associated with strain pattern on ECG (p = 0.021).
Conclusions: In this cohort, apical HCM phenotype had higher prevalence of negative T wave inversion on ECG. On the other hand, strain pattern and Peguero-Lo Presti LVH criteria correlated better with non-apical HCM phenotypes as well as with a higher LV mass measured by CMR.

Painel 1 - Insuficiência Cardíaca 9

P 288. CLINICAL AUDIT OF IN-PATIENT ECHOCARDIOGRAPHY IN ACUTE HEART FAILURE: REAL WORLD DATA FROM A TERTIARY HOSPITAL

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Introduction: Over the last 10 years, an increase in admission rates for acute heart failure (HF) has been noted in the United Kingdom, with 1-year mortality rates varying between 30% and 60%. Transthoracic echocardiography (TTE) is recommended within 48 hours of admission for suspected acute HF, so to guide treatment accordingly. Our specialist HF team sees suspected HF patients on admission and refers them for urgent in-patient TTE, using 2 priority echo slots per day. Patients are referred for HF assessment by general medics and geriatricians, across non-specialist medical wards. We audited the referrals and results of those who received TTE in this context.
Methods and results: We screened the medical notes of 252 patients admitted with suspected HF during a period of 12 months, and reviewed the

echocardiography results of those who received it during their admission. 50% of patients were female and 59% were elderly (> 80 years). 245 patients (97.2%) had in-patient echocardiography performed during their hospital stay. The mean wait for echocardiography was 0.58 days, with 92% of scans being performed within 24 hours. The mean admission duration was 8.6 days (SD 10.9). 17.9% of patients were readmitted with suspected HF within 6 months, 69% of which were elderly. The majority of this cohort presented with HF with preserved ejection fraction (HFpEF), 50%), followed by HF with reduced ejection fraction (HFrEF, 29%) and HF with mid-range ejection fraction (HFmrEF, 16%). 41% of the patients who received an echocardiogram were in atrial fibrillation, 51% of which were diagnosed with HFpEF. All patients had their HF medical treatment optimised post-echocardiography and only 18.4% were readmitted within 6 months of the first admission. The majority of these was elderly (68.9%). 38.8% patients who received echocardiography were referred for specialist clinic follow-up, with HFrEF patients more likely to be seen in this setting (42%). 6-month mortality occurred in 19.8% patients; cause of death (COD) was undocumented in 25.8% cases. In those where COD was ascertained, the main contributing factor was HF (16.7%), followed by sepsis (13.6%), cardiac (6.1%) and respiratory arrest (6.1%). 66% of the deceased patients were elderly and 48% presented with HFpEF.

Conclusions: Our cohort is an accurate representation of the current HF statistics seen nationwide. Appropriate treatment was offered to the large majority of patients who received in-patient echocardiography within the first 24 hours of their admission, with low 6-month readmission rates. This approach also allowed for the inclusion of these patients on a systematic review plan, including specialist cardiology follow-up. Our numbers are consistent with the higher awareness about HFpEF currently seen in the medical community.

P 289. MALNUTRITION IN ACUTE DECOMPENSATED HEART FAILURE.

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Introduction: Malnutrition (M) can lead to cardiac cachexia and sarcopenia, two known risk factos for worse prognosis in heart failure (HF), leading to increased mortality. Score system tools are an easy way to screen patients at risk. The M universal screening tool (MUST), the nutritional inflammatory index (IIN) and the Glasgow Prognostic Score (GPs) are 3 easy tools validated in the care settings that help differentiate high risk patients.

Objectives: Study the prevalence of M in patients admitted for acute HF (AHF), using M scores and compare their performance on terms of prognosis.

Methods: Selected all patients admitted to a cardiology ward between 2010-15 with AHF. MUST, IIN and GPs were calculated. MUST score as the summation of 2 of its original 3 components (BMI > 20 Kg/m^2-0 points (pts), 18.5-20 Kg/m^2-1 point (pt), < 18.5 Kg/m^2-2 pts; unwanted weight loss (as the subtraction of Ideal body weight (IBW) and actual body weight; < 5%-0 pts, 5-10%-1 pt and > 10%-2 pts); Total: 0 pts-low risk, 1 pt-intermediate risk, 2 pts-high-risk). IBW calculated with *Devine* formula. IIN score as the ratio of PCR/Albumin (< 0.4 as without risk-0 pts, 0.4-1.1 as lower risk-1 pt, 1.2-1.9 as intermediate risk-2 pts, and > 2.0 as hig-risk-3 pts). GPs score as the summation of 2 components (PCR > 10 mg/L-1 pt, PCR < 10 mg/L-0 pts; Albumin < 3.5 g/L-1 pt, Albumin > 3.5 g/L-1 pts; 0 pts-low risk, 1 pt-intermediate risk, 2 pts-high-risk). Follow up (FU) for up to 2 years. Endpoints: in-hospital death (IHD), readmission for HF and death. Using association analysis and performance analysis, we inferred associations between M and endpoints and comparison between the 3 scores

Results: Initial population of 797 patients with median age of 79 [31-99] years. 50.8% males. IHD in 6.9%, Death 24 months 18.6%, readmission for AHF at 24 months 43.3%. Median of GP score 0 [0-2], IIN 0.4 [0.01-7.59] and MUST 0 [0-4] points. The prevalence of high-risk malnourished patients was 1.6% with GP, 3.9% with MUST and 6.2% with IIN score. Regarding IHD, there was a significant association between intermediate-high risk score by IIN (11.1% vs 5.3%, p = 0.02), but not with GPs and MUST score, with an odds-ratio of 2.25 [1.23-4.48]. On FU, no high-risk score was associated with readmission for HF. Regarding death on FU, high-risk IIN was associated with early (3-12 months) death (26.3% vs 14%, p = 0.04), and high-risk MUST was associated with late (6-24 months) death (35.7% vs 9.4%, p = 0.002). ROC curve confirms that IIN has a better performance (AUC 0.642) than GPs (AUC 0.571) and MUST score (AUC 0.458) in predicting IHD, and at mid-FU (12 months), IIN score has the best performance (IIN AUC 0.629 > MUST AUC 0.606 > GPs AUC 0.510) in predicting death at 12 months.

Conclusions: Malnourished patients were infrequent in our study, but the prognosis associated and evaluated by M scores was helpful identifying HF patients with a worse P.

P 290. CAN TAPSE/PSAP RATIO PREDICT MORTALITY AND RE-HOSPITALIZATION IN ACUTE HEART FAILURE PATIENTS?

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Introduction: TAPSE/PSAP ratio was proposed as a possible index of the right ventricular (RV) length-force relationship. In small studies, a reduced ratio was associated with decreased survival. However, the prognostic impact of this ratio in acute heart failure (HF) patients is unclear.

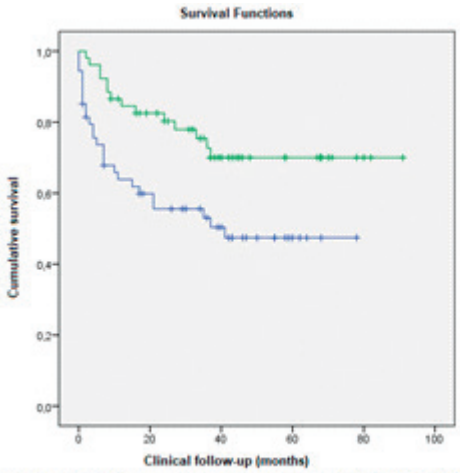

Figure 1 - Kaplan-Meyer curves for all-cause mortality according to TAPSE/PSAP ratio (69% vs 43%, Log Rank *P=0.01*).

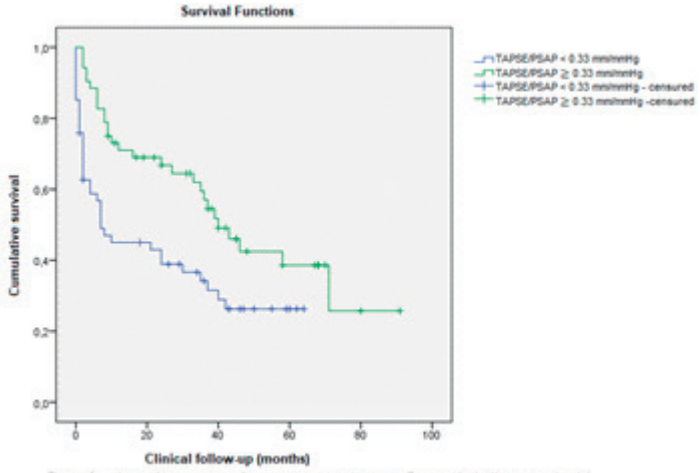

Figure 2 - Kaplan-Meyer curves for all-cause mortality and HF rehospitalization according to TAPSE/PSAP ratio (47% vs 24%, Log Rank *P<0.01*).

P 290 Figure

Objectives: To assess the impact of the TAPSE/PSAP ratio on all-cause mortality and rehospitalization in acutely decompensated heart failure (ADHF) patients.
Methods: One hundred-six patients (82% male, mean age: 69 ± 15 years) consecutively admitted to a single care unit due to ADHF were included. Clinical, laboratorial and echocardiographic data were evaluated. The primary endpoint was all-cause mortality and the secondary endpoint was a combined outcome of all-cause mortality and HF rehospitalization. ROC analysis was used to determine the ability of the TAPSE/PSAP ratio to identify patients who met the primary outcome. A cut-off value to predict the outcome was derived from the Youden index and two groups were created based on this cut-off. Kaplan-Meyer survival curves and multivariate Cox regression were conducted to evaluate the impact of the ratio on both endpoints. The mean follow-up was 32 ± 24 months.
Results: Ischemic cardiomyopathy (28%) was the most common aetiology and a minority (18%) had preserved left ventricular ejection fraction (LVEF). The majority (52%) was admitted at NHYA IV class. Mean TAPSE was 15 ± 4 mm; PSAP 45 ± 15 mmHg and TAPSE/PSAP ratio 0.38 ± 0.17 mm/mmHg. 40 patients met the primary endpoint and 65 the secondary endpoint. The area under the curve for the TAPSE/PSAP ratio was 0.614 (95%CI 0.51-0.71, p < 0.05) and the associated criterion was 0.33. Fifty-two patients had a ratio ≥ 0.33 mm/mmHg. Kaplan-Meier curves showed different event free survival among groups-TAPSE/PSAP ≥ 0.33 vs < 0.33 mm/mmHg-(69% vs 43%, log rank p = 0.01-Figure 1) for all-cause mortality and (47% vs 24%, log rank p < 0.01-Figure 2) for the composite outcome. In a model adjusted for age, LVEF groups and admission NT-proBNP, a TAPSE/PSAP ratio < 0.33 mm/mmHg remained associated with the primary (HR 3.30, 95%CI 1.60-6.77, p = 0.001) and the secondary endpoints (HR 2.64, 95%CI 1.53-4.46, p < 0.001).
Conclusions: According to our data the TAPSE/PASP ratio seems to be an useful prognosis predictor in ADHF.

P 291. PREDICTING NON-INVASIVE VENTILATION FAILURE IN ACUTE HEART FAILURE PATIENTS PRESENTING IN THE EMERGENCY DEPARTMENT

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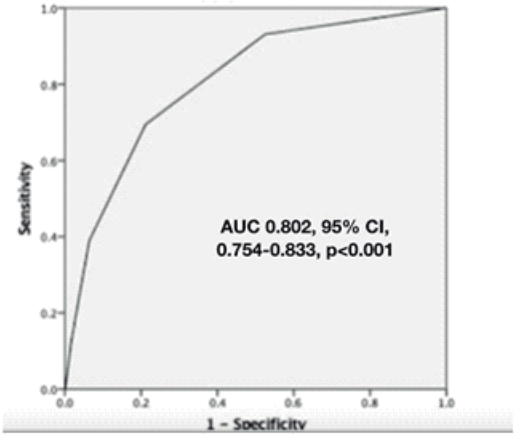
Introduction: The majority of patients with acute heart failure (AHF) present with some degree of respiratory insufficiency due to pulmonary congestion. Non-invasive ventilation can avoid the need for invasive mechanical ventilation (IMV) in some settings. However, it can also delay the time to orotracheal intubation and IMV, which worsens the short-term prognosis.
Objectives: To provide a sample and easy-to-perfom score base on clinical and analytical parameters quickly obtainable at admission and to access its performance to predict NIV failure.
Methods: In a retrospective, observational, single-center study, a total of 516 patients were admitted for AHF in the emergency room of a large urban hospital. All patients had data collected regarding demographics, clinical and laboratorial markers at admission. We followed-up patients to access NIV failure and in-hospital mortality. Multivariate analysis was performed to identify predictors of NIV failure. Discriminative power was accessed by receiver operating characteristic (ROC) curve.
Results: A total of 516 patients were included in the final analysis. Of those, 134 patients (25.9%) were treated with NIV and 16 of those (11.9%) had NIV failure with progression to IMV. In-hospital mortality was 8.9% (n = 46). Univariate and multivariate analysis are illustrated in Table 1.Stratified analysis was based on the approximate cut-off value for the last quartile.

Table 1 - Univariate and Multivariate analysis including predictors for NIV failure

	NIV success	NIV failure	p-value	Cut-off	Odds Ratio	RC	POINTS
Age, years	76.5±11.6	61.2±4.2	<0.001	-	-	-	-
Males, n (%)	52 (44.1%)	15 (93,6%)	<0.001	-	-	-	-
Chronic heart	82 (69.5%)	3 (18.7%)	<0,001	-	-	-	-
Chronic pulmonary	22 (18.6%)	2 (12.5%)	0,064	-	-	-	-
Systolic arterial	147.9±38.4	123.9±26.4	0,054	-	-	-	-
Heart rate, bpm	94.2±28.6	132.8±29.7	<0.009	>140	1.86	-0,698	1
PaO2/FiO2 ratio	305±111	225±106	<0.001	<250	1.97	-0,754	1
Lactate, mmol/L	1.65 IQR	3.12 IQR	<0.001	>2.50	2.95	-0,965	1
Arterial pH	7.41±0.07	7.21±0.14	0,004	pH<7.30	2.51	-0,942	1
Basal creatinine,	1.23±0.65	1.34±0.35	0,923	-	-	-	-

Figure 1 - Receiver Operating Characteristic curve for the model in predicting NIV failure



P 291 Figure

Based on the similar beta coefficient values for each variable, we attributed 1 point in the presence of each following conditions: arterial lactate concentration > 2.5 mmol/L, PaO2/FiO2 < 250, blood pH < 7.30, heart rate > 140 bpm, with a total score range 0-4. Our model yielded a good performance in predicting NIV failure using ROC analysis (AUC 0.802, 95%CI 0.754-0.833, p < 0.001). A score of 1 or above had a sensitivity of 94% and a specificity of 53% in predicting NIV failure.
Conclusions: Our predictive model proved to be a simple and accessible tool with good to predict NIV failure in patients admitted for AHF.

P 292. ECHO-AHF SCORE, A PREDICTIVE MODEL OF IN-HOSPITAL AND LONG-TERM MORTALITY IN HEART FAILURE

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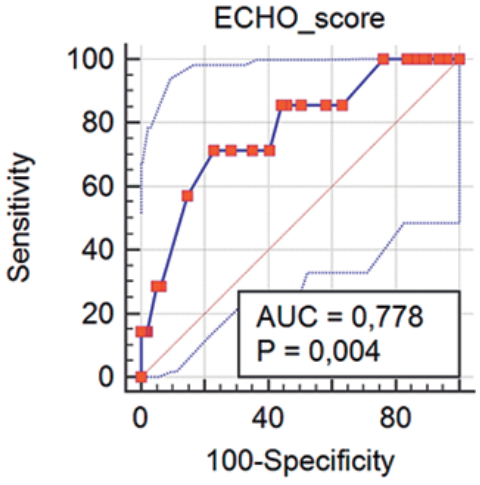
Introduction: Patients hospitalized due to heart failure (HF) compose a heterogeneous population whose prognosis is difficult to forecast. The purpose of this study was to create a model based on echocardiographic parameters that could predict mortality and/or rehospitalization risk in different stages of HF course.
Methods: Retrospective analysis of 247 patients admitted for decompensated HF. The variables pulmonary artery systolic pressure (PSAP), left atria diameter (LAD), E/e' ratio and left ventricle ejection fraction (LVEF) measured by Simpson's biplane method were selected for score inclusion. Mann-Whitney U was used for univariate analysis. Subgroups were created for each variable, according to literature reference values. For each subgroup, an *odds ratio* (OR) for the risk of in-hospital mortality (IHM) was calculated, and a numerical value proportional to the OR was subsequently attributed. Normal reference values for these variables were classified with 0 points. A score was created, ranging from 0-37 points, corresponding to the sum of the classification attributed to each variable (ECHO-AHF score = points of LAD + PSAP + EF + E/e' subgroups). ROC curve analysis was then performed to evaluate the predictive value of the score for IHM. Kaplan-Meyer survival plots and Cox-regression were used to assess mortality (24MM) and combined outcome of HF rehospitalization or death at 24 months (24HM).



Results: Mean patient age was 77 ± 10y; 53% were men. Mean LVEF was 48% ± 16, mean LAD 48.2 mm ± 9.1, mean PSAP 46 mmHg ± 14, mean E/e' 16 ± 7. 33% had LVEF < 40%. IHM, 24MM and 24HM were 3%, 18.6% and 60.9%, respectively. A statistically significant association between IHM and PSAP (p < 0.001), LAD (p = 0.03), LVEF (p = 0.02) and E/e' ratio (p = 0.05) was found on univariate analysis. ROC curve analysis revealed an AUC of 0.778 (p = 0.004) for ECHO-AHF score, regarding IHM. The cut-off point with the most sensitivity (S) and specificity (E) obtained using Youden index (IY = 0.4851) was 16 (S 71%, E 73%). Analysis of mortality by score interval revealed an IHM of 0%, 1.6%, 7.8% and 20%, respectively, for intervals 0-7, 8-16, 17-24 and > 24. An ECHO-AHF score < 8 predicted in-hospital survival in all patients. Kaplan Meyer survival analysis by subgroup (ECHO-AHF ≤ 16 or > 16) revealed significant differences in 24MM (29.4% vs 15.4%, χ^2 = 5.807, p = 0.016). Cox-regression analysis demonstrated that ECHO-AHF score is an independent prognosis marker of 24MM (HR: 1.067, p = 0.05) and 24HM (HR: 1.057, p = 0.005) after adjustment for other variables, such as renal function, age and pulmonary disease.
Conclusions: ECHO-AHF score is an accurate and simple predictive model of IHM, 24MM and 24HM. Its use may help to identify patients with a very high risk of in-hospital and long term-mortality, in need of specialized care, and those patients with very low risk of death, who might be candidates for early discharge or lenient follow-up.

P 293. HEMOCONCENTRATION IN ORDER TO AVOID READMISSIONS IN HEART FAILURE: WICH LABORATORY MARKERS TO USE?

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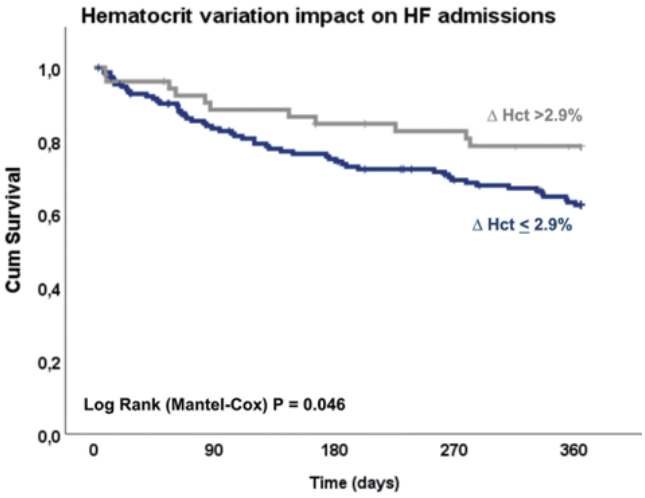
Introduction: Hemoconcentration is a widely accepted prognostic marker associated with improvement of short-term mortality and rehospitalization in acute heart failure (HF). Different laboratory markers are used as surrogates of hemoconcentration. However the best laboratory surrogate marker is not yet defined.
Methods: Single-center, retrospective study of 224 consecutive patients admitted for acute HF between 2016 and 2018. Hemoglobin (Hb), hematocrit (Hct), sodium (Na+) creatinine (Cr) and estimated plasma volume (ePV; calculated using the Strauss formula) were selected as laboratory surrogates of hemoconcentration. Blood samples were obtained at admission and at discharge. Variation of each one of these markers were also calculated (ΔCr, ΔNa+, ΔHct and ΔHb). Cox regression was used to evaluate the impact of the above-mentioned variables in 1-year all cause hospitalisation, HF hospitalisation, death and in the combined outcome of all cause hospitalisation or death. The analysis was adjusted for age, HF aetiology, NYHA functional class and left ventricule ejection fraction (EF).
Results: The study included 224 patients (63.8% male, mean age of 71.7 ± 13.4 years). The most frequent aetiologies were ischaemic heart disease (39.7%) and dilated cardiomyopathy (22.3%). The vast majority of patients were in NYHA class II (23.9%) and III (33.4%). HF with reduced EF was present in 62.2% patients, with preserved EF in 23.0% and with mid-range EF in 14.8%. HF admission rate was 29.5%. All cause admission rate was 12.1%. At admission, mean blood test results were as follows: Hb 12.7 ± 2.1 g/dL, Hct 38.7 ± 6.2%, Cr 1.42 ± 0.95 mg/dL, Na+ 138.2 ± 5.1 mmol/L, ePV 5.1 ± 1.6L. At discharge: Hb 12.6 ± 2.1 g/dL, Hct 38.4 ± 6.8%, Cr 1.34 ± 0.79 mg/dL, Na+ 137 ± 10.2 mmol/L, ePV 4.9 ± 1.8L. In multivariate analysis, the only surrogate marker of hemoconcentration with a protective effect on HF hospitalisation was ΔHct (OR 1.04; 95%CI 1.01-1.09; p = 0.024). Hct variation was also found to be a protective factor for the combined outcome of all cause hospitalisation, HF hospitalisation and death (OR 1.03; 95%CI 1.01-1.06; p = 0.034). None of the remaining surrogate markers analysed were found to be useful on predicting adverse events. No surrogate for hemoconcentration was associated with death alone or all cause admission. A Kaplan-Meier survival analysis found that a ΔHct > 2.9% (fourth quartile) is associated with a greater protective effect for HF admissions (Figure).



Conclusions: The only surrogate marker of hemoconcentration that consistently seems to be associated with lower heart failure admission rate is a positive hematocrit variation at discharge, particularly when > 2.9%.

Painel 10 - Doença Valvular 10

P 344. THE MECHANICS BEYOND BICUSPID AORTIC VALVE

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Introduction: Bicuspid aortic valve (BAV) disease is the most common congenital cardiac defect and it is frequently associated with dilatation of the proximal ascending aorta. However, little is known about mechanics of the aortic root. In this study we aimed to evaluate aortic deformation in patients with BAV.
Methods: We conducted a retrospective observational study including 50 patients with BAV and 20 healthy controls. Echocardiographic evaluation included aortic valve planimetry, ascending aortic diameter, deformation of ascending aorta with longitudinal strain by speckle tracking echocardiography (STE) in parasternal long-axis view and deformation of aortic annulus with circumferential strain STE in parasternal short-axis view. Besides that, a complete assessment of aortic stenosis or regurgitation was made.
Results: Mean age was 42.4 ± 15.5 years with a male preponderance (74.3%). The BAV group was older (46.2 vs 33 years, p = 0.041), had higher aortic valve area (2.44 vs 2.14 cm^2, p = 0.04), had a larger ascending aorta (40.5 vs 28.9 mm, p < 0.001) and increased longitudinal aortic deformation (28.9 vs 17.7%, p = 0.018). Circumferential deformation of the aortic annulus did not differ between groups (10.6 vs 9.7% p = 0.58). Compared to controls, BAV patients with normal ascending aortic calibre (under 36 mm) showed an increased longitudinal strain (38.8 vs 17.5%, p = 0.007). Among BAV patients, 16% had severe aortic regurgitation (AR) and 4% had severe aortic stenosis (AS). Besides aortic valve area, severe AR was associated with a higher longitudinal strain (45.2 vs 23.4%, p = 0.002) and severe AS with a higher circumferential strain (21.6 vs 10%, p = 0.004), with no significant differences in the other variables.
Conclusions: BAV is associated with an increase in longitudinal deformation of ascending aorta, particularly in severe AR patients. Longitudinal strain of the ascending aorta is increased even in patients with normal aortic diameter and may become a potential evaluation method of BAV, particularly detecting early disease involvement.

P 343. GLOBAL CIRCUNFERENCIAL STRAIN AS A PREDICTOR OF DISEASE PROGRESSION IN PATIENTS WITH BICUSPID AORTIC VALVES

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Introduction: Bicuspid aortic valve (BAV) is frequently associated with aortic valve stenosis (AS) or regurgitation (AR) and aortic enlargement (AE). Disease progression has high interpersonal variability.
Objectives: The aim of this study was to evaluate global circunferential strain (GCS) of aortic valve as a predictor of disease progression in patients with BAV.
Methods: Retrospective analysis of echocardiographic and clinical evolution of BAV patients (P). Clinical and echocardiographic features were collected at baseline and through a follow up period of 78 ± 2 months. Primary endpoints: AS worsening; AR worsening; aortic valve replacement (AVR); AE. Combined secondary endpoints: AS worsening + AR worsening; AS worsening + AE; AR worsening + AE; AS worsening + AVR; AR worsening + AVR; AS worsening + AR worsening + AVR; AS worsening + AR worsening + AE; AS worsening + AR worsening + AVR + AE.
Results: 54 P (70.4% male) were included, with a median age of 34 ± 11. 20.4% of P had aortic coarctation and 11.1% had an interventricular communication. 25.9% P had a history of cardiac surgery, the majority of them (18.5%) a coarctation correction, 1.9% a valvulotomy, 3.7% a interventricular communication closure and 5.6% a patent ductus arteriosus closure. The most frequent BAV pattern was fusion of right and left coronary cusps (55.6%), following by right and non-coronary cusps fusion (31.5%), BAV with two cusps without raphe (7.4%) and left and non-coronary cusps fusion (5.6%). At baseline all patients had good left ventricular systolic function, 77.8% had AR and 38.9% had AS, with an average maximum gradient of 49 ± 5.48 mmHg, mean gradient of 30 ± 3.5 mmHg and valvular area of 1.3 ± 0.27cm^2. The mean GCS was 4.41 ± 0.79%. 38.9% had AE (71.4% ascending aorta and 28.6% aortic root + ascending aorta). At baseline GCS did not correlated with AS severity (p = 0.731), mean gradient (p = 0.0449), maximum gradient (p = 0.561), aortic root dimension (p = 0.107) or ascending aorta dimension (p = 0.063). On follow up, 2P (3.7%) died, 16P (29.6%) had a hospitalization and 14P (25.9%) had an AVR (64.3% with a simultaneous aortic conduit implantation). 20.4% P had worsening of AR, 24.1% of AS and 65.6% of AE. GCS at baseline correlated with AS worsening (p = 0.043) and with AS worsening + AE (p = 0.02) and AR worsening + AS worsening + AE (p = 0.019). Other predictors of AS worsening were dyslipidemia (p = 0.018) and annulus calcification (p = 0.05), with GCS and calcification being independent predictors (p = 0.028 and p = 0.023). GCS was also an independent predictor of the combined endpoint AS worsening + AE (p = 0.049). GCS was not a predictor of mortality (p = 0.583), hospitalization (p = 0.619) or valvular and aortic intervention (p = 0.373).
Conclusions: BAV is a risk factor for aortic valve dysfunction and aortic enlargement. GCS at baseline was an independent predictor of disease progression, including AS worsening and AS worsening + AE.

P 346. RIGHT ATRIAL MECHANICS BY STRAIN ECHOCARDIOGRAPHY IN CHRONIC THROMBOEMBOLIC PULMONARY HYPERTENSION

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Introduction: Chronic thromboembolic pulmonary hypertension (CPTEH) is the result of thromboemboli that occlude the pulmonary vascular bed, leading not only to mechanical obstruction but also pulmonary vascular remodelling, progressive pulmonary hypertension (PH), an increase in

right heart afterload and eventually right heart failure (if left untreated). Prognostic assessment in CPTEH is complex and multifactorial.

Objectives: We used two-dimensional strain echocardiography (2D-STE) to quantify right atrial (RA) mechanics and its correlation with invasive hemodynamics, load-dependent biomarkers and well-known prognostic markers in patients with CTEPH.

Methods: A total of 44 patients with CTEPH were recruited. 2D-STE was used to measure right atrial reservoir strain (RASr) (Figure) which was then compared to conventional ultrasound measurements, right heart catheterisation (RHC) measurements, the percentage of obstruction in ventilation-perfusion pulmonary single-photon emission computed tomography (V/Q SPECT), B-type natriuretic peptide (BNP) values and 6-minute walk test (6MWT) performance. All patients underwent transthoracic echocardiographic evaluation with a maximal time distance of three months to RHC.

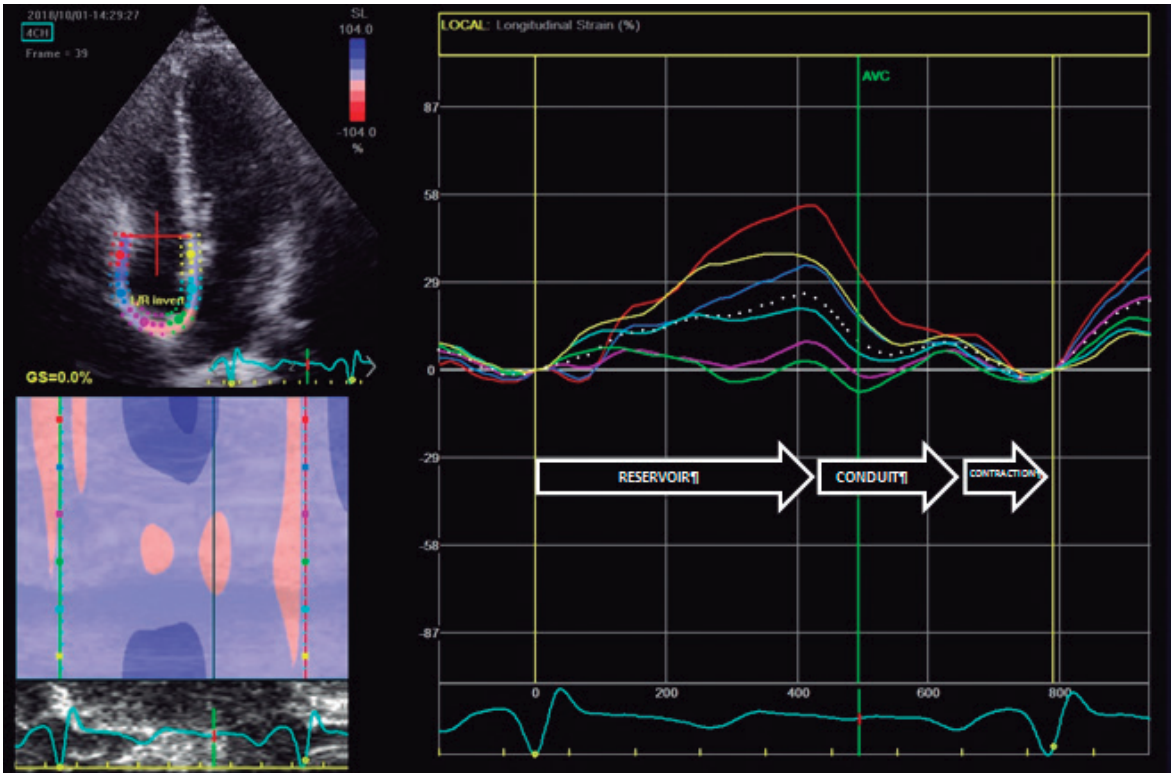
Results: The population baseline characteristics, VQ/SPECT, RHC parameters and echocardiographic data are summarized in the Table. There was a significant positive correlation of RASr with RV longitudinal function determined by tricuspid annular plane systolic excursion (r = 0.488, p = 0.003), tricuspid annular peak systolic velocity (r = 0.490, p = 0.002), right ventricular outflow tract velocity time integral (r = 0.457, p = 0.005), as well as with 6MWT (r = 0.491, p = 0.004). There was a significant negative correlation of RASr with mean pulmonary artery pressure (r = -0.513, p = 0.002), pulmonary vascular resistance (r = -0.439, p = 0.011) and right atrial pressure (r = -0.513, p = 0.002). RASr was also correlated with Log-transformed BNP values (r = -0.552, p < 0,001), and in a multivariate linear regression model, RASr was an independent predictor of Log-transformed BNP values (-0.448, 95%CI -0.046--0.009; p = 0.005). There was no correlation between RASr and the percentage of obstruction in V/Q SPECT (r = 0.164, p = 0.388).

Conclusions: 2D-STE-derived RA mechanics demonstrated to be a useful, non-invasive, surrogate measurement of RHC parameters. It also predicted important clinical/laboratory prognostic measurements, such as BNP and 6MWT performance. The absence of correlation between 2D-STE values and the percentage of vessel obstruction determined by SPECT may suggest that RV maladaptive response to the obstruction, rather than the degree of obstruction, dictates right heart failure in CTEPH.

Baseline characteristics, SPECT, hemodynamic parameters and echocardiographic data of the population

Clinical data	
Female gender, n (%)	24 (54.5)
Age in years, mean ± SD	61.0 ± 15.6
Previous acute pulmonary thromboembolism, n (%)	13 (29.5)
Central	5 (38.5)
Fibrinolysis	5 (38.5)
NYHA class III at presentation, n (%)	20 (45.4)
BNP in pg/ml, median (IQR)	150.9 (42.9-385)
6MWT in meters, mean ± SD	389.8 ± 120.5
VQ/SPECT in % of obstruction, mean ± SD	45.0 ± 15.6
RHC parameters	
RAP in mmHg, mean ± SD	9.1 ± 5.4
MPAP in mmHg, mean ± SD	47.6 ± 13.5
PCWP in mmHg, mean ± SD	11.6 ± 5.3
PVR in wu, mean ± SD	10.9 ± 4.8
CO in L/min, median (IQR)	3.3 (2.7-4.0)
CI in L/min/m², median (IQR)	1.9 (1.7-2.42)
Echocardiographic data	
RASr in %, mean ± SD	21.6 ± 10.7
TAPSE in mm, mean ± SD	17.1 ± 3.1
S' in cm/sec, mean ± SD	10.3 ± 2.2
TRv in m/sec, mean ± SD	60.0 ± 24.3
RVOT VTI in cm, mean ± SD	12.1 ± 3.5

NYHA: New York Heart Association; BNP: B-type natriuretic peptide; 6MWT: 6-minute walk test; VQ/SPECT: ventilation-perfusion pulmonary single-photon emission computed tomography; RHC: right heart catheterisation; RAP: right atrial pressure; MPAP: mean pulmonary artery pressure; PCWP: mean pulmonary capillary wedge pressure; PVR: pulmonary vascular resistance; CO: cardiac output; CI: cardiac index; RASr: right atrial reservoir strain; TAPSE: tricuspid annular plane systolic excursion; S': tricuspid annular peak systolic velocity; TRv: tricuspid regurgitant jet velocity; RVOT VTI: right ventricular outflow tract velocity time integral; SD: Standard Deviation; IQR: Intequartile Range.



Right atrial strain components.

P 342. MYOCARDIAL WORK INDEXES IN ADULT PATIENTS WITH REPAIRED AORTIC COARTATION

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Introduction: Myocardial strain analysis is a tool that allows a more precise assessment of cardiac performance. However, strain is relatively load dependent. New tools have been developed, with afterload adjustment. It was our objective to assess myocardial work (MW) in patients with repaired aortic coartation (ACo).
Methods: Study of consecutive adult patients with corrected ACo submitted to a complete routine transthoracic echocardiogram in 2018 at our centre. Patients with an aortic valve prosthesis, more than mild aortic stenosis/regurgitation, with pacemaker or with other non-corrected congenital heart diseases (with the exception of bicuspid aortic valve were excluded from the analysis. A semi-automated strain analysis was performed with speckle tracking technology and both longitudinal strain and MW were estimated using GE software. Blood pressure was simultaneously measured in the patient's right arm. The following parameters were specifically assessed: Global Work Index (GWI), Global Constructive Work (GCW), Global Work Waste (GWW) and Global Work Efficiency (GWE)
Results: Thirty-two patients were included in the study, with a mean age of 38 ± 10 (24-62) years, 37% males. Mean body surface area was 1.7 and repair was performed at a mean age of 12 years. In this group of patients, 50% were hypertensives and in 66% there was a concomitant bicuspid aortic valve. Median maximum aortic valve gradient was 10 mmHg and median descending aortic gradient was 17 mmHg. Compared to reference values for a normal population (previously published), repaired ACo patients had lower values of MW, with the exception of GWE (Table). In multivariate linear regression analysis, independent predictors of GWI are systolic blood pressure (β = 0.332, p = 0.047) and let atrial volume indexed (LAVI) (β = 0.405, p = 0.01). For GCW, systolic blood pressure (β = 0.463, p = 0.003) and LAVI (β = 0.443, p = 0.005). For GWW, age at intervention (β = 0.384, p = 0.022) and LAVI (β = -0.334, p = 0.044). For GWE, the only predictor was LAVI (β = 0.458, p = 0.008). The presence of bicuspid aortic valve, aortic valve gradient and descending aortic gradient did not have any influence in MW parameters, although patients with higher aortic valve gradients were excluded from this study.

Variable	Reference population (n = 226)	Repaired aortic coartation (n = 32)	p-value
GWI (mmHg%)	1,896 ± 308	1,806 ± 372	< 0.001
GCW (mmHg%)	2,232 ± 331	2,163 ± 387	0.004
GWW (mmHg%)	78.5 (53-122)	75 (53.5-134.2)	< 0.001
GWE (mmHg%)	96 (94-97)	96 (93.2-97)	NS

Conclusions: Adult patients with repaired ACo, present lower MW indices (with the exception of GWE) and the main determinant for that difference are LAVI and systolic blood pressure.

P 345. MYOCARDIAL WORK BY ECHOCARDIOGRAPHY IN PATIENTS WITH BICUSPID AORTIC VALVES

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Centro Hospitalar de Lisboa Central, EPE/Hospital de Santa Marta.

Introduction: The degree of cardiac remodelling and clinical symptoms in bicuspid aortic valves (BAV) is largely variable. New echocardiographic indices of left ventricle (LV) function as myocardial work (MW) can detect subtle alterations in myocardial mechanics and emerge as promising tools for improving risk stratification.

Objectives: The aim was to evaluate MW by transthoracic echocardiography (TTE): Global Constructive Work (GCW), Global Wasted Work (GWW) and Myocardial Work Efficiency (MWE) in patients (pts) with BAV.
Methods: Retrospective analysis of pts with BAV, who underwent TTE study in our tertiary reference centre between December 2017 and November 2019. MW indices were calculated using vendor-specific software through a combination of global longitudinal strain (GLS) and non-invasive estimation of LV pressure (brachial cuff pressure). In pts with severe aortic stenosis, a second calculation was made adding maximum aortic valvular gradient to systolic brachial pressure. Pts with previous heart valve surgery and non-optimal quality imaging were excluded.
Results: Total of 64 pts: 75% males, mean age 38.6 ± 11.3 years, 30% with arterial hypertension, 19% with aortic coarctation and 22% symptomatic. The main echocardiographic features are described in the table. Mean GLS was -18.6 ± 2.8, systolic blood pressure 118 ± 14.5 mmHg and diastolic pressure 68.6 ± 10.2 mmHg. Mean MW indices: GCW 2161 ± 1305 mmHg, GWW 89.4 ± 53.7 mmHg and MWE 94.5% ± 3.1. Pts with severe aortic stenosis (N = 11) had similar mean MWE between the two calculations (92.7%) that were significantly lower than other pts (92.7% vs 94.8%, p = 0.041, OR 0.9), higher mean GCW (2,901 vs 2,050 mmHg, p < 0.001), non-significant higher GWW (123 vs 90 mmHg, p = 0.078) and non-significant difference in GLS (-17.7 vs -18.7, p = 0.279). Symptomatic pts had also lower GWE (p = 0.002, OR 0.85) and higher GWW (p = 0.025, OR 16.39). We also found an inverse correlation between LV mass index and MWE (p = 0.008, -0.342). Pts with severe aortic regurgitation had non-significant lower MWE and GLS values.

Population main echocardiographic features	
Echocardiographic parameter	Patients – Total 64
Aortic valve calcification	27 (42%)
Aortic Valve stenosis	
Mild	12 (19%)
Moderate	10 (16%)
Severe	11 (17%)
Aortic Valve regurgitation	
Mild	20 (31%)
Moderate	25 (39%)
Severe	3 (5%)
Left ventricle mass index (mean)	105.3 ± 39.9 g/m^2
Left ventricle diastolic diameter (mean)	54.14 ± 0.96 mm
Left ventricle systolic diameter (mean)	31.39 ± 0.74 mm
Left ventricular ejection fraction (modified Simpson's rule) ≥ 50%	64 (100%)
Global Longitudinal Strain (mean)	-18.56 ± 2.77
Global Constructive Work (mean)	2,161 ± 1,305 mmHg
Global Wasted Work (mean)	89.4 ± 53.7 mmHg
Myocardial Work Efficiency (mean)	94.5% ± 3.1

Conclusions: To our knowledge this is the first study to evaluate MW in BAV. In this population with preserved LV ejection fraction, symptomatic pts and those with severe aortic stenosis had significantly lower GWE while no difference in GLS. The inverse correlation between LV mass index and GWE highlight the less energetically efficiency of hypertrophic hearts. Further studies are needed to address the association between MW, prognosis and risk stratification in this population.

P 347. RIGHT TO LEFT VENTRICULAR DIAMETER RATIO ON PULMONARY ANGIO-CT. IS THERE A CORRELATION WITH HEMODYNAMICS IN CTEPH?

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Introduction: In acute pulmonary embolism several studies showed that right ventricle (RV) dilatation based on right-to-left ventricle diameter ratio (RV/LVd) assessed by pulmonary angio-CT is a measure of RV dysfunction and correlates well with echocardiographic and hemodynamic parameters to predict outcomes. In CTEPH patients the role of these measurements is still not established.
Objectives: To evaluate the relationship between RV/LVd by pulmonary angio-CT and invasive hemodynamic parameters assessed by right cardiac catheterization.
Methods: Retrospective single-center study of consecutive CTEPH patients. Demographic, clinical, laboratorial, imaging and hemodynamic data were collected. RV/LVd was measured on the standard axial view and in the true 4-chamber view. For statistical analysis Pearson and Spearman correlation were used to continuous variables and Mann-Whitney test if the variables were categorical.
Results: We included 24 CTEPH patients (pts) with mean age of 59.7 ± 12.9 years, 54.2% were female. 20.8% of pts had congenital thrombophilia and 12.5% antiphospholipid syndrome. The majority (87.5%) of patients were under specific pulmonary vasodilator therapy, all the pts were anticoagulated and all of them underwent pulmonary endarterectomy. Functional class was WHO 2 in 33% WHO 3 in 67%. In our population, axial RV/LVd showed correlation with pulmonary artery systolic pressure (PASP) ($p = 0.046$ $R = 0.42$); mean pulmonary artery pressure (mPAP) ($p = 0.015$, $R = 0.502$); cardiac output (CO) and pulmonary vascular resistance (PVR) ($p = 0.013$ $R = -0.532$ and $p < 0.001$ R 0.964, respectively). In the true 4-chamber view RV/LVd correlated with CO ($p = 0.014$ $R = 0.518$), PVR (respectively; $p = 0.024$ $R = 0.502$) and transpulmonary pressure gradient (TPG) ($p = 0.031$ $R = 0.484$). We also analysed the RV/LV area ratio and we observed a correlation with PASP ($p = 0.019$ $R = 0.497$); mPAP ($p = 0.002$ $R = 0.627$); CO ($p = 0.035$ $R = -0.461$); PVR ($p = 0.001$ OR = 0.677) and TPG (GGT $p = 0.032$ $R = 0.48$).
Conclusions: These findings suggest that the measurement of RV/LVd on pulmonary angio-CT can add important information, correlating with hemodynamics. Furthermore, axial determinations

Painel 11 - Doença Aórtica 1

P 348. CAN NT-PROBNP PREDICT FUNCTIONAL OUTCOME AFTER A STROKE?

Rodolfo Viríssimo Gomes[1], Marina Santos[2], Flávio Mendonça[2], Margarida Temtem[2], Catarina Nóbrega[2], Ricardo Rodrigues[2], Marco Gomes Serrão[2], Rafael Freitas[2], Drumond Freitas[2]

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Introduction: NT-proBNP is a risk factor for atrial fibrillation and a marker of cardiac function, therefore useful to determine prognosis.
Methods: Analysis of NT-proBNP determined in patients admitted in a Cerebrovascular Unit due to an ischemic stroke during a year (188 patients), determining cardiovascular events and functional outcome at after 5 years.
Results: From total of 188 patients, we removed 24 because they had a Barthel score < 60 before admission, so there were 164 patients remaining. In our 5 year follow-up, 53.7% had NT-proBNp < 125 pg/ml with average 49.4 ng/ml (group 1) and 46.3% had NT-proBNP ≥ 125 pg/ml with average 520.6 pg/ml (group 2). There was no difference in demographics and comorbidities between both groups. NT-proBNP levels correlated with several features analyzed (group 1 vs group 2): cardioembolic stroke (2.3% vs 38.2%), atrial fibrillation (1.1% vs 47.4%), average NIHSS at admission (4.3 vs 8.2), Rankin scale at discharge (1.9 vs 2.7), death (11.4% vs 44.7%), non-fatal CV events (8.0% vs 27.6%) and Barthel < 60 in survivors (9.0% vs 16.7%).
Conclusions: We conclude that higher NT-proBNP levels can be used to establish bad prognosis after 5 years, in functional outcome as well as in death and non-fatal cardiovascular events.

P 349. IS TROPONIN RELATED TO STROKE ETHIOLOGY?

Rodolfo Viríssimo Gomes[1], Marina Santos[2], Flávio Mendonça[2], Margarida Temtem[2], Catarina Nóbrega[2], Ricardo Rodrigues[2], Marco Gomes Serrão[2], Rafael Freitas[2], Drumond Freitas[2]

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Introduction: Elevated troponin is a marker of cardiac disease and has been associated with embolic stroke risk.
Methods: Analysis of all high sensitivity troponin T determination performed in the acute phase of every patient admitted in a Cerebrovascular Unit due to an ischemic stroke during a year (188 patients), determining differences between cardioembolic (group 1) and non-cardioembolic (group 2) sources.
Results: According to TOAST, there were 19.1% strokes of cardioembolic source, without any difference in demographics between both groups. Previous atrial fibrillation was more common in group 1 (44.4% vs 5.3%), as well as ischaemic cardiomyopathy (16.7% vs 9.9%) and heart failure (8.3% vs 3.9%). All 188 patients had admission troponin levels available. In group 1, 19.4% had positive troponin levels and an average value of 0.120 ng/ml; in group 2, only 2.0% had positive troponin leves, with an average value of 0.014 ng/ml.
Conclusions: In our population, we found that admission troponin levels were significantly higher in cardioembolic stroke. Therefore, this value should be tested in all patients and should guide our ethiologic investigations in every stroke of unknown cause. Further studies might help us to decide if this is a useful feature to recommend secondary prevention in these patients.

P 350. CAN LEFT ATRIAL MECHANICS PREDICT ANTICOAGULATION IN CRYPTOGENIC STROKE?

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Introduction: Ischemic stroke is a leading cause of death and disability in the Western world, frequently due to cardioembolism and atherothromboembolism. Cryptogenic strokes occur without a well-defined aetiology after a standard vascular and cardiac evaluation, and secondary prevention may include antiplatelet therapy while awaiting results of long-term cardiac monitoring. In this study, we aimed to identify echocardiographic predictors of paroxysmal atrial fibrillation (AF) latter identified in follow-up of patients with cryptogenic stroke.
Methods: We retrospectively assessed all patients with cryptogenic stroke admitted in our hospital in the last year. Only patients in normal sinus rhythm with a minimum of 24 hours of cardiac monitoring at admission and 24 hours Holter monitor within 6 months after discharge were included. Echocardiographic measures included left ventricle ejection fraction, left atrium (LA) volume, left and right atrium longitudinal strain, left and right ventricle longitudinal strain, E/A ratio, E/e' ratio, isovolumetric relaxation time (IVRT) and E wave deacceleration time. Echocardiographic data was assessed to determine its accuracy to identify AF.
Results: The study included 32 patients with a mean age of 72 ± 10 years and a male preponderance (87.5%). AF was identified in 12 (37.5%) patients. This group of patients had a larger indexed LA volume (44.3 vs 29.1 mL/m^2, $p = 0.043$), a lower IVRT (87 vs 116 ms, $p = 0.028$), and a lower LA longitudinal strain in contractile (6.7 vs 13.6%, $p < 0.001$) and in reservoir phase (17.1 vs 23.6%, $p = 0.042$). All other variables were not significantly different among

groups, including LA longitudinal strain in conduit phase. LA longitudinal strain in contractile phase showed the best predictive power with an area under the ROC curve of 0.925 (95%CI 0.82-1, p = 0.001). The cut-off value that best predicted AF was 8.17% with a sensitivity of 1 and specificity of 0.9.
Conclusions: LA longitudinal strain in contractile phase is a powerful method to identify AF in cryptogenic stroke. When reduced, anticoagulation may be considered in order to prevent recurrence. Further studies are warranted to reproduce these results in larger cohorts.

P 351. PATENT FORAMEN OVALE: THE BALANCE BETWEEN ROPE SCORE AND ECHOCARDIOGRAPHIC CHARACTERISTICS

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Introduction: Patent foramen ovale (PFO) is the most common congenital heart abnormality and is present in approximately 25% of the worldwide adult population, with higher prevalence in patients (pts) with embolic stroke of undetermined source (ESUS). The Risk of Paradoxical Embolism (RoPE) score was developed with the aim of stratifying pts according to the probability of a causative role of PFO in the pathogenesis of ESUS. However, it is mainly based on clinical criteria and does not correlate with anatomo-functional PFO parameters, which may aid the decision-making process in this pts Whether both information should be incorporated together is still debatable.
Objectives: Characterize a cohort of ESUS pts with PFO and identify possible relations between RoPE score and echocardiographic PFO features.
Methods: Unicentric, retrospective analysis of pts with ESUS diagnosis and PFO confirmation by transesophageal echocardiography (TEE) between 1/2014 and 11/2019. Excluded pts aged older than 70 years. Clinical, demographic and echocardiographic PFO-characteristics were analyzed. Pts were divided in two groups: G1-low-risk RoPE score (0-5 points) and G2-high-risk RoPE score (6-10 points).
Results: Included 60 pts with mean age of 48.3 ± 13.1 years (y) [20;68] and female gender predominance (53%). G1 had 21pts (35%) and G2 had 39 (65%). G2 had more significant right-to-left shunt (64.1 vs G1 57.1%, p < 0.001), more shunts occurring at rest and during the Valsalva maneuver (63.2 vs G1 47.6%, p < 0.001) and more tunnel-like morphology (61.5 vs G1 38.1%, p < 0.001). G1 pts had more atrial septum aneurysm (ASA) (70.0 vs G2 48.7%, p = 0.003).
Conclusions: In this cohort, the majority of pts had high-risk RoPE score. Shunt size, PFO *tunnel-like* conformation and shunt occurring at rest and Valsalva maneuver conditions were more frequently related to high-risk RoPE score. On the other hand, G1 pts had more ASA. These results suggest that high-risk RoPE score might be associated with important echocardiographic PFO features that can help on pt selection for specific treatments.

P 352. ATRIAL FIBRILLATION RISK STRATIFICATION AFTER ISCHEMIC STROKE-WHAT CAN BE DONE WITH USUAL WORK UP DIAGNOSTIC TOOLS

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Introduction: Atrial fibrillation (AF) is a common cause of stroke. Common work up usually fails to diagnose it soon after the event.
Objectives: To assess the clinical predictors of AF in patients presenting with stroke and to derive a risk predictive score of AF that may help in further management of this patients.
Methods: Single center retrospective analysis including 223 consecutive patients presenting with stroke without previously known AF between January 2016 and December 2016. Univariate analysis was used to find variables associated with AF at long-term, and multivariate analysis including clinical important known factors to be associated with AF and those variables that showed to be associated with AF in the long-term in the Univariate analysis. ROC curve analysis was performed to assess the discriminative power of the model.
Results: The mean age was 72 ± 12 yo, 47% were male. At 3-year follow up, 47 patients (21%) had AF diagnosed. Patients with AF at long term were older (76 ± 9 vs 71 ± 12, p = 0.002), had larger left atrium (LA) (41 [38-48] ml/m^2 vs 27 [25-33] ml/m^2), greater ectopic beat burden (1.35 [0.2-3.3]% vs 0.2 [0-0.6]%) and greater serum creatinine (1.3 ± 0.8 vs 1 ± 0.5, p = 0.009). There were no differences (p > 0.05) in gender, hypertension, diabetes, sleep apnea,, congestive heart failure, ejection fraction, mitral valve disease, between groups.. The only independent predictor of long-term AF was LA dimension OR 1.16 (95%CI 1.07-1.25). The model including LA dimensions, ectopic beat burden, creatinine, age, hypertension, diabetes, sleep apnea and previous stroke showed an AUC of 0.91 (95% IC 0.85-0.97, p < 0.001) for long-term AF prediction.
Conclusions: Left atrium dimension was the only independent predictor of long-term AF in this single center cohort of patients with stroke. Notwithstanding other clinical important variables may be important to identify patients that may benefit from further investigation (implantable loop recorder) and therapy. The AF predictive model derived from the present population showed a good discriminative ability.

P 353. PATENT FORAMEN OVALE-HIGH-RISK ECHOCARDIOGRAPHIC FEATURES RELATED TO SECONDARY STROKE PREVENTION

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Introduction: Patent foramen ovale (PFO) closure has long been a matter of debate concerning the impact of such procedure on preventing ischemic events recurrence. Recent reports support this strategy raising the issue of optimal patient selection based on anatomical high-risk characteristics evaluated by transesophageal echocardiography (TEE) that may be associated with an increased risk of recurrence.
Objectives: Characterize PFO-related echocardiographic findings and clinical features of a cohort of Embolic Stroke of Undetermined Source (ESUS) patients (pts).
Methods: Unicentric, retrospective analysis of pts with ESUS diagnosis who underwent TEE between 1/2014 and 11/2019. Excluded pts aged older than 70 years. Clinical stroke characteristics and echocardiographic PFO features were analyzed.
Results: Included 124 pts with a mean age of 50 ± 1.6 [20;68] years and female gender predominance (58.9%). 48.4% of ESUS pts had PFO (53% female). Regarding PFO pts, 38 (62.3%) had significant right-to-left shunt on TEE, which was statistically associated with cortical infarcts (78.9 vs 56.5%,p = 0.037). 35 pts (58.3%) had shunt occurring at rest and during the Valsalva maneuver; when associated to significant shunt there was a correlation with cortical located infarcts (82.1 vs 60.0%, p < 0.001). 33 PFOs (54.1%) had tunnel-like morphology. Tunnel-like PFOs were associated with significant right-to-left shunt (78.8 vs 42.9%, p < 0.001), atrial septum aneurysm (ASA) presence (68.8 vs 50.0%, p < 0.001) and with hemorrhagic transformation of ischemic stroke (15.2 vs 3.6%, p = 0.031). 34 PFO pts (60.7%) had ASA. Mean PFO length was 6.42 ± 5.0 mm and mean height was 3.2 ± 2.0 mm.
Conclusions: In this cohort, there was a similar number of pts with and without PFO. Regarding ESUS pts with PFO, the majority had significant right-to-left shunt that occured at rest and during Valsalva maneuver and were associated with cortical located infarcts. Tunnel-like morphology and ASA were also frequent. Tunnel-like morphology were associated with hemorrhagic transformation of ischemic strokes. These findings support the proposal that PFO characterization should have an additional role in stratifying pts with ESUS and selecting them for device closure.

Painel 12 - Cardio-Oncologia/Farmacologia 1

P 358. CAN WE ACCESS CARDIOVASCULAR RISK IN RADIOTHERAPY PATIENTS?

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Introduction: Radiotherapy (RT) may lead to several side effects including coronary, valvular and pericardial disease. However, pharmacological cardioprotection is not indicated yet. Calcium score by computed tomography (CT) has showed value predicting cardiovascular risk over traditional risk stratification. In this study we aimed to determine cardiovascular radiotherapy effects on calcium score by CT.
Methods: We conducted a retrospective observational study including all patients submitted to breast RT in 2017 at our hospital. A total of 235 patients were identified. A CT planning for RT was used as a basal assessment. After identifying patients with an adequate CT within a year after RT, 11 female patients were included in our analysis. Non-electrocardiography gated CT with a 3 mm slice thick reconstruction permitted the Agatston score calculation.
Results: Mean age was 67.2 ± 14 years. Median total calcium score was increased after RT (276 vs 696, p = 0.005), particularly in pericardium (0 vs 71, p = 0.018) and descending aorta (276 vs 553, p = 0.08). Moreover, there was an increased calcium score in coronary arteries (8.45 vs 73.36, p = 0.028) and cardiac valves (16.6 vs 66.6, p = 0.03) but with no significant increases in aortic, mitral or tricuspid valve neither in coronary arteries when individually analysed. The total radiation dose was correlated with the increase in total calcium score (r^2 = 0.41, p = 0.034). However, there were no differences regarding the irradiated breast (right vs left). Age was also not associated with calcium increase.
Conclusions: In this preliminary study on patients submitted to breast RT, an increase of calcium score in coronary, valvular, pericardial and aortic territories was found. Further studies are warranted regarding the ability of the calcium score to predict events in this at-risk population.

P 355. PREDICTORS OF CARDIOTOXICITY AFTER CHEMOTHERAPY WITH TRANSTUZUMAB

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Introduction: Trastuzumab is a monoclonal antibody that targets the human epidermal growth factor receptor 2 (HER2). For the 15 to 20 percent of patients with breast cancer whose tumors overexpress HER2, trastuzumab therapy is important in the treatment of both early and advanced disease. Its use results in a risk for cardiotoxicity, which is, typically, manifested by left ventricular dysfunction (LVD) and heart failure (HF) that is usually reversible with trastuzumab interruption and/or treatment with HF therapies
Objectives: To identify the predictors of cardiotoxicity during follow-up of a population under treatment with trastuzumab.
Methods: Unicentric, retrospective study including all patients, from January 2018 to November 2019, who were treated with trastuzumab and developed clinical or subclinical LVD. And a control group of 37 patients who received trastuzumab, without LVD. LVD was defined by decline in initial ejection fraction (EF) of at least 5% to < 55% with signs and symptoms of heart failure or asymptomatic decrease in EF of at least 10% to < 55%, or decrease in global longitudinal strain > 15%. Cardiovascular risk factors and treatment regimens were analyzed.
Results: Mean age is 54.59 ± 9.21 years in the group with LVD and 55.95 ± 10.25 in the control group. Of the 130 patients treated with trastuzumab from January 2018 to December 2019, 13.08% (n = 17) developed LVD. There was an association between the occurrence of LVD and concomitant treatment with anthracyclines (100% vs 76.30%, p = 0.044) and with tobacco consumption (23.50% vs 2.60%, p = 0.028). There was no statistically significant difference in the two groups regarding the mean age, contrary to what is described in the literature. Concurrent treatment with trastuzumab and adjuvant radiation therapy, or another drug regimen, does not increase the risk of developing cardiotoxicity.
Conclusions: Concomitant treatment with anthracyclines and tobacco consumption were predictors of left ventricular dysfunction in patients with tumor treated with trastuzumab. Results reinforce the importance of tighter follow-up in patients with these risk factors.

P 354. EARLY PREDICTORS OF CARDIOTOXICITY IN PATIENTS UNDER ANTHRACYCLINES

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Introduction: Left Ventricular Ejection Fraction (LVEF) is the most used parameter for the monitoring of anthracyclines induced cardiotoxicity but it requires significant myocardial damage to be affected. Therefore, it is important to study earlier markers for cardiotoxicity.
Objectives: To identify the early markers of cardiotoxicity caused by anthracyclines.
Methods: Systematic review. Research was performed on 3 databases (Pubmed, Embase and Medline) using a combination of terms (anthracyclines and cardiotoxicity and predictors and early detection), including articles from 2000 to May 2019. The inclusion criteria were human studies and anthracycline therapeutic regimens in any dosage, formulation or indication. We extracted information about the study population, intervention and results, using a data extraction platform specifically designed for this review.
Results: According to the evaluated studies, 2D-global longitudinal strain (GLS) (8 studies with 628 participants) is an early predictor of cardiotoxicity despite of the time used for its evaluation, being reduced in the first echocardiographic evaluation after the beginning of treatment (even when LVEF is normal). 1 study with 89 people evaluate 3D-GLS and it is also a predictor of early cardiotoxicity. In 2 studies with 200 participants, T-troponin (TnT) showed to early predict cardiotoxicity regardless of the time. 1 study with 75 people evaluate hs-TnT showing that it is an early predictor of cardiotoxicity. I-troponin (TnI) and hs-TnI also showed to predict early cardiotoxicity in 1 study with 82 and 43 people respectively. A study that combine values of 2D-GLS superior to -15.9 and hs-TnT > 0.004 ng/mL showed its power to predict early cardiotoxicity with a specificity of 89%. A study combining a fall in 2D-GLS > 10% and a rise on hsTnI showed to be an early cardiotoxicity predictor with a specificity of 97%. On the other hand, left atrial volume (2 studies with 182 participants), E/A ratio (6 studies with 432 participants) and NTproBNP (3 studies with 282 participants) were not early predictors of cardiotoxicity. Despite LVEF being a predictor of cardiotoxicity, this parameter is changed late in the course of the treatment according to the 5 studies with 377 participants analyzed.
Conclusions: This study confirms that LVEF is not a good marker of early cardiotoxicity and suggests the use of echocardiographic deformation parameters and biomarkers of cardiac injury for this purpose.

P 356. STATINS FOR VENOUS THROMBOEMBOLISM PREVENTION: OLD DOG, NEW TRICKS

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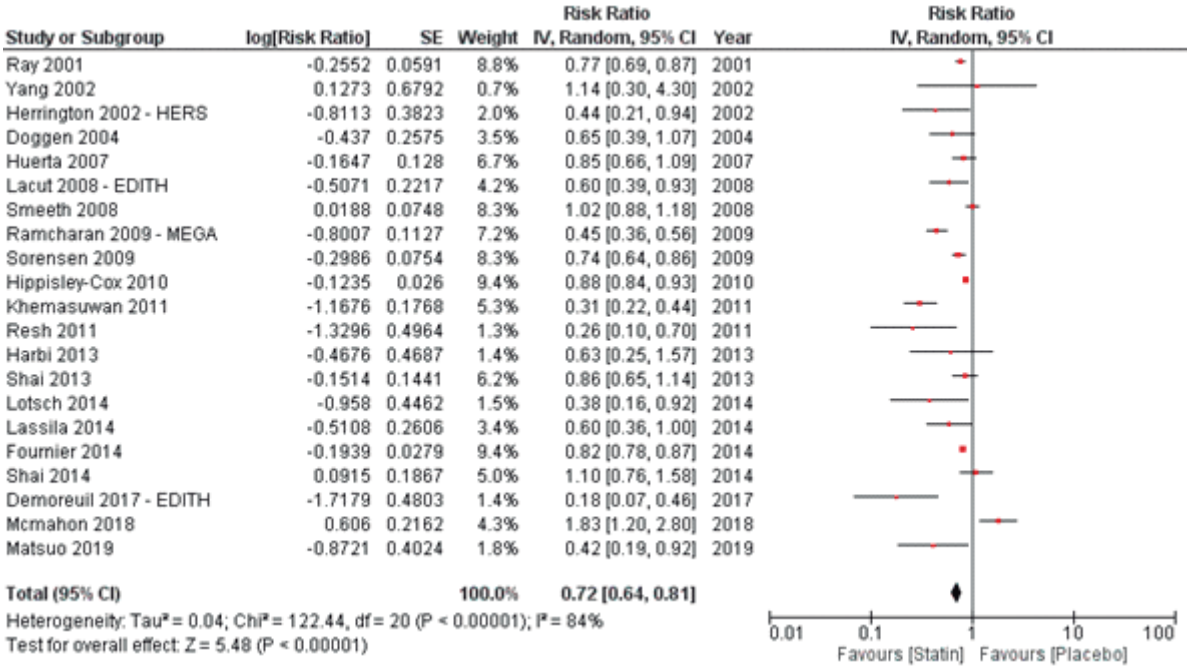

P 356 Figure

Introduction: Statins are highly effective in preventing major acute cardiovascular events in the setting of atherosclerotic arterial disease. On the other hand, given their antithrombotic and anti-inflammatory properties, statins may also attenuate patients' odds of developing venous thromboembolism (VTE). However, clinical studies have yielded variable estimates of this effect.
Objectives: To perform a meta-analysis designed to evaluate the extent to which statin use influences the rate of subsequent VTE events.
Methods: We systematically searched MEDLINE, Embase, Web of Science, Cochrane Library and Google Scholar for both randomized controlled trials (RCTs) and observational studies addressing the association between statins and VTE risk, published up until December 1, 2019. Manually reviewed references and key investigators interaction via email correspondence were also data sources. RCTs comparing the effects of statin therapy with those of a placebo or no treatment were included, while interventional studies appraising different lipid-lowering pharmacological strategies were not. Observational studies encompassed both cohort and case-control designs. The primary endpoints were general VTE, deep vein thrombosis or pulmonary embolism. Patients with cancer, heart failure and chronic kidney disease (CKD) were further investigated separately. Study-specific relative risks (RRs) were pooled using generic inverse variance outcome meta-analytic technique with a random-effects model.
Results: 23 RCTs comprising 118,464 participants, 12 cohort studies encompassing 2,881,184 patients and 9 case-control studies including 354,367 patients were regarded as eligible for quantitative evaluation. Specifically, 5 observational studies comprising 9,656 cancer patients, 3 studies encompassing 9,693 heart failure patients and 4 studies including 4,353 CKD patients were gathered. In RCTs, statin therapy was proven slightly superior to placebo or no treatment in lowering VTE incidence (RR 0.85, 95%CI 0.73-0.99, p = 0.04, i^2 = 14%). Observational studies were found to corroborate this effect, with statin treatment resulting in VTE risk reduction overall (RR 0.72, 95%CI 0.64-0.81, p < 0.001, i^2 = 84%) and in both cohort (RR 0.86, 95%CI 0.83-0.90, p < 0.001, i^2 = 85%) and case-control (RR 0.68, 95%CI 0.57-0.82, p < 0.001, i^2 = 80%) designs. This positive effect held true in cancer patients (RR 0.56, 95%CI 0.33-0.95, p = 0.03, i^2 = 78%), but not in those with heart failure (RR 0.7, 95%CI 0.42-1.16, p = 0.17, i^2 = 2%) and CKD (RR 1.04, 95%CI 0.67-1.60, p = 0.87, i^2 = 0%).
Conclusions: Currently available evidence suggests that statins significantly reduce patients' odds of developing VTE. Given their favorable safety profile and low cost, statin treatment should now be considered in high-risk individuals, particularly in those with cancer.

P 357. THROMBIN GENERATION TEST IS SUPERIOR TO CONVENTIONAL TESTS TO MONITOR DIRECT ORAL ANTICOAGULANTS

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Introduction: The use of direct oral anticoagulants (DOAC) is increasing, mainly to limited monitoring requirements. The test of choice for the assessment of the anticoagulant effect is the dilute thrombin time (dTT) for dabigatran and the anti-factor Xa assay for rivaroxaban, apixaban and edoxaban. However, both tests do not truly represent the achieved anticoagulation, because they measure the inhibitory activity exerted against an individual factor. The Thrombin Generation Test (TGT) is a promising tool, as it evaluates thrombin generation (procoagulant driver) and inhibition (anticoagulant driver). We aimed to assess the anticoagulant effect of the DOAC on each individual TGT parameter to assess suitability of these parameters for monitoring the global anticoagulant effect.
Methods: We prospectively included 20 senior patients on DOAC for atrial fibrillation. TGT parameters were measured at through (lag time, endogenous thrombin potential (ETP), peak height, time to peak, and velocity index). TGT parameters and DOAC concentrations were correlated. The patients were followed up for 9 months.
Results: The mean age was 76 ± 7 years; 40% were male. All patients were polymedicated. The majority of the patients were under apixaban (n = 12, 60%), while 4 patients were on edoxaban, 2 on rivaroxaban and 2 on dabigatran. All patients were on clinically appropriate DOAC dosages. Although all the TGT parameters were significantly correlated with DOAC activity (figure 1), peak height showed the best correlation (r = -0.74, p < 0.001). Conversely, ETP was weakly correlated with DOAC levels (r = -0.65, p = 0.002). Patients treated with dose reduction scheme (n = 7, 35%) had a similar DOAC activity compared to patients treated with a regular dose. Additionally, no differences were found in the different TGT parameters. At the 9-month follow-up, 1 patient suffered an ischemic stroke; no major hemorrhagic events were observed. In that dabigatran-treated patient who suffered the stroke, although the dTT was in the appropriate range, the very sensitive parameters of the TGT suggested a hypercoagulability state, characterized by higher levels of ETP and peak high (Table).

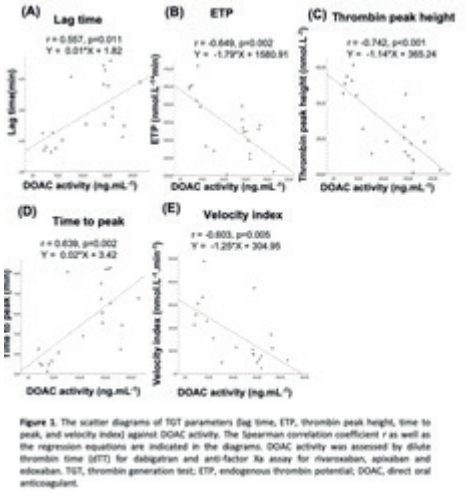

Figure 1. The scatter diagrams of TGT parameters (lag time, ETP, thrombin peak height, time to peak, and velocity index) against DOAC activity. The Spearman correlation coefficient r as well as the regression equations are indicated in the diagrams. DOAC activity was assessed by dilute thrombin time (dTT) for dabigatran and anti-factor Xa assay for rivaroxaban, apixaban and edoxaban. TGT, thrombin generation test; ETP, endogenous thrombin potential; DOAC, direct oral anticoagulant.

DOAC concentration	Patient who suffered the stroke	Normal values	
dTT – ng.mL⁻¹	40	28-155	
TGT parameters		**Median (IQR)**	**P90**
Lag time - ratio	2.3	2.5 (2.0-3.9)	4.4
Thrombin peak high - %	405.4	214.0 (158.8-325.6)	372.3
ETP - %	1716.0	1363.0 (1144.3-1512.5)	1608.1
Time to peak – ratio	3.5	5.5 (3.7-7.3)	8.2
Velocity index - %	487.7	113.1 (66.4-249.5)	367.4

Table 1 – DOAC concentration and TGT parameters in the patient who suffered the stroke. DOAC, Direct oral anticoagulant; dTT, dilute thrombin time; TGT, Thrombin generation test; ETP, endogenous thrombin potential.

P 357 Figure

Conclusions: Our preliminary analysis results indicate a potential role for TGT in improving the assessment of the thrombotic risk in patients on DOAC. The dose needed to prevent thrombosis, but still prevent bleeding, may vary in each patient. Therefore, tailoring drug dosages may be crucial in specific subgroups.

P 359. VERY FRAGILE PATIENTS WITH ATRIAL FIBRILLATION: TO ANTICOAGULATE OR NOT IS THE QUESTION!

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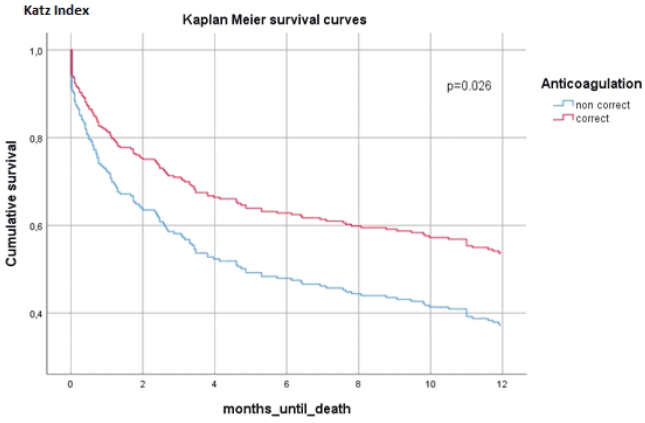
Introduction: In the setting of patients with atrial fibrillation (AF), older age and frailty increase the risk of both thromboembolic and haemorrhagic complications. One tool to evaluate frailty is through the Katz Index of activities of daily living (KI). We hypothesized that among a frail population, non-necessarily an elderly one, the net clinical benefit of anticoagulation persists.



Methods: We conducted a retrospective, observational study of 800 patients with AF admitted to an Internal Medicine ward and grouped the population according to the KI: KI = 0 (totally dependent: n = 293, 39%) and KI > 0 (non-totally dependent: n = 455, 61%). Patients were stratified whether they were adequately anticoagulated [with low molecular weight heparin, warfarin or direct oral anticoagulant (DOAC) at correct dose] or inadequately anticoagulated (discharged with no anticoagulant or anticoagulant at an incorrect dose). Finally, we assessed the incidence of 1-year adverse outcomes (cardiovascular death, ischemic or haemorrhagic stroke and major bleeding).

Results: Patients with KI = 0 were slightly older (86 ± 7 vs 81 ± 8, p < 0.001) than patients with KI > 0, with a similar gender distribution (57% women). A KI = 0 conferred a 3-fold higher risk of dying than a KI > 0 (p < 0.01). There was a significant interaction between anticoagulation adequacy and mortality: inadequately anticoagulated patients with KI = 0 had a 1.6-fold higher mortality compared to those adequately anticoagulated, after adjusting for age and sex (63% vs 47%), HR 1.60 (95%CI 1.05-2.45, Log Rank p = 0.026). Conversely, no interaction was found between the adequacy of anticoagulation and the risk of events in KI = 0 patients (ischemic stroke n = 1, 2.3%; haemorrhagic stroke n = 4, 0.6% major bleeding n = 6, 3.5% in inadequately anticoagulated).

Conclusions: Although we cannot exclude prescription bias, in extremely frail, totally dependent patients a benefit was found from an adequate anticoagulation strategy, if the focus is cardiovascular mortality. The ischemic and hemorrhagic event rate was similar among groups, eventually due to underreporting. Thus, we want to reinforce the importance of evaluating variables other than fragility, like cognitive function at the time of the decision to anticoagulate a extremely frail patient.

Painel 2 - Insuficiência Cardíaca 10

P 294. POTASSIUM AS A PREDICTOR OF OUTCOME IN ACUTE HEART FAILURE AND PRESERVED EJECTION FRACTION

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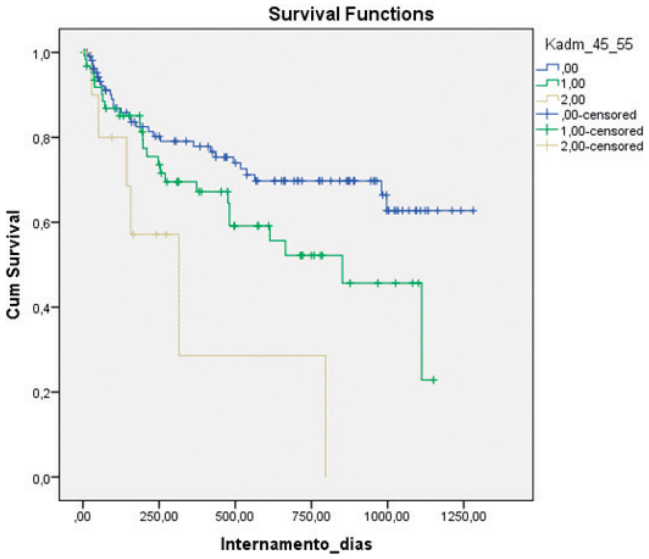
Introduction: Following the approval of new potassium binders, there has been a renewed interest on serum potassium (K) in patients with heart failure and a reduced ejection fraction (HFrEF). The association between serum K levels and outcome in this population was previously studied, frequently with inconsistent results. Low baseline levels and acute decreases in serum K during

hospital stay have been linked to increased mortality. There is some evidence that high normal K values may be associated with a more favorable outcome. Not much is known about the predictive value of K in patients with HF and preserved ejection fraction (HFpEF), a population where hospitalizations and mortality are more commonly associated with co-morbidities and who are also frequently treated with neurohumoral inhibitors. Our aim was to assess the impact of K levels on the outcome of HPpEF patients.
Methods: Single-center, retrospective study including patients admitted for decompensated HF to a dedicated HF unit between 2016 and 2018. Patients with HFrEF were excluded. K levels were recorded at admission and discharge. Long-term all-cause mortality and HF hospitalization were assessed on follow-up.
Results: 200 patients were included. Mean age: 79.7 (72.5-84.8) years; 47% male. 89.4% had hypertension, 41.9% diabetes; 28.5% ischemic heart disease; Avg. creatinine on admission 1.28 mg/dL (0.95-1.71) with estimated glomerular filtration rate (eGFR) 45.02 ± 0.4 ml/min/1.73 m^2. Avg. serum K on admission 4.35 ± 0.66 mmol/L; at discharge: 4.31 ± 0.55 mmol/L. Avg. follow-up 18.9 ± 12.2 months. In univariate analysis, a higher K at admission was associated with increased prevalence of hospitalization for HF on follow-up (HR 1.02, 95%CI 1.002-1.038, p = 0.031) (Figure). After adjustment for potential confounders (diabetes, GFR, thiazides, MRAs, hemoglobin), a lower value of K (< 4.5 mmol/L) was a significant predictor of lesser hospitalization for HF (HR 0.274, 95%CI 0.1-0.747, p = 0.011). On the other hand, a K level between 4.5 and 5.5 mmol/L at discharge was an independent predictor of decreased long-term mortality, when compared to discharge K levels > 5.5 or < 4.5 mmol/L (HR 0.50, 95%CI 0.31-0.82 p = 0.006).



Kaplan-Meier curve; Relationship between K on admission and long-term hospitalization on follow-up.

Conclusions: In this population with HFpEF, K on admission was an independent predictor of long-term hospitalization. We observed a U-shaped relationship between K at discharge and mortality (greater events occurring outside of the 4.5-5.5 mmol/L range), as previously reported on other populations (both cardiovascular and non-cardiovascular).

P 295. CHEST ULTRASOUND VS. NATRIURETIC PEPTIDES FOR THE DIFFERENTIAL DIAGNOSIS OF ACUTE CARDIAC DYSPNOEA

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Introduction: N-terminal pro B-type natriuretic peptide (NT-proBNP) is a useful tool for heart failure (HF) diagnosis and a well-established and independent marker of worse prognosis. In the context of critical illness it seems less useful from a diagnostic perspective, while chest ultrasonography (CUS) allows rapid determination of cardiac function, intravascular volume status, and pulmonary oedema.
Objectives: To compare the accuracy of CUS and NT-proBNP for predicting HF among patients (pts) with acute dyspnoea.
Methods: We prospectively evaluated 26 pts admitted to our intensive care unit (ICU) due to acute dyspnoea, between January and March 2018. In the first 12 hours, CUS was performed and NT-proBNP levels assessed in each pt. Ultrasound protocol included lung (B-lines) and cardiac evaluation (left ventricular ejection fraction (LVEF), diastolic filling (E/e') and inferior vena cava collapsibility index (IVCi)). A positive exam was defined according to the presence of ≥ 3 bilateral B-lines plus 2 of 3 of the following: LVEF < 50%; E/e' > 14; IVCi < 25%. Two independent physicians, blinded to CUS and NT-proBNP findings, reviewed all the medical records to establish the aetiologic diagnosis of dyspnoea. Patients who survived hospital admission were followed for 180 days.
Results: Overall, mean age was 72 ± 15 years and 12 (52%) were female. Cardiogenic dyspnoea was diagnosed in 14 pts (58%) and 12 were clinically diagnosed with non-cardiac dyspnoea. Baseline mortality risk scores did not differ between groups: APACHE II 23 ± 7 vs 24 ± 9, p = 0.77; SAPS II 47 ± 13 vs 47 ± 20, p = 0.98. Moreover, in-hospital and 180-day mortality rates did not differ according to the aetiology of the acute dyspnoea (29 vs 18%, p = 0.66 and 36 vs 18%, p = 0.41 respectively). The results from CUS evaluation and NT-proBNP levels among each aetiologic group is depicted in the table. NT-proBNP did not correlate with a positive CUS (r = 0.26, p = 0.21). Receiver operating characteristic analysis showed an area under the curve of 0.82 (95% confidence interval (CI): 0.65-0.99) for positive CUS and of 0.69 (95%CI: 0.44-0.94) for NT-proBNP in predicting cardiac origin of dyspnoea.
Conclusions: In this cohort of pts admitted to an ICU due to acute dyspnoea, mean NT-proBNP did not differ between cardiac and non-cardiac aetiology. The discrimination power of CUS, a combination of lung and cardiac parameters, in predicting cardiac origin of dyspnoea was high and it was also superior to the one of NT-proBNP.

P 296. LEVOSIMENDAN IN ACUTE HEART FAILURE: A TERTIARY CENTER EXPERIENCE

Mariana Ribeiro Silva, Gualter Santos Silva, Daniel Caeiro, Marisa Passos Silva, Cláudio Guerreiro, Pedro Teixeira, Pedro Ribeiro Queirós, Mariana Brandão, Diogo Ferreira, Olga Sousa, Adelaide Dias, Alberto Rodrigues, Pedro Braga

Centro Hospitalar de Vila Nova de Gaia/Espinho.

Introduction: Levosimendan (LVS) is a calcium sensitizer and inodilator used for treatment of acute heart failure (HF). It has favorable effects on systemic hemodynamics with an acceptable safety profile.
Objectives: To characterize patients (pts) treated with LVS during hospital stay, to evaluate its effects on hemodynamics and renal function (RF) and the impact of adverse events (AE) in the outcomes.
Methods: Retrospective study that included pts with acute decompensated HF treated with LVS in a cardiac intensive care unit and cardiology ward of a tertiary center, between January 2015 and June 2018. Serum creatinine (SCr) and natriuretic peptides (NT pro-BNP) before and within 5 days after LVS were recorded as well as AE that occurred during infusion. We evaluate outcomes at 1-year.
Results: 83 LSV infusions were identified in 69 pts, 84% males, mean age 65 years, 49% with ischemic heart disease, left ventricle ejection fraction (EF) ≤ 40% in 78%. INTERMACS 4 and hemodynamic profile C were the most frequent presentation. LSV was administered in 24h, without bolus, in most pts. 26.1% of pts needed another inotropic or vasopressor and 4.3% needed mechanical assist device. There was a significant improvement in NT-proBNP (10,466 to 8,237 pg/mL, p = 0.012) and SCr (1.62 to 1.44 mg/dL, p = 0.001) after LVS use. Also, pts with an EF ≤ 35% significantly improved EF after LVS (21% to 27%, p = 0.020). AE were common (37.7%), the most frequent were *de novo* hypotension, hypokalemia and arrythmias. The majority of AE were easily managed and did not required stopping the infusion. However, in 5 pts (7.2%) infusion need to be stopped due to ventricular arrhythmias. Despite the

AE recorded, there was still a significant improvement in RF in this pts (SCr 1.79 to 1.44 mg/dL, p < 0.001) but no improvement in NT-proBNP (p = 0.156). However, pts who interrupted the infusion prematurely did not significantly improve RF or NT-proBNP (p > 0.05 for all). 30-day and 1-year mortality was 23.2% and 46.4%. 30-day and 6-month readmissions for cardiovascular cause were 7.4% and 36%. 24.5% pts needed another LSV treatment within the readmissions. It is noteworthy that were no significant differences in mortality nor readmissions at 30-days and 1-year in pts with AE.
Conclusions: LVS improved NT-proBNP, RF and EF. Although AE were frequent, they were well tolerated and they did not change the outcome. Despite this, mortality remained very high.

P 297. LEVOSIMENDAN INCREASES TIME OUT-OF-HOSPITAL IN DECOMPENSATED ADVANCED HEART FAILURE

Gualter Santos Silva, Mariana Ribeiro Silva, Daniel Caeiro, Cláudio Espada Guerreiro, Pedro Gonçalves Teixeira, Pedro Ribeiro Queirós, Francisco Sampaio, Olga Sousa, Adelaide Dias, Pedro Braga

Centro Hospitalar de Vila Nova de Gaia/Espinho.

Introduction: Advanced heart failure is associated with a high rate of hospitalization due to clinical decompensating. Adding Levosimendan (LVS), an inodilatador which metabolite has long-lasting effect, to intravenous diuretic therapy (standard therapy) is a therapeutic option in these patients, although the magnitude of the short and long-term benefit still remains controversial.
Objectives: The aim of this study was to determine whether combination of LVS with standard therapy in patients with decompensated advanced heart failure (DAHF) increases time out-of-hospital compared to standard therapy alone. The secondary endpoint was duration of hospital stay for each type of hospitalization.
Methods and results: We included patients between January 2015 and October 2018, who met the following criteria: at least one hospitalization with standard therapy and at least one hospitalization with standard therapy plus LVS, separated less than 6 months from each other. From a total of 71 patients who took LVS, 7 patients met the inclusion criteria. All these patients were male, mean age was 64.1 ± 10.6 years, mean left ventricular ejection fraction was 24.6 ± 7.3% and 71.4% had ischemic cardiomyopathy. A total of 22 hospitalizations were analysed (12 with standard therapy plus LVS and 10 with standard therapy), with 4 patients having more than two hospitalizations. The administration of LVS increased the time out-of-hospital until readmission compared to standard therapy alone (70.5 days vs 34.7 days, p = 0.023). The length of stay during LVS administration was longer (12.1 days vs 6.0 days, p < 0.001). In 75% of cases after LVS infusion patients stay out-of-hospital more than 2 months while after standard therapy this event occurred only once (10%). 1-year mortality was 71.4%.
Conclusions: Use of Levosimendan increases time out-of-hospital in patients with decompensated advanced heart failure. This is an opportunity to improve quality of life in patients with severe disease and recurrent hospitalizations.

P 298. AN OLD STIGMA IN ACUTE HEART FAILURE: WORSENING RENAL FUNCTION AT DISCHARGE IS ALWAYS A BIG ISSUE?

Sofia Martinho[1], José Almeida[2], João Rosa[2], Gustavo Campos[2], Patrícia Alves[2], Cátia Ferreira[2], Flávio Freitas[2], João Ferreira[2], James Milner[2], Fátima Franco[2], Rui Baptista[2], Lino Gonçalves[2]

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Introduction: Deterioration of renal function in acute heart failure (AHF) occurs by renal congestion and/or low cardiac output and is an important prognostic factor in patients with AHF. We aimed to assess if worsening of renal function (WRF) at discharge in AHF was associated with a higher risk of readmission and its interaction with markers of clinical decongestion, as a negative variation of NT-proBNP levels.
Methods: We conducted a single-centre, retrospective, observational study of 128 patients who were admitted to our hospital for AHF during 2016 and were discharged alive. Baseline clinical, laboratory and demographic characteristics were evaluated at admission. We selected 106 patients who decreased NT-proBNP from admission to discharge and assessed whether WRF (identified as a decrease in glomerular filtration rate compared with the value on admission) alone (n = 59) was associated with a higher readmission rate at 3-months. Then, we selected those who developed WRF at discharge and assessed whether worsening of NT-proBNP alone (n = 10) was associated with a higher readmission rate at 3-months.
Results: Mean age was 75 ± 12 years and 62% were male. At baseline, 95% were on clinical-haemodynamic profile B, with a median NT-proBNP of 2,433 (IQR 1,446-5,130) pg/dL, and a mean estimated glomerular filtration rate (GFR) of 59 ± 27 mL/min/m^2. At discharge, when only patients who had decreased NT-proBNP during the admission (NT-proBNP at discharge-NTproBNP at admission < 0 pg/dL) were selected, those who developed WRF (GFR at discharge-GFR at admission < 0 mL/min/m^2) did not have an increased risk of AHF readmission at 3-months compared to those who did not develop WRF [OR 1.5 (95%CI 0.6 to 3.8, p = 0.417]. Conversely, when we selected only patients who developed WRF at discharge, an elevation of NT-proBNP was associated with a higher risk for AHF readmission at 3-months [HR 3.6 (95%CI 1.5 to 8.7, Log Rank p = 0.005)], after adjusting for age and gender.

Table 1. Patients with NT-proBNP improvement at discharge

		WRF at discharge (ΔGFR < 0 pg/dL)	No WRF at discharge (ΔGFR ≥ 0 pg/dL)	p-value
NT-proBNP improvement at discharge (ΔNT-proBNP < 0 pg/dL)	Readmission (n)	15	9	
	No readmission (n)	44	38	
				0.417

Table 2. Patients with WRF at discharge

		NT-proBNP improvement at discharge (ΔNT-proBNP < 0 pg/dL)	No NT-proBNP improvement at discharge (ΔNT-proBNP ≥ 0 pg/dL)	p-value
WRF at discharge (ΔGFR <0 pg/dL)	Readmission (n)	15	8	0.005
	No readmission (n)	44	2	

Conclusions: After an AHF admission, the major prognostic factor of 3-months readmission was the presence of residual congestion, signalled by an increase in NT-proBNP, regardless of whether renal function worsens at discharge. Efforts should be made to achieve as much decongestion as possible, even if it results in acute worsening of renal function.

P 299. PROFILE OF HOSPITALIZED PATIENTS WITH HEART FAILURE ADMITTED IN AN INTENSIVE CARE DEPARTMENT OF A TERTIARY CARE HOSPITAL

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Introduction: Heart failure (HF) is one of the major clinical challenges of public health, being the most common cardiovascular reason for hospital admission for people older than 60 years of age. In recent years there has been an evolution regarding the supportive measures that can be offered to these patients. Data about the epidemiology and prognosis of acute HF in the contemporary era is lacking in Portugal.
Objectives: To analyse the profile of the patients with acute HF admitted to an intermediate/intensive care unit (ICU) at a tertiary Portuguese hospital centre.
Methods: retrospective study of patients admitted at an ICU with the diagnosis of acute HF between January and December of 2018 of a tertiary care hospital. Patients were analysed regarding epidemiological data, aetiology, precipitant factors and in-hospital prognosis.
Results: 239 patients were included in the analysis, predominantly men (60.7%), with a mean age of 69.5 ± 14.8 years old. The majority was admitted directly from the emergency department (67.4%). A high burden of cardiovascular risk factors was present with hypertension (71.1%), dyslipidemia (59.0%) and diabetes (40.2%) being the most prevalent ones. The majority did not have a previous known diagnosis of HF (59.9%). Ischaemic disease was the most prevalent underlying cause (27.6%), followed by primary valvular disease (11.3%). The most common precipitant factors were acute coronary syndrome (35.6%), infection (13.4%) and arrhythmia (12.6%). The mean maximum BNP was 1,333.0 ± 104 pg/mL, and the mean ejection fraction at admission was 37.5 ± 16.9%. MCS was needed in 9.6% of the patients, with Veno-Arterial ExtraCorporeal Membrane Oxygenation (ECMO-VA) being the most used one (7.1%) with a mean duration of 12 ± 6.7 days. ECMO-VA patients had a mean age of 45.2 ± 15.4 years old, were predominantly men (64.7%), with previous unknow HF (82.4%) with myocarditis as the most common cause of admission (29.4%). Mean length of ICU stay for the overall group was 5.8 ± 7.2 days and a high in-hospital mortality rate of 23.4% was found. Cardiogenic shock unresponsive to the therapeutic measures (56.1%) and septic shock (17.1%) were the main causes of death.
Conclusions: in this group of patients with high risk acute HF, ischemic heart disease prevailed as the most common aetiology and cause of decompensation. MCS was used in younger patients, with less comorbidities and myocarditis was the main diagnosis in a strategy of bridge to recovery. In-hospital mortality was significant with infection assuming a highly relevant role in the prognostic definition alongside with the severity of the underlying cardiac disease.

Painel 3 - Imagiologia Cardiovascular 5

P 305. CARDIAC MAGNETIC RESONANCE IN MINOCA PATIENTS: SEARCHING FOR THE FINAL DIAGNOSIS

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Introduction: In patients with clinical evidence of acute myocardial infarction(AMI), absence of obstructive coronary disease does not imply absence of acute thrombotic process. Thereafter, it can be designated as Myocardial Infarction with Non-obstructive Coronary Arteries (MINOCA). In these cases, performing Cardiac Magnetic Resonance (CMR) can be essential for establishing a final diagnosis, due to evaluation of the presence and pattern of late enhancement.
Objectives: The aim of this study is to evaluate the diagnostic and prognostic impact of cardiac magnetic resonance in patients with a possible diagnosis of MINOCA.
Methods: A 7-years prospective study in our centre, which included all patients proposed to CMR with a presumptive diagnosis of MINOCA due to acute chest pain, troponin raise and absence of angiographically significant coronary disease (luminal stenosis of < 50%). All patients performed functional, anatomical evaluation, as so late gadolinium enhancement search. We analysed clinical characteristics, electrocardiographic presentation, echocardiographic and coronariography results. A presumptive diagnosis was elaborated after coronariography and comparison was made with the definitive one after CMR.
Results: A total of 85 patients were included, 53% were male, with a mean age of 49 ± 20 years old. Clinical history of hypertension was observed in 52% patients, 34% had dyslipidaemia, 8% with diabetes, obesity was present in 21% of patients and smoking habits in 33%. At admission, 47% had ST segment elevation, so emergent coronariography was performed. The mean highest troponin I was 7.54 ± 9.39 ng/mL. Late gadolinium enhancement was observed in 50 (59%) of patients. After CMR realization a final diagnosis of MINOCA was made in only 13 patients (15%) and in 51 patients (60%) CMR evaluation allowed a diagnosis modification, with impact on patients' management and prognosis. Of these 51 patients, a definitive diagnosis of myocarditis was seen in 65% of cases, of Takotsubo's myocardiopathy in 27%, and hypertrophic cardiomyopathy in 8%. In 21 (25%) of patients, late gadolinium enhancement was not found however its absence could exclude type 1 AMI as definitive diagnosis.
Conclusions: CMR is a fundamental technique on MINOCA patients' management. In our population, performing CMR allowed initial diagnosis modification in about two thirds of the cases, with important therapeutic and prognostic implications.

P 304. MYOCARDIAL PERFUSION SCINTIGRAPHY PRIOR TO KIDNEY TRANSPLANT: THE ROLE OF ATTENUATION CORRECTION WITH COMPUTED TOMOGRAPHY

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Introduction: Attenuation artifacts in myocardial perfusion scintigraphy (MPS) caused by subdiaphragmatic structures, breast and fat tissue reduce the specificity of the test. Several technics to overcome this limitation were developed, such as attenuation correction (AC). Kidney transplant candidates have higher perioperative risk due to the higher probability of myocardial ischemia (MI). Therefore, screening for MI before transplant is a common procedure and MPS is frequently used. The purpose of this study is to assess the role of AC with computed tomography (CT) on MPS performed on renal transplant candidates.
Methods: A cohort of 3,332 patients that underwent MPS between January 2016 and December 2018 was retrospectively reviewed. All kidney transplant candidates that performed MPS with and without AC an had a final report considered normal were selected. Perfusion defects were quantified using a 17-segment model and the Summed Stress Score (SSS) was calculated, on both with and without AC studies. Defects were grouped according to the coronary artery territories: left anterior descending (LAD), except the apex segment; circumflex (Cx); right coronary (RC). All relevant data, including demographic variables, was recorded and statistical analysis was performed using SPSS version 25.0.
Results: A total of 155 patients were selected (male gender n = 119 (76.7%); mean age 61.0 ± 8.1, 35-76 years old). Statistically significant difference on SSS was found between studies with and without AC (AC = 0.65% vs without AC = 3.29%, p < 0.000). When comparing each coronary artery territory, statistically significant differences were found on the segments assigned to LDA (AC = 0.08% vs without AC = 0.99%, p < 0.000), Cx (AC = 0.13% vs without AC = 1.52%, p < 0.000), RC (AC = 0.13% vs without AC = 7.97%, p < 0.000) and apex (AC = 9.68% vs without AC = 2.6%, p < 0.000).
Conclusions: Attenuation correction with CT has a significant impact on the results of MPS. In this group of patients the use of attenuation correction leads to a higher number of normal results avoiding probably unnecessary invasive evaluations.

P 302. PHARMACOLOGICAL STRESS ECHOCARDIOGRAPHY-IS THIS A SAFE EXAM TO PERFORM? DATA FROM A 6-YEAR SINGLE CENTRE EXPERIENCE

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Introduction: With increasing age and co-morbidities of patients and widely use of pharmacological stress echocardiography (PSE), its safety and side effects should be known.
Objectives: To assess incidence of PSE complications. To evaluate factors associated with higher incidence of complications.
Methods: Retrospective single-center study including all consecutive PSE performed during a 6-year period (2011-2016). Major complications were defined as death or conditions requiring hospitalization. Minor complications were defined as symptoms that were not tolerable by the patient, no life-threatening arrythmias and arterial hyper or hypotension. Univariate analysis was performed.
Results: Were performed 1484 PSE: 1227 (83%) using dobutamine and 257 (17%) using dipyridamole. The tests were performed in male patients in 56%, with mean age of 69 ± 10 years. The main reason for requesting PSE was to evaluate myocardial ischemia (n = 1421, 96%): in 60% in pts without previous diagnose of coronary artery disease (of which in 12% during pre-operative non-cardiac surgery evaluation) and in 39% to evaluate residual ischemia post-coronary revascularization. The test was negative in 81%, positive in 9.5% tests and inconclusive in the remaining tests. Complications occurred in 331 (22.3%) tests. Nine (0.6%) major complications occurred, all requiring hospitalization: 4 chest pain with ST-segment elevation, 2 refractory chest pain, 2 sustained ventricular tachycardia and 1 unstable high rate atrial fibrillation. No death occurred. Minor complications occurred in 322 exams (21.7%). The mostly common minor complications were frequent premature ventricular beats (7.7%), chest pain (4.5%) and arterial hypotension (3.4%). Early stopping of drug infusion with prematurely ended exams occurred in 64 (4.3%) tests, mostly due to arterial hypotension (n = 16) and hypertension (n = 14). Complications occurred more frequently with dobutamine compared to dipyridamole PSE (25 vs 9%, p < 0.001), and in those tests whose result was inconclusive (46%) or positive (40%) (p < 0.001).
Conclusions: Incidence of major complications was 6 events/1.000 exams. Minor complications occurred in 21.7/100 exams performed. Early stopping of drug infusion with prematurely ended exams occurred in 4.3 per 100 exams performed. Dobutamine stress echocardiography was associated with higher incidence of complications, as well as positive or inconclusive result tests.

P 332. CORONARY ARTERY CALCIUM ASSOCIATED WITH ADVERSE EVENTS IN PATIENTS WITH NON-OBSTRUCTIVE CORONARY HEART DISEASE IN THE SCOT-HEART STUDY.

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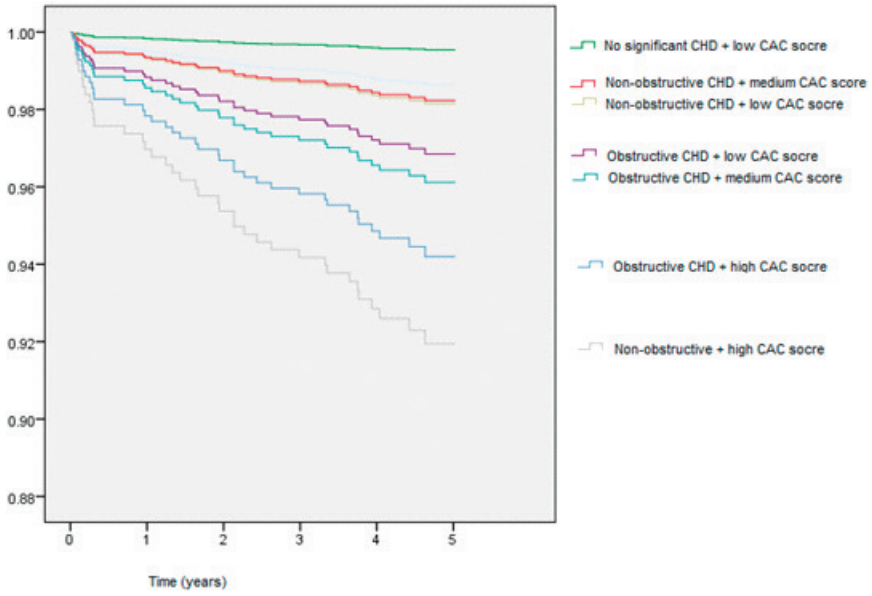
Introduction: Coronary CT Angiography (CCTA) has prognostic value in patients with symptoms concerning coronary heart disease (CHD). Coronary artery calcium (CAC) score has also an established prognostic value in both asymptomatic and symptomatic individuals. Recently, adverse coronary plaque characteristics were shown to confer an increased risk of CHD death or nonfatal myocardial infarction, but these associations were not independent of CAC score. The aim of this study was to assess if CAC score adds prognostic information to the anatomical information given by CCTA, particularly in the non-obstructive CHD patients for which evidence based management is scarcer.
Methods: A secondary analysis was performed in SCOT-HEART dataset. We analyzed patients who performed a baseline diagnostic CCTA (n = 1,772) and were classified into: no significant CHD (n = 641), non-obstructive CHD (n = 679) or obstructive CHD (n = 452). Primary endpoint was 3-point MACE defined as a composite of nonfatal stroke, nonfatal myocardial infarction, and cardiovascular death at 5 years. Cox multivariate regression was used to estimate the primary endpoint using CAC score risk class (Low Risk (< 100 Agatston units (AU)), Medium Risk (100-400 AU), High Risk (> 400 AU)) on top of CCTA anatomical classification.
Results: The CCTA anatomical diagnosis of CHD strongly predicted the primary endpoint (log rank p = 0.0001). The majority of patients were diagnosed with non-obstructive CHD (38%), closely followed by no significant CHD (36%) and finally obstructive CHD (26%). In our model, CAC score further predicts MACE in addition to anatomic CCTA diagnosis (log rank p = 0.014). Patients with high CAC score and non-obstructive (n = 88) or obstructive (n = 234) CHD had the worse prognosis, followed by patients with obstructive



P 332 Figure

CHD and medium (n = 124) or low (n = 94) CAC score. Patients with non-obstructive CHD and either a medium (n = 122) or low (n = 108) CAC score had an intermediate prognosis. Finally, patients with no significant CHD and a low CAC score (n = 640) had the best prognosis. Interestingly, there were no patients with no significant CHD and a high CAC score (n = 0) and only one (n = 1) had a medium CAC score (Figure).
Conclusions: Combining anatomical information with CAC score, both obtainable through CCTA, has prognostic implications. Non-obstructive CHD has an overall good prognosis when associated low or medium CAC scores, but the worst prognosis if associated with a high CAC score.

P 301. ISOLATED APICAL PERFUSION DEFECT IN SPECT/CT SCANS-IS THERE ANY PROGNOSTIC VALUE?

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Introduction: Myocardial perfusion imaging (MPI) plays a significant role in diagnostic and therapeutic decision making in coronary artery disease (CAD). An isolated apical defect in the 17th segment in SPECT/CT scans is a common finding, sometimes attributed to the apical thinning phenomenon. However, the clinical significance of apical thinning or other isolated apical defects is unknown.
Objectives: The purpose of this study is to assess the prognostic impact of an isolated apical perfusion defect (17th segment) in patients (P) with suspicion of significant CAD.
Methods: A cohort of 612 consecutive P that underwent a MPI test with a SPECT/CT scanner, between January 2017 and December 2017, in a single nuclear medicine centre, was included in this retrospective study. The inclusion criteria for this study were either a normal perfusion exam (group 1-G1) or only an isolated apical defect in the 17th segment, either reversible suggesting ischemia (group 2-G2) or fixed suggesting necrosis (group 3-G3). Images with and without attenuation correction were analysed. Mean follow-up was 29 ± 4 months. The chi square test was used for categorical variables, and analysis of variance for continuous variables. Binary logistic regression was used to control for confounding.
Results: A total of 612 P were included (57% male sex, mean age of 69 ± 10) and divided in G1 (n = 494, 80.7%), G2 (n = 62, 10%) and G3 (n = 56, 9.2%). P in G3 had higher body mass index (31 ± 7, p = 0.028) and higher prevalence of dyslipidemia (84%, p = 0.001), while P in G1 had lower ejection fraction at rest (54 ± 15, p = 0.001). There was no association between the presence of isolated apical defect and all- cause mortality (G1 = 7.3% vs G2 = 6.5% vs G3 = 5.4%, p = 0.851). There was a statistically significant difference between groups in the referral for coronary angiography in the bivariate analysis (G1 = 7.9% vs G2 = 35.5% vs G3 = 10.7%, p = 0.001), but this association did not remain when accounted for potential confounders (angina, ejection fraction, previous CAD and diabetes)-OR = 3.94, CI 95 [0,968-16,093], p = 0,056. In those P that underwent coronary angiography, there was no statistically significant difference between the 3 groups in revascularization of significant CAD (G1 = 38.5% vs G2 = 36.4% vs G3 = 50%, p = 0.830). During the follow-up time, 11 P of group 1 suffered an acute coronary syndrome (ACS), but there were no events in group 2 or 3.
Conclusions: Isolated apical myocardial defect on a SPECT/CT exam has no association with all-cause mortality in these patients. There is no significant difference in referral for coronary angiography or need for coronary revascularization between P with normal exams and P with isolated apical defects.

P 300. STRESS ECHOCARDIOGRAPHY IN MULTIVESSEL CORONARY ARTERY DISEASE-12 MONTHS FOLLOW UP

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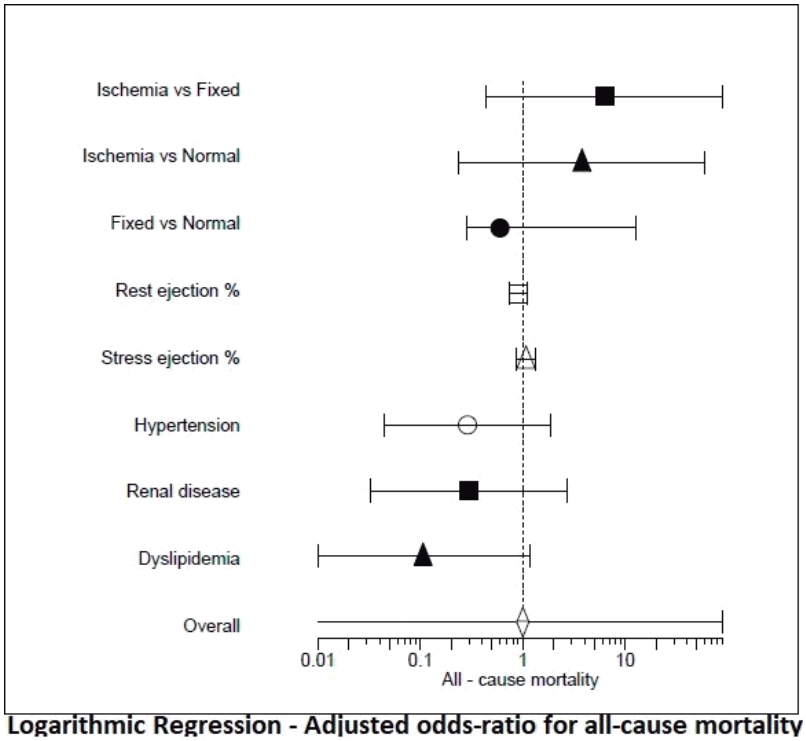
Introduction: Stress echocardiography (SE) is currently a first line exam for the diagnosis of chronic coronary syndromes, as well as for risk stratification of future coronary events. Recently, Cibele Larrosa Garzillo, at al (2019), concluded in their study that regardless of the therapeutic strategy



P 301 Figure

applied, the presence of documented myocardial ischemia in stress testing did not appear to be associated with an increased occurrence of major adverse cardiovascular events (MACE) or changes in ventricular function in patients with multivessel coronary artery disease (MVCAD) during a long-term follow-up. Currently, in our center, SE is abundantly used to stratify patients with chronic coronary disease according to risk of future events and to assess the need of coronary angiography (CA) and eventual percutaneous coronary intervention (PCI) when feasible.
Objectives: To assess the association of a positive SE with MACE, in patients with documented MVCAD, for a period of 12 months.
Methods: A retrospective unicentric study was performed. Patients who underwent a SE between 2016 and June 2018 were analyzed. Patients who had a coronary angiogram (CA) less than 12 months before the SE were included. Patients with MVCAD were then selected for further analysis. MVCAD was defined as stenosis in 2 or more epicardial coronary arteries. MACE was defined as: overall mortality, new acute myocardial infarction or additional percutaneous coronary intervention (PCI). The 1-year MACE outcome was compared between patients with either positive or negative SE.
Results: Of the 215 patients enrolled, 145 had MVCAD. Age 63 +-10 years, males 80,7% When the groups were compared according to MACE events, no association was found in overall mortality or new myocardial infarction. However, there was a strong association between positive SE and additional PCI (p = 0,001).
Conclusions: Patients with MVCAD and a positive SE were more likely to undergo PCI in the following 12 months after the exam. This is statistical significant after adjusting for chronic kidney injury, dyslipidemia, antiplatelet therapy, hypertension or smoking. The one year prognosis of these patients after PCI is similar to patients with previous MVCAD and negative SE.

Painel 4 - Arritmologia 9

P 306. ATRIAL ELECTRICAL IMPAIRMENT AND ATRIAL FIBRILLATION AFTER AV NODAL REENTRANT TACHYCARDIA ABLATION

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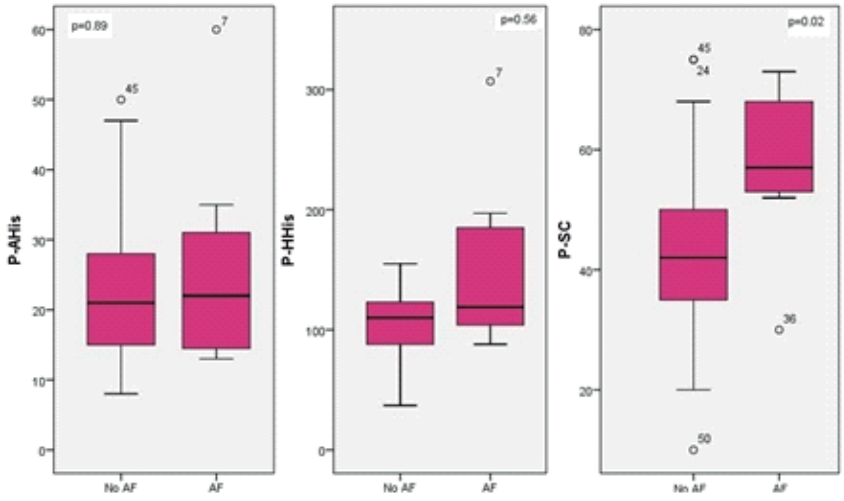
Introduction: Atrial electrical conduction properties have been implicated in atrial fibrillation (AF) pathogenesis. Patients (pts) who underwent catheter ablation (CA) of atrioventricular nodal reentrant tachycardia (AVNRT) have a higher incidence of AF. Several atrial time measurements determined during electrophysiologic study (EPS) can reflect atrial electrical conduction impairment related with AF. Also conventional risk factors can play a role in AF development during the follow-up.
Objectives: To evaluate atrial conduction times and assess its effect on AF development during follow-up.
Methods: We studied AVNRT pts who performed EPS and catheter ablation of the slow pathway between 2013 and 2016 in a single center. Pts with AF or valvular disease were excluded. We evaluated duration of symptoms due to AVNRT, conventional risk factors for AF (age, gender, obesity, hypertension, diabetes and structural heart disease (SHD)), left atrium (LA) enlargement and electrophysiologic study (EPS) time intervals related with atrial electrical conduction properties. We measured the time interval between: (1) the beginning of the P wave on the ECG to the A deflection in His-bundle electrogram (P-AHis); (2) the beginning of the P wave to the mid-

A - Box-plot for the studied time intervals in electrophysiologic study (EPS) according to the presence of atrial fibrillation (AF)



P-AHis: time interval between the beginning of the P wave on the ECG to the A deflection in His-bundle electrogram. P-CS: time interval between the beginning of the P wave to the mid-distal coronary sinus (CS) atrial electrogram. P-HHis: time interval between the beginning of the P wave to the H deflection in His-bundle electrogram.

B - Uni- and multivariate logistic analysis for the development of atrial fibrillation (AF)

	Univariate analysis			Multivariate analysis		
	OR	95% CI	p-value	OR	95% CI	p-value
Age (years)	1.10	1.02-1.19	0.016	1.10	1.00-1.21	0.051
LA enlargement	7.00	1.10-44.71	0.040	3.42	0.41-28.03	0.255
P-CS	1.07	1.021.14	0.013	1.06	1.01-1.12	0.044

LA: left atrium. P-CS: time interval between the beginning of the P wave to the mid-distal coronary sinus (CS) atrial electrogram.

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distal coronary sinus (CS) atrial electrogram (P-CS) and (3) the beginning of the P wave to the H deflection in His-bundle electrogram (P-HHis).
Results: Fifty-two pts were evaluated during a median follow-up of 63 months (IQR 51-69): 22% male, median age 55 years (IQR 42-67). AF occurred in 9 patients (17%) (39 cases per 1,000 person-years). Patients with AF were older (67 vs 53 years, p = 0.005) and had more frequently LA enlargement (33% vs 7%, p = 0.024) but they did not differ in hypertension, obesity, diabetes, SHD and duration of symptoms. EPS measured intervals P-AHis and P-HHis interval were not different between the groups (26.0 vs 22.8 ms, p = 0.89 and 151 vs 106 ms, p = 0.56, respectively) but P-CS were prolonged in patients with AF (70 vs 55 ms, p = 0.02) (Figure A). Univariate logistic analysis for AF is presented in table 1. There was no interaction between P-CS and LA enlargement (p = 0.87). In multiavariate analysis, only P-CS was independently associated with AF (Figure B).
Conclusions: In this group of patients with AVNRT, P-CS, but not other atrial conduction intervals, was independently associated with AF, suggesting a possible role of LA electrical conduction impairment in AF development in AVNRT pts.

P 310. IDIOPATHIC HFREF. IS THERE ROOM LEFT FOR DEFIBRILLATORS?

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Introduction and objectives: Prophylactic implantation of an implantable cardioverter-defibrillator (ICD) is class 1 recommendation for heart failure (HF) patients with reduced ejection fraction (HFrEF) even though its proven advantage is weaker among nonischemic aetiology. In fact, in an era where both optimal medical therapy (OMT) and cardiac resynchronization therapy (CRT) significantly reduce sudden cardiac death (SCD), it is questionable whether ICD still have additional value. The aim of this study was to assess the current benefit of ICDs in preventing sudden cardiac death through resuscitated cardiac arrest (RCA), appropriate therapy for sustained ventricular tachycardia (VT) or fibrillation (VF) in a contemporary population of idiopathic HFrEF patients.
Methods: Single-centre retrospective study of consecutive symptomatic (NYHA class II to IV) idiopathic HFrEF patients with an ICD (either alone or in association with CRT), and remote monitoring with the corresponding software (Merlin™, Latitude™, Carelink™, MicroPort™ or Biotronik™) to assure appropriate event supervising. Idiopathic aetiology was assumed after excluding other probable causes. Coronary angiogram was required to exclude ischemic aetiology. Only those with prophylactic ICD implantation were included. RCA was defined as collapse with clinical signs of cardiac arrest and VF or VT appropriately terminated by ICD. In order to be sustained, VT episode had to have last at least 30 seconds.
Results: From 781 remote monitoring controlled patients, a total of 187 consecutive symptomatic idiopathic HFrEF patients with an ICD (125 men, mean age 64 ± 18 years) were enrolled. Patients were on optimal medical therapy (ACEi/ARB: n = 168, 90%; BB: n = 154, 82%; mineralocorticoid antagonists: n = 91, 49%; CRT: n = 130, 70%; Table). After a median follow-up of 99 months (IQR 62.2), RCA occurred in 10.7% (n = 20) and 36.9% (n = 69) had appropriately terminated VT. Both left ventricular ejection fraction (LVEF) improvement and CRT implantation did not independently reduce the incidence of RCA and VT requiring ICD therapy (OR, 1.02; 95%CI, 0.99-1.05; p = 0.146 and OR, 0.85; 95%CI, 0.34-2.13; p = 0.728; respectively). All cause mortality was 20 (10.7%). Inappropriate therapy was given as shocks to 41 patients (21.9%) and as antitachycardia pacing (ATP) to 30 (16%), opposing with appropriately given therapy to 43 (23%) and 63 (33.7%) patients, respectively (Figure), contributing to a net clinical benefit (NCB) of 18.8%, favouring ICD implantation.
Conclusions: In this contemporaneous real-world population of symptomatic idiopathic HFrEF patients, episodes of impending cardiac death were frequent. Prophylactic ICD implantation seems to have added further benefit reducing SCD on top of optimal medical therapy, LVEF improvement and coexisting CRT.

	N=187	
All cause death - No.(%)	20	10.7
Resuscitated cardiac arrest - No.(%)	20	10.7
Appropriately terminated VT - No.(%)	69	36.9
Appropriate therapy - No.(%)		
Shock	43	23.0
ATP	63	33.7
Inappropriate therapy - No.(%)		
Shock	41	21.9
ATP	30	16.0
LVEF - median (IQR)	28	11
ACEi/ARB - No.(%)	168	90
BB - No.(%)	154	82
Mineralocorticoid Antagonists - No.(%)	91	49
CRT - No.(%)	130	70

Table: Outcome and baseline population characteristics

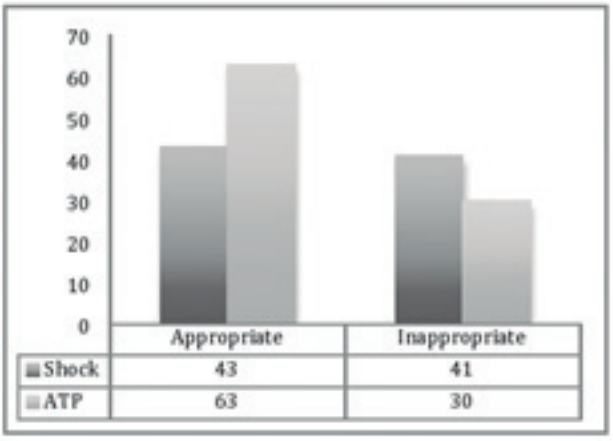

Figure: Outcome depicted as appropriate and inappropriate therapy

P 311. EKG LOCALIZATION OF IDIOPATHIC PVC ORIGIN BEFORE ABLATION: COMPARISON OF DIFFERENT ALGORITHMS.

Gustavo Rodrigues, Fábio Klemz, Diogo Cavaco, João Carmo, Daniel Matos, Salomé Carvalho, José Alencar, Flávio Mendonça, Francisco Moscoso Costa, Pedro Carmo, Francisco Morgado, Pedro Adragão

Centro Hospitalar de Lisboa Ocidental, EPE/Hospital de Santa Cruz.

Introduction: In patients without structural heart disease, localization of idiopathic premature ventricular contraction (PVC) can be pursued through twelve-lead electrocardiographic (EKG) analysis. Non invasive EKG localization of PVCs allows a better risk assessment of an ablation procedure and can guide mapping strategy during invasive localization of the site origin on the electrophysiologic (EP) study. We aimed to evaluate rate of success of PVC ablation and compare the accuracy of different algorithms intending to predict PVC origin site trough EKG analysis.
Methods: Through the analysis of the EKG of the patients submitted to first attempt PVC endocardial ablation between January 2017 and

November 2019, with acute suppression of PVC during radiofrequency application, the capacity of different algorithms (Ouyang et al, Yoshida et al; Betensky et al & Enriquez et al) to predict the origin site, was evaluated. Structural heart disease was excluded through magnetic resonance and echocardiogram. Both high density activation mapping tools and pace mapping were used in most cases. SPSS v21 was used for statistical analysis.
Results: From 2017 till 2019, 56 patients without structural heart disease were submitted to first attempt of endocardial ablation of PVC, which was successful in 42 patients (75%). Half of the patients were male (N = 28), and median age was 51 ± 16.7 years. Common cardiovascular risk factors and use of medication are described on table 1. Considering only the cases with acute suppression of PVC, the site with earliest activation was right sided in most EP studies (60%, N = 25). Ouyang et al indexes (R-wave duration index e R/S wave amplitude index) revealed the higher accuracy (86% for both), followed by Yoshida et al (V2S/V3R index) with 81% and Betensky et al index (V2 transition ratio) with 76% of precision localizing the side of origin of PVCs (right vs left sided). Enriquez et al recent algorithm which aims for a more precise localization of the site of origin of PVC failed in most cases (N = 25, 60%).
Conclusions: In our cohort of patients without structural heart disease, the indexes described by Ouyang et al localized PVC in 86% of cases. PVC endocardial ablation was successful in the majority of cases.

P 308. ESTUDO ELETROFISIOLÓGICO NA ESTRATIFICAÇÃO DE RISCO DE DOENTES COM SÍNDROME DE BRUGADA

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Introdução: Atualmente, o valor do estudo eletrofisiológico (EEF) com estimulação ventricular programada na estratificação de risco de doentes com Síndrome de Brugada (SB) permanece controverso. O objetivo deste estudo foi determinar quais os preditores clínicos e eletrocardiográficos de EEF positivo e avaliar se a indução de disritmias ventriculares malignas no EEF é preditor de eventos.
Métodos: Foi efetuado um estudo retrospetivo dos doentes com padrão de Brugada tipo 1 espontâneo seguidos em consulta de Arritmologia no nosso hospital. Desta população foram selecionados os doentes que fizeram EEF para estratificação de risco disrítmico. Foram analisadas variáveis clínicas e eletrocardiográficas. Foram consultados registos hospitalares e dados de monitorização dos dispositivos cardíacos. Foi efetuada analise estatística utilizando o SPSS v20.0.
Resultados: Foram incluídos 49 doentes com idade média no início de *follow-up* de 45 ± 14 anos, sendo 40 (82%) do género masculino. Em 16 indivíduos (33%) o EEF foi positivo com indução de disritmias ventriculares malignas. Todos os doentes com EEF positivo implantaram cardioversor-defibrilhador implantável e dos 32 doentes com EEF negativo, 10 implantaram registador de eventos implantável. O grupo de doentes com EEF positivo apresentava uma maior proporção de doentes do género masculino (88% *versus* 78%). A mediana de tempo de *follow-up* foi de 31 meses. Na análise univariada, a história familiar de morte súbita, história familiar de SB, ou identificação de variante classificada como patogénica ou provavelmente patogénica não apresentaram relação com a positividade do EEF. Dos marcadores eletrocardiográficos analisados, verificaram-se intervalos PR (178 ± 29 *versus* 171 ± 27) e duração de QRS (119 ± 24 *versus* 113 ± 15) tendencialmente maiores nos doentes com EEF positivo. Adicionalmente, constatou-se que 74% dos doentes com QRS inferior a 120 ms apresentaram EEF negativo. Na análise do valor preditivo do EEF na estratificação de risco disrítmico nesta população, verificou-se que de todos os doentes que sofreram eventos (4), 75% apresentavam EEF positivo, enquanto que dos doentes com EEF negativo, apenas 3% (1) apresentaram eventos no *follow-up*. Não se verificou, no entanto, associação significativa entre estas variáveis.
Conclusões: Esta análise revelou que, nesta população, os elementos de ordem clínica estudados não se correlacionaram de forma significativa com o resultado do EEF. Apesar de não se ter verificado significância estatística, verificou-se uma tendência para que doentes com QRS mais estreitos apresentassem maior probabilidade de apresentar EEF negativos. De acordo com dados publicados, verificou-se que o resultado do EEF não foi preditor de eventos durante o tempo de *follow-up*, o que salienta a dificuldade de estratificação de risco nos doentes com SB.

P 309. FAMILY SCREENING IN A PORTUGUESE SAMPLE OF BRUGADA SYNDROME PATIENTS

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[1]Hospital Senhora da Oliveira-Guimarães. [2]Centro Hospitalar do Alto Ave, EPE/Hospital da Senhora da Oliveira.

Introduction: Brugada syndrome (BS) is a rare inherited channelopathy associated with sudden cardiac death (SCD) and family screening (FS) of index patients (pts) is recommended. However, data about pts identified through FS is lacking.
Objectives: To compare index pts to non-index pts identified through systematic FS.
Methods: Single-center retrospective study of BS pts followed by the Arrhythmology Department. FS was offered to 1st degree relatives of all index pts through primary care services and a once-weekly voluntary open appointment. Genetic counselling was performed when indicated. Index and non-index pts were compared regarding baseline characteristics and events during the follow-up (syncope of probable arrhythmic origin, ventricular tachycardia/ventricular fibrillation (VT/VF) and SCD).
Results: We included 165 pts (61% males, mean age 47 ± 15 years) and 72 (44%) were identified through FS. Non-index pts were diagnosed at a younger age (42 ± 14 vs 51 ± 14 years, p < 0.001), were more often female (57% vs 25%, p < 0.001), were diagnosed predominantly through provocative test with ajmaline/flecainide (88% vs 47%, p < 0.001) and had less documented spontaneous type 1 ECG pattern (17% vs 59%, p < 0.001). A type 2 pattern was identified in 18 (25%) non-index pts. Genetic testing was performed in 38 (53%) non-index pts: 6 had a pathogenic SCN5A mutation, 18 a likely pathogenic SCN5A mutation and 12 a mutation of uncertain significance. At diagnosis, 24 (33%) non-index pts had history of syncope, 3 (4%) had nocturnal agonal respiration and 11 (15%) had palpitations with no differences between both groups (p =.119). Non-index pts were less likely to implant a cardioverter-defibrillator (14% vs 38%, p =.001). During a median follow-up of 28 (IQR 16-41) months, 10 (6%) pts had an event-2 (3%) in the non-index group (2 syncope) and 8 (9%) in the index group (1 syncope; 7 VT/VF)-with no significative differences between groups (p = 0.432). There were no cardiovascular deaths.
Conclusions: FS identified a considerable proportion of BS pts. Non-index pts were younger at the time of the diagnosis and had less spontaneous type 1 pattern. No differences were found in events between index and non-index pts, however, the event rate was low. Systematic FS can identify individuals at risk of SCD earlier, allowing close monitoring and, when indicated, appropriate treatment.

P 307. ELECTROCARDIOGRAPHIC CRITERIA TO DETECT CARDIAC ABNORMALITIES IN ATHLETES-A PORTUGUESE STUDY

Pedro von Hafe Leite[1], Bebiana Faria[2], Geraldo Dias[2], Filipa Cardoso[2], Tâmara Pereira[2], João Português[2], Lucy Calvo[2], António Lourenço[3]

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Introduction: Electrocardiogram (ECG) has been included in most sport screening programs worldwide. Improvement of the criteria defining the electrocardiographic changes that suggest cardiac pathology had its last

breakthrough in 2017 with the publication of new guidelines, replacing the 2013 Seattle criteria.
Objectives: To assess the accuracy of the international consensus criteria (ICC) for electrocardiogram interpretation to detect cardiac anomalies during athlete screening.
Methods: ECGs of 2000 elite and leisure athletes (aged 5 to 65 years old), that were submitted to sport pre-participation evaluation were analyzed retrospectively using ICC.
All athletes underwent a two-dimensional echocardiogram.
Results: Of the revised ECGs, 19 had abnormal findings, namely: ventricular pre-excitation (42.1%, n = 8), inverted T-wave in leads other than V1-V3 (36.8%, n = 7), complete left bundle branch block (5.3%, n = 1), ≥ 2 premature ventricular contraction (5.3%, n = 1), pathologic Q waves (5.3%, n = 1) and atrial tachyarrhythmias (5.3%, n = 1). Of these, 10 (52.6%) were soccer players, 4 (21.1%) leisure athletes and 1 (5.3%) athlete for each of the following modalities: athletics, basketball, kickboxing, table tennis and volleyball. This group included two women and two black athletes (10.5%). Mean age was 25.47 ± 18.65 years. Among the athletes with normal ECG, seven had structural heart disease documented on echocardiogram. Bicuspid aortic valve with mild regurgitation, atrial septal defect, ventricular septal defect, aortic dilatation, left ventricular dysfunction, mitral valve prolapse with mild regurgitation and left ventricular noncompaction were detected (n = 1, each). Four were soccer players, two were referees and one was a leisure athlete. All of them were male, one black and mean age was 19.86 ± 9.35 years. The calculated sensitivity of ICC to detect cardiac abnormalities was 58.82% (95%CI, 36.01-78.39%) and specificity was 99.14% (95%CI, 99.14-99.76%). Positive predictive value was 52.63% (95%CI, 31.71-72.67%) and negative predictive value was 99.65% (95%CI, 99.27-99-83%).
Conclusions: There are few studies validating on the accuracy of screening using the new ECG criteria and, to our knowledge, this is the only series described in the literature with athletes in Portugal. In this sample, the sensitivity of ICC to detect cardiac abnormalities was 58.82% and the specificity of 99.14%, similar to that described elsewhere in literature.

Painel 5 - E-Cardiologia e Saúde Pública 1

P 313. INEQUALITIES AFTER STEMI IN NHS SERVICES: IS THERE REALLY A POSTCODE LOTTERY?

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Introduction: Failure to address the impact of social determinants of health attenuates efficacy of proven prevention recommendations, namely because important considerations related to socioeconomic disadvantage are not captured by existing cardiovascular disease (CDV) risk stratification methods. We aimed to assess how socioeconomic determinants influence recurrent MI and all-cause death after myocardial infarction (MI) in Portugal.
Methods: We conducted a retrospective, observational cohort study, including all patients with a ST-elevation MI (STEMI) admitted to and discharged alive from an intensive cardiac care unit between 2004 and 2017 (n = 1,809). The median (interquartile range) follow-up was 6 (4-9) years. We used survival models to assess the relationship between their municipal (i) income by purchasing power *per capita* (PPC), (ii) access to health care and (iii) illiteracy and recurrent MI and all-cause mortality. To assess residential socioeconomic deprivation, each individual's residential postcode was merged with the recently validated Portuguese version of European Deprivation Index (EDI). The index was categorized into quintiles (Q1-least deprived to Q5-most deprived).
Results: The mean age was 64 ± 14 years; 74% were male. Regarding individual socioeconomic variables, PPC and medical appointments in primary health centers per inhabitant were predictors of all-cause mortality

	Total	Q1	Q2	Q3	Q4	Q5	*P* value
Age - years	64.4 ±13.5	64.7 ±13.2	64.3 ±13.7	64.2 ± 13.5	63.4 ±13.3	65.6 ±14.2	0.66
Male - no. (%)	1344 (74.3)	364 (71.9)	519 (75.1)	242 (76.8)	144 (76.2)	75 (69.4)	0.35
Hypertension - no. (%)	1108 (61.2)	299 (59.1)	432 (62.5)	198 (62.9)	116 (61.4)	63 (58.3)	0.70
Dyslipidemia - no. (%)	927 (51.2)	261 (51.6)	352 (50.9)	171 (54.3)	90 (47.6)	53 (49.1)	0.66
DM - no. (%)	435 (24.0)	394 (22.1)	169 (24.5)	82 (26.0)	42 (22.2)	30 (27.8)	0.57
Current smokers - (%)	493 (27.3)	122 (24.1)	208 (30.1)	78 (24.8)	58 (30.7)	27 (25.0)	0.10
Previos PCI - no. (%)	31 (1.7)	7 (1.4)	15 (2.2.)	2 (0.6)	4 (2.1)	3 (2.8)	0.37
Previous CABG - no. (%)	14 (0.8)	1 (0.2)	9 (1.3)	3 (1.0)	0 (0)	1 (0.9)	0.18
Diagnosis							0.97
Anterior STEMI - no. (%)	875 (48.4)	249 (49.2)	324 (46.9)	154 (48.9)	92 (48.7)	56 (51.9)	
Lateral STEMI - no. (%)	90 (5.0)	28 (5.5)	33 (4.8)	16 (5.1)	9 (4.8)	4 (3.7)	
Inferior/Posterior STEMI - no. (%)	844 (47.7)	229 (45.3)	334 (48.3)	145 (46.0)	88 (46.6)	48 (44.4)	
LDL cholesterol - mg.dL-1	126 (101-150)	129 (103-149)	124 (100-151)	126 (100-150)	128 (98-146)	134 (100-158)	0.85
Creatinine - mg/dL-1	0.94 (0.80-1.11)	0.91 (0.80-1.15)	0.96 (0.80-1.14)	0.94 (0.80-1.14)	0.90 (0.78-1.10)	0.90 (0.80-1.10)	0.77
LVEF - no. (%)	50 (42-57)	50 (42-56)	50 (42-57)	50 (42-55)	50 (42-57)	50 (43-58)	0.32

Table 1. Baseline characteristics.
Abbreviations: DM, diabetes mellitus; PCI, percutaneous coronary intervention; CABG, coronary artery bypass grafting; STEMI, ST-elevation myocardial infarction; LDL, low density lipoprotein; LVEF, left ventricular ejection fraction.

P 313 Figure 1

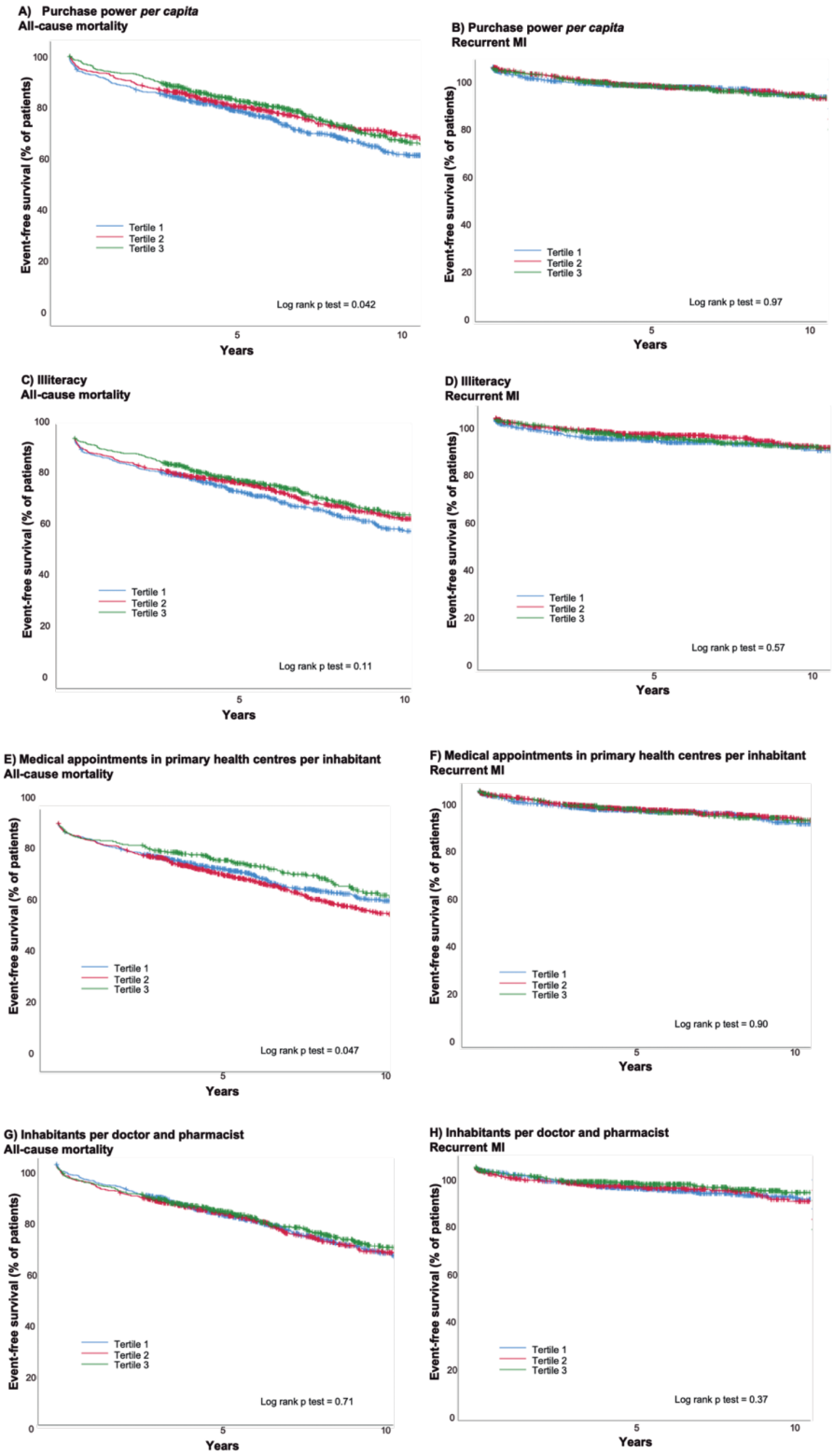


Figure 1. Kaplan-Meier plots
Kaplan-Meier plots of (A) all-cause mortality and (B) recurrent MI for purchase power *per capita;* (C) all-cause mortality and (D) recurrent MI for illiteracy; (E) all-cause mortality and (F) recurrent MI for medical appointments in primary health centers per inhabitant and, (G) all-cause mortality and (H) recurrent MI for inhabitants per doctor and pharmacist.
Abbreviations: MI, myocardial infarction.

P 313 Figure 2

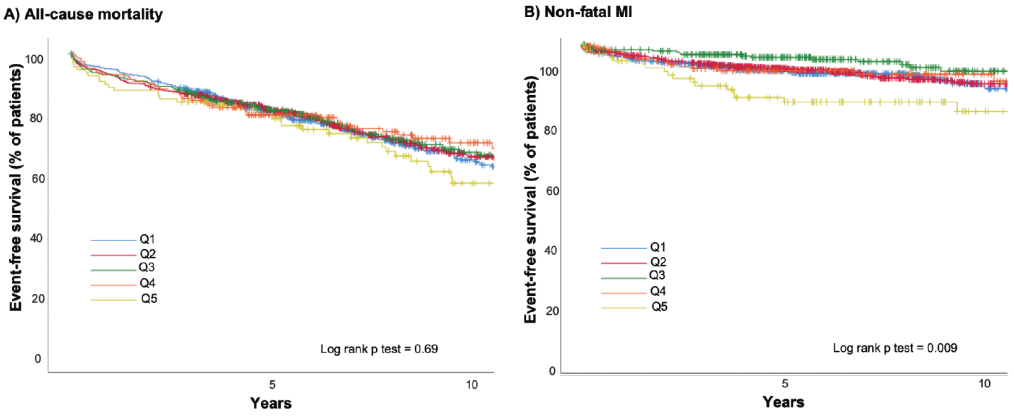


Figure 2. Kaplan-Meier plots of (A) all-cause mortality and (B) recurrent MI for EDI.
Abbreviations: MI, myocardial infarction; EDI, European deprivation index.

P 313 Figure 3

(Log-rank *p* = 0.042 and 0.047, respectively), but not recurrent MI; however, in multivariate analysis adjusted for sex, age and ejection fraction, this association was no longer significant (HR 1.00; 95%CI 0.99-1.00, p = 0.49 and HR 1.00; 95%CI 0.89-1.17, p = 0.77, respectively). Additionally, no evident association between illiteracy and all-cause mortality or MI was present (Figure 1). Concerning EDI, demographic data was similar among the quintiles (Table). Although EDI quintiles were not associated with all-cause mortality (Log-rank p = 0.69), the EDI was an independent predictor of recurrent MI (Figure 2). On multivariate analysis, adjusted for age, sex, hypertension, diabetes and LDL cholesterol, the HR for the most deprived (Q5) to the least deprived (Q1) quintile was 1.91 (95%CI 1.05-3.49, p = 0.035) for MI.

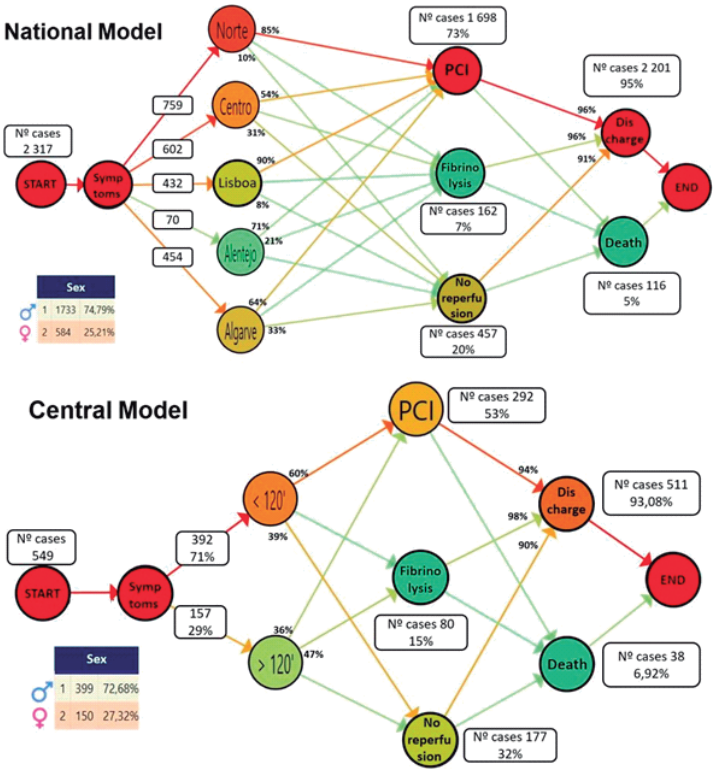
Conclusions: Our study shows that differential cardiovascular outcomes persist by important socioeconomic characteristics in patients after STEMI. Failure to address the impact of social determinants of health reduces the efficacy of proven secondary prevention recommendations.

P 314. PATHWAYS: ASSESSMENT OF DISTANCE TO PCI AND MORTALITY IN STEMI WITH PROCESS MINING TOOLS

João Borges Rosa[1], Manuel Oliveira Santos[1], Marco Simões[2], César Teixeira[2], Sílvia Monteiro[1], Lino Gonçalves[3], em nome dos investigadores do Registo Nacional de Síndromes Coronárias Agudas[3]

[1]Centro Hospitalar e Universitário de Coimbra/Hospitais da Universidade de Coimbra. [2]Centro de Informática e Sistemas da Universidade de Coimbra. [3]CNCDC-Centro Nacional de Coleção de Dados em Cardiologia.

Introduction: The expected delay of transport between patient location and percutaneous coronary intervention (PCI) centre is paramount for choosing the adequate reperfusion therapy in ST-segment elevation myocardial infarction (STEMI). The central region of Portugal has heterogeneity in PCI



P 314 Figure

assess due to geographical reasons. However, this data is usually presented numerically without providing a visual distribution of patients. We aimed to analyse the impact of distance to PCI centres on mortality in patients with STEMI through visual maps of patients' flow by using an experimental process mining tool, integrated in EIT Health's project PATHWAYS.
Methods: Using the Portuguese Registry of Acute Coronary Syndromes (ProACS), we retrospectively assessed patients with an established diagnosis of STEMI, geographical presentation specified, reperfusion option identified (PCI, fibrinolysis or no reperfusion), short-term outcomes defined as discharge or in-hospital death. With the 2 317 patients that fulfilled the criteria, we used a process mining tool to build national and regional models that represent the flow of patients in a healthcare system, enhancing differences between groups.
Results: Colour gradient in nodes and arrows changes from green to red, with green representing a lower number of patients as opposed to red. In the national model, most patients from all regions had PCI. Mortality was similar between PCI and fibrinolysis groups (4%) but higher in those without reperfusion (9%). In the central region model, one third of the patients were more than 120 minutes away from a PCI centre. Despite that, almost one third of these patients had PCI instead of fibrinolysis. In this model, fibrinolytic therapy had higher in-hospital survival rate than PCI (98% vs 94%). Overall mortality was higher in the central model compared with the national model (6.92% vs 5%). Central region had less PCI (53% vs 73%), more fibrinolysis (15% vs 7%) and more patients with no reperfusion (32% vs 20%).
Conclusions: In the ProACS registry, mortality was higher in the central region compared with national data. Even though global interpretation of these findings is limited by underrepresentation from certain central areas, process mining offers an easily understandable view of patients flow. With its statistical upgrade and continuous development, this tool will facilitate the analysis of big data and comparison between groups.

P . SGLT INHIBITORS IN A POST-ACUTE CORONARY SYNDROME POPULATION

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Introduction: Sodium glucose type 2 inhibition (SGLT2i) drugs are an emerging therapeutic class changing the paradigm of type II diabetes mellitus (DM2) treatment in patients with high cardiovascular risk or with established cardiovascular disease. Recently published data also shows a reduction in cardiovascular events with SLGT2i therapy in heart failure patients with reduced ejection fraction (HFREF), even without DM. DM2 is a frequent comorbidity in ischemic cardiomyopathy, which is the most common etiology of HFREF.
Objectives: To analyse eligibility and possible reduction of cardiovascular outcomes with SGLT2i therapy in a post-acute coronary syndrome (ACS) population.
Methods: We analysed a database of ACS patients admitted to a district hospital from 2011 to 2018. Eligibility criteria and effectiveness were considered based on the 2019 ESC guidelines of Diabetes, Pre-Diabetes and Cardiovascular Diseases and EMPA-REG OUTCOME, DECLARE-TIMI 58, CANVAS, CREDENCE, DAPA-HF trials.
Results: There was a total of 1335 patients admitted with ACS, 33% (n = 439) STEMI and 67% (N = 896) NSTEMI/UA. Mean age was 69 ± 13 years, 67% (n = 895) were men, 74% (n = 993) had arterial hypertension, 18% (n = 243) were smokers, 42% (n = 558) had dyslipidemia, and 37% (n = 497) had DM, including 14 patients with type I DM. Of the 483 DM2 patients, 86% (n = 418) had an estimated glomerular filtration rate (eGFR) > 30 ml/min/1.73 m^2. Within the DM2 population, 16 (3.3%) patients were diagnosed at the index event, 38 (10%) were under dietary and lifestyle therapy only, 330 (66%) under oral pharmacologic treatment and 99 (20%) under insulin therapy. Mean HbA1c was 7.83 ± 1.64%. Transthoracic echocardiography after the acute event revealed reduced ejection fraction (< 40%) in 267 patients (20%) of the total population, with a mean BNP of 1,179 ± 1,042 pg/mL. Of these, 110 patients didn't have DM diagnosis and had eGFR > 30 ml/min/1.73 m^2. In total, 528 patients (40%) of this post-ACS population could be eligible for SGLT2i. If this therapy had been used in this population, all-cause mortality at follow-up could have been reduced from 12,48% to 8,48%, death from cardiovascular causes from 5,02 to 3,11% and hospitalization for heart failure from 8.3% to 5,81%.
Conclusions: A large proportion of patients (40%) could have been eligible for SGLT2i therapy, either as a first line therapy in "naïve" patients or "on-top" of metformin/insulin therapy in DM2 patients with adequate eGFR, with a significant improvement in cardiovascular outcomes. In the near future, HFREF patients (even without diabetes) could be included for treatment with SGLT2i in order to further reduce the risk of death and CV events.

P 317. O *SCORE* DE CHA2DS2-VASC COMO PREDITOR NA REABILITAÇÃO CARDÍACA DE DOENTES CORONÁRIOS

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Introdução: A reabilitação cardíaca (RC) melhora o prognóstico e aumenta a qualidade de vida dos doentes com doença coronária. O score de CHA2DS2-VASc avalia o risco cardiovascular e o risco tromboembólico e tem sido amplamente usado para decisão terapêutica em doentes com fibrilhação auricular. A literatura recente tem vindo a demonstrar que o score de CHA2DS2-VASc pode ser usado para avaliação do risco cardiovascular e tromboembólico para outras patologias como doença coronária e insuficiência cardíaca. O objetivo deste trabalho é aplicar este *score* a doentes coronários integrados num programa de RC de maneira a avaliar a sua aplicabilidade como preditor de evolução da capacidade funcional e adaptação ao exercício físico.
Métodos: Foram incluídos neste estudo 69 doentes referenciados para tratamento de reabilitação cardíaca. Os doentes foram divididos em três grupos de acordo com a classificação obtida no score de CHA2DS2-VASc: baixo risco (1-2), risco intermédio (3) e alto risco (≥ 4). A capacidade funcional de exercício foi avaliada através de duas provas de esforço realizadas antes e depois do programa de recondicionamento ao esforço. Como valor comparativo entre doentes e entre provas, consideraram-se os equivalentes metabólicos (METs).
Resultados: Verificou-se uma diferença estatisticamente significativa entre os METs gastos na primeira e na última prova de esforço, para todos os grupos. Quando comparamos os vários grupos de doentes classificados através do valor de CHA2DS2-VASc, verificamos que os doentes com *scores* mais elevados apresentam piores resultados iniciais da prova de esforço. No total, cerca de 69% dos doentes melhoraram pelo menos 10% na prova de esforço. Não se verificou diferença estatisticamente significativa entre os grupos quanto ao resultado em METs na última prova de esforço.
Conclusões: Os resultados deste trabalho permitem inferir que o programa de reabilitação cardíaca foi terapêutico para a maioria dos doentes, independentemente da presença de comorbilidades. Os doentes com maior score de CHA2DS2-VASc apresentaram piores resultados na primeira prova de esforço. Quando terminam o programa de RC, independentemente do *score* de risco, os doentes têm resultados semelhantes. Este facto demonstra uma tendência para corroborar o que está descrito na literatura-os doentes com maior score de CHA2DS2-VASc tendem a apresentar maior evolução durante o tratamento, terminando-o com resultados aproximados aos dos restantes doentes.

P 312. CARDIAC REHABILITATION IN STEMI: AN ASSESSMENT OF FUNCTIONAL CAPACITY IMPROVEMENT

Gonçalo Cunha[1], Bruno Rocha[1], Pedro Lopes[1], Mónica Neto[1], Sofia Santos[1], Marusa Trabulo[1], Carlos Aguiar[1], Maria João Borges Andrade[1], Anai Durazzo[1], Miguel Mendes[2]

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[2]Hospital Sta Cruz.

Introduction: Cardiac rehabilitation (CR) is recommended in all patients with a recent ST-segment elevation MI (STEMI), yet dedicated teams are

outnumbered by the burden of ischemic heart disease. The aim of this study was to assess the role of cardiopulmonary exercise testing (CPET) in identifying STEMI patients who may derive a greater functional capacity benefit from CR.
Methods: This is a single-center cohort of consecutive patients with a recent (< 90 days) STEMI enrolled in a CR program involving supervised exercise, cardiovascular risk factor modification, self-management education and counselling, from 2016 to 2019. CPET was performed at baseline and repeated at the end of the program, as per site protocol.
Results: A cohort of 105 patients (mean age 52 ± 18 years, 80% male, 67.6% previous or current smokers, 56.2% hypertensive, mean BMI 27.9 ± 4.2 Kg/m^2) with a mean LVEF of 49 ± 12% was assessed. At enrollment, most were receiving antiplatelet therapy (AAS: 91.4%; and P2Y12 inhibitors: 93.3%), neurohormonal antagonism (ACEi or ARB: 92.4%;), beta-blockers (88.6%) and statins (95.2%). At baseline, mean peak oxygen uptake (pVO_2) was 24.8 ± 6.1 mL/Kg/min, while predicted pVO_2 (%$ppVO_2$) was 95.7 ± 16.5% and ventilation/carbon dioxide production (VE/VCO_2) slope was 33.6 ± 6.1. After 2 months of CR, repeated CPET showed a significant gain in mean pVO_2 (+1.3 ± 3.3 mL/Kg/min; p < 0.001) and%$ppVO_2$ (+4.3 ± 11.8%; p < 0.001) and a decrease in resting heart rate (-2.3 ± 8.9 bpm; p = 0.003). In multivariate analysis, baseline %$ppVO_2$ was the sole predictor of 2-month pVO_2 gain (p = 0.020). However, the observed negative correlation between pVO_2 gain and %$ppVO_2$ was weak (r = -0.262; p = 0.005). ROC curve analysis confirmed that baseline% $ppVO_2$ has poor predictive value to identify patients who derive larger gains in pVO_2 at 2-month.
Conclusions: A comprehensive CR program enrolling patients with a recent STEMI led to a significant improvement in pVO_2 and%$ppVO_2$. Whilst%ppVO2 at baseline CPET independently predicted pVO_2 gain after 2-month CR, the correlation was rather weak, suggesting that CPET should not be used to select STEMI patients who may derive a greater benefit from CR.

P 316. THE EPIDEMIOLOGY OF OUT OF HOSPITAL CARDIAC ARREST IN PORTUGAL IN 2018

Luís Ladeira, Fátima Rato, Filipa Barros

INEM.

Introduction: Out of Hospital Cardiac Arrest (OHCA) due to its severity and unpredictability is a medical emergency of greater clinical and social impact[12]. After long years of prehospital response to OHCA, it still represents a cross-sectional and permanent challenge requiring a strong survival chain (SC) in all of its links[34]. There are many factors that determine the victim's return of spontaneous circulation (ROSC) and determine the strategy for implementing improvement measures. The present study represented the first critical analysis (*test tube*) to the OHCA National Registry and aimed to describe the epidemiology of OHCA in Portugal in 2018, as well as to verify the adequacy of the register itself as a tool to optimize team activity in the field, as well as its potential for improvement.
Methods: A retrospective observational study was performed and data were collected from the Portuguese's National Registry of Cardiac Arrests between January 1 and December 31, 2018. All OHCA situations registered by the prehospital personnel were included.
Results: A total of 16,685 cases of OHCA were recorded. The average age was 75.9 years and the male gender was slightly more prevalent (56.1%). The vast majority of OHCA situations occurred at home (74.3%) and in nursing homes (12.2%), and the occurrence of OHCA in public places was 13.5%. In 36.1% of all cases the OHCA was witnessed by bystanders. Cardiac etiology was the most likely cause of OHCA, occurring in 50.3% of cases. Of all OHCA situations, the return of spontaneous circulation (ROSC) occurred in 6.2% of the cases, and 24.6% of the cases were transported to the hospital, of which 18.4% with signs of life and 81.6% of the cases in CPR maneuvers.
Conclusions: There were some limitations detected in the registry which conditioned the analysis and which showed the need to update the register according to the current state of the art and the current Utstein model. Cardiac arrest is a major cause of death in Portugal. With less than one in ten patients surviving, there is room for improvement. It is very importante a well detailed review and analisys of the OHCA National Registry since the beginning of it to substantiate strategic decision-making in the health policies on this issue. It is also necessary to build "bridges" that allow interoperability between prehospital and intrahospital systems, to know the outcome of OHCA cases admitted to the hospital.

Painel 6 - Doença Coronária 13

P 318. CHRONIC KIDNEY DISEASE IN ACUTE CORONARY SYNDROMES: WHAT IS THE REAL BURDEN?

Carolina Saleiro[1], Diana Campos[1], Rogério Teixeira[2], João Lopes[1], Ana Rita M. Gomes[1], José Pedro Sousa[1], Luís Puga[1], Joana Maria Ribeiro[1], Cândida Cristóvão[1], Carolina Lourenço[1], Marco Costa[1], Lino Gonçalves[2]

[1]Centro Hospitalar e Universitário de Coimbra. [2]Centro Hospitalar e Universitário de Coimbra, EPE/Hospital Geral.

Introduction: Patients with chronic kidney disease (CKD) are at increased risk of composite cardiovascular (CV) events and all-cause mortality. However, current aggressiveness of therapeutic strategies may minimize the course of the disease.
Aim: To assess the prognostic impact of optimized medical treatment in a CKD population with acute coronary syndrome (ACS).
Methods: 355 ACS patients admitted to a single coronary care with CKD who were discharged from hospital were included. Those with end-stage renal disease were excluded. Three groups were created based on the KDIGO classification: Group A (Stage 3A, eGFR [estimated glomerular filtration rate] 45-59 mL/min/1.73 m^2) N = 190; Group B (Stage 3B, eGFR 30-44 mL/min/1.73 m^2) N = 113; and Group C (Stage 3B, eGFR 15-29 mL/min/1.73 m^2) N = 52. The primary endpoint was long-term all-cause mortality. Kaplan-Meyer survival curves and Cox regression were done. The median of follow-up was 32 (IQ 15-70) months.

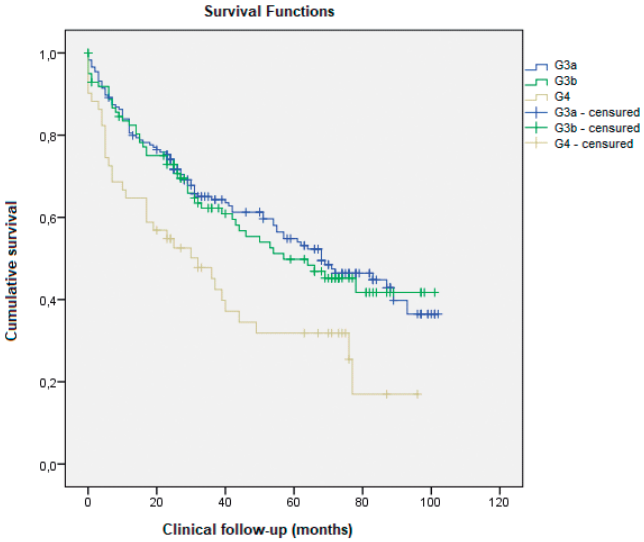

Figure 1- Kaplan-Meyer curves for all-cause mortality according to KDIGO chronic kidney disease stages (68% vs 57% vs 37%, Log Rank *P=0.006).*

Results: Groups were similar regarding demographics, CV risk factors, ACS type, heart failure diagnosis, left ventricular (LV) systolic function, peak troponin, multivessel disease, treatment option (PCI, CABG or OMT) and medical therapy at discharge. More advance renal failure patients had a higher prevalence of diabetes mellitus (DM) (40% vs 50% vs 58%, p < 0.05); a lower haemoglobin (13 ± 2 vs 12 ± 2 vs 11 ± 1 g/dL, p < 0.001), a higher NT-proBNP (p < 0,001) and were less likely to receive ACE inhibitors/angiotensin II antagonist at discharge (95% vs 92% vs 82%, p < 0.05). 170 patients met the primary outcome. Kaplan-Meyer curves showed decreased

survival with worse renal function (Group A 68% vs Group B 57% vs Group C 37%, Log Rank p = 0.006-Figure). After adjustment for age, DM, haemoglobin, NT-proBNP, LV systolic function and ACE inhibitors/angiotensin II antagonist at discharge, eGFR was not associated with increased death (HR 1.00, 95%CI 0.98-1.01). In this model, only age (HR 1.04, 95%CI 1.01-1.07), haemoglobin (HR 0.86, 95%CI 0.979-0.94), Nt-proBNP (HR 1.00, 95%CI 1.00-1.00) and impaired LV function (LV ejection fraction 40-49%: HR 2.95, 95%CI 1.89-4.81; LV ejection fraction < 40%: HR 2.15, 95%CI 1.44-3.21) remained associated with the outcome.

Conclusions: The worse outcome attributed to CKD after an ACS seems to be related not the eGFR itself but to associated comorbidities such as age, anaemia, fluid overload and impaired LV function. The fact that some of these comorbidities may be altered by intensive therapy indicates that CKD patients should also be candidates to optimized medical treatment.

P 319. HEMORRHAGIC RISK SCORES IN ACUTE CORONARY SYNDROMES: PREDICTION OF IN-HOSPITAL BLEEDING COMPLICATIONS

Joana Correia, João Santos, Inês Pires, Luísa Gonçalves, Hugo Antunes, António Costa, José Costa Cabral

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Introduction: Bleeding risk stratification in acute coronary syndrome (ACS) is extremely importante, given that its occurrence is associated with a worse prognosis. The identification of different bleeding risk assessment tools may help the clinician to optimize treatment options and improve important outcomes. Different hemorragic risk scores are currently used in patients with ACS (CRUSADE, MEHRAN, ACTION). Other risk scores (ATRIA, HEMORRHAGES) are currently used in patients with atrial fibrillation, however their applicability in patients with ACS has not been evaluated. The objective of this study is to apply the aforementioned risk scores in a group of patients admitted with ACS.

Methods: A retrospective study of patients admitted with ACS in the cardiology service was performed. Hemorrhagic events were defined as hemorrhagic stroke, major bleeding or need for blood transfusion. The different risk scores were calculated for all patients and ROC curves were determined to ascertain the predictive capacity for in-hospital bleeding complications.

Results: 840 patients were included; 72.6% were male and mean age was 68 ± 14 years old. There were 42 hemorrhagic events (5%). The mean values obtained for each score in patients with vs without bleeding complications were: 35.4 ± 9 vs 28.8 ± 8 for ACTION, 40 ± 15,3 vs 31,4 ± 16 for CRUSADE, 21.5 ± 8,2 vs 18.4 ± 8,5 for MEHRAN, 3.3 ± 2.6 vs 2.3 ± 2.2 for ATRIA, 2.8 ± 1.8 vs 1.9 ± 1.5 for HEMORRHAGES. For each risk score, ROC curves were obtained with the following c-statistic: HEMORRHAGES score-0,657 (p = 0.001); ATRIA score-0,652 (p = 0.001); MEHRAN score-0,658 (p = 0.001); CRUSADE score-0,689 (p < 0.001); ACTION score-0,712 (p < 0.001). For an ACTION score > 30.5 we had a sensibility of 71% and specificity of 65%. For an ACTION < 30.5 and > 30.5 the in-hospital mortality was, respectively, 0.95% and 13.42%. For ACTION score, a ROC curve was obtained to ascertain the predictive capacity for intra-hospital mortality, presenting the following c-statistic value: 0.860 (p <.001).

Conclusions: In this population, only the ACTION score presented an acceptable predictive power for bleeding complications. Although ATRIA and HEMORRHAGES are simpler these scores have a lower predictive value comparing with the scores that are currently used. In addition, the ACTION score has a good predictive power for in-hospital mortality, demonstrating that bleeding complications are associated with poor prognosis and increased mortality.

P 320. FRIEND OR FOE: ACUTE CORONARY SYNDROME WITHOUT STANDARD MODIFIABLE CARDIOVASCULAR RISK FACTORS

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Introduction: Acute coronary syndromes (ACS) in patients without the standard modifiable cardiovascular risk factors (SMCRF; hypertension, diabetes, dislipidemia, smoking) is uncommon and their prognosis is unknown.

Methods: We reviewed ACS patients admitted in our coronary unit between 2009 and 2016. We examined the proportion of patients without SMCFR and their outcomes. The primary outcome was all-cause death. Secondary-endpoints were rates of short-term (6 months) all-cause death, long-term re-infarction and hospitalization for heart failure. Logistic regression analyses were performed to estimate the unadjusted and adjusted hazard ratio (HR) for the binary outcomes. Kaplan-Meier methodology was used for the analysis.

Results: Of the 1,544 patients (67.9 ± 13.3 years old, 70.1% male), 5.1% had no SMCRF. The proportion of patients with no SMCRF was equal between men and women. There were minor non significant differences

Figure 1. Kaplan-Meier survival curve

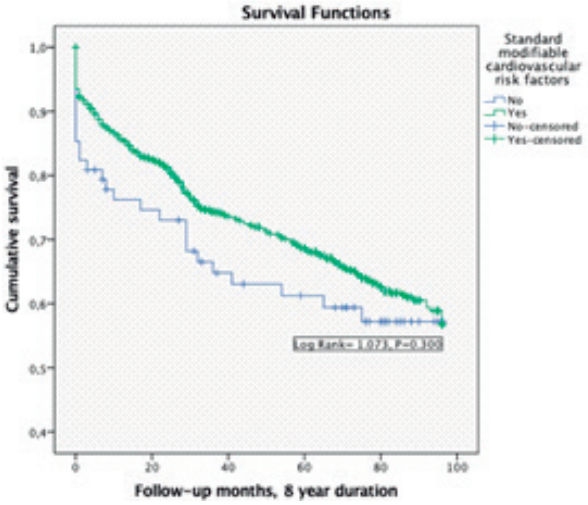

Table 1. Unadjusted secondary outcomes post-discharge

	No SMCRF	With SMCRF	Overall
6-month death	13 (16.5%)	146 (10.0%)	159 (10.3%)
Re-infarction	4 (5.1%)	205 (14.0%)	209 (13.5%)
Heart failure hospitalization	5 (6.3%)	166 (11.3%)	171 (11.1%)

P 320 Figure

in the mean age (no SMCRF 69.8 ± 15.3 yo, with SMCRF 67.8 ± 13.1yo). No relationship was found between type of ACS and SMCRF status. Mean systolic blood pressure was lower in no SMCRF patients (121.1 ± 28 vs 134.4 ± 27.5 mmHg, p = 0.000). Killip-Kimbal class (KK) and left ventricular ejection fraction (LVEF) were comparable. The unadjusted mortality rate during the follow-up (median 47 months) was similar between the two groups (HR = 1.12 95%CI 0.82-1.79). No clinically significant difference in the unadjusted rates of all-cause death 6 months post-discharge was observed. Trends for hospitalization for heart failure were similar between the two groups. However, the rates of re-infarction (6.3% versus 16.5%, χ^2 = 4.75, p = 0.034) were lower in patients with no SMCRF, with an approximately 30% less chance (HR = 0.28, 95%CI 0.10-0.75, p = 0.011). In a multivariable analysis (adjusted for age, sex, type of ACS, atrial fibrillation, chronic kidney disease, KK and LVEF), SMCRF status was not a predictor of long-term death.

Conclusions: This under-appreciated group of patients has a comparable rate of mortality to patients with standard modifiable cardiovascular risk factors. This uncovers and highlights the importance of diagnosis coronary artery disease not predicted by the SMCRF.

P 321. ECG TO REPERFUSION TIME ANALYSIS ANT ITS IMPACT IN THE PROGNOSIS OF ACUTE MYOCARDIAL INFARCTION

Cátia Costa Oliveira[1], Carlos Galvão Braga[1], Isabel Campos[1], Paulo Medeiros[1], Carla Rodrigues[1], Rui Flores[1], Fernando Mané[1], Pedro Azevedo[1], Miguel Álvares Pereira[1], António Gaspar[1], Jorge Marques[1], Em nome dos investigadores do registo nacional de Síndromes Coronárias Agudas[2]

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Introduction: According to 2017 ESC guidelines for STEMI, reperfusion time of patients not admitted in centers with primary PCI must be ≤ 120 minutes (min).

Objectives: To analyze the proportion of patients with STEMI admitted in hospitals without primary PCI in which reperfusion time was ≤ 120 min and to understand its prognostic impact.

Methods: Multicentric, retrospective study. 1909 STEMI pts with < 12h of symptoms evolution, admitted in hospitals without primary PCI between October 2010 and September 2019 who underwent primary PCI were analyzed. Patients were studied according to the ECG-reperfusion time: ≤ 120 min (Group 1-G1) or > 120 min (Group 2-G2).

Results: G1 corresponded to 42.5% while G2 to 57,5%. In both groups patients were mainly male. G1 1 was younger (61 ± 13 vs 64 ± 14, p < 0.001) and had more prevalence of smoker patients (44.1% vs 36.1%, p < 0.001). G2 have more often diabetes (25.9% vs 21.2%, p = 0.02). Time until the 1st medical contact and admission was longer in G2 (120 min vs 105 min, p = 0.004). *"Via verde coronária"* was more frequently activated in G1 (5.5% vs 1.8%, p < 0.001). There were no significant differences on the KK classification on admission, but G2 had more prevalence of severe left ventricular disfunction (LVEF≤ 30%: G1 = 3%, G2 = 6%, p = 0.002). During the hospitalization, G2 had significantly higher rates of heart failure (11.7% vs 17.4%, p < 0.001) and cardiogenic shock (3.6% vs 5.7%, p = 0.036). Cardiac arrest on admission was more prevalent in G2 (3% vs 5.2%, p = 0.017). Mortality during hospitalization was higher in G2 (1.6 vs 4.2%, p < 0.001). Patients admitted on North were mainly in G2 (n = 493, 39.6% vs 60.4%) as on Center (n = 253, 25.7% vs 74.3%) and South (n = 304, 35.3% vs 64.7%). In Lisbon and Tejo Valley patients were mainly on G1 (n = 860, 51.6% vs 48.4%). Follow-up was performed in 859 patients (G1 = 42.6% vs G2 = 54.4%). After 1 year, there were no differences in mortality (G1 = 16 deaths, G2 = 26 deaths, p = 0.520). Cardiovascular and non-cardiovascular readmissions were also not difference between the groups mortality (p = 0.782 and p = 0.548, respectively).

Conclusions: Most of the patients did not comply the current guidelines. Reduction of system delay in STEMI remains crucial, since lower reperfusion time have less in-hospital complications and mortality. Follow-up was not performed in all patients which can justify the results. This work shows that it is fundamental to adopt organizational measures to reduce system delay.

P 322. PROGNOSIS OF REVASCULARAZION ON A PREVIOUS MYOCARDIAL INFRACTION (MI), IN PATIENTS WHO PRESENT WITH A NEW ACUTE CORONARY SYNDROME (ACS)

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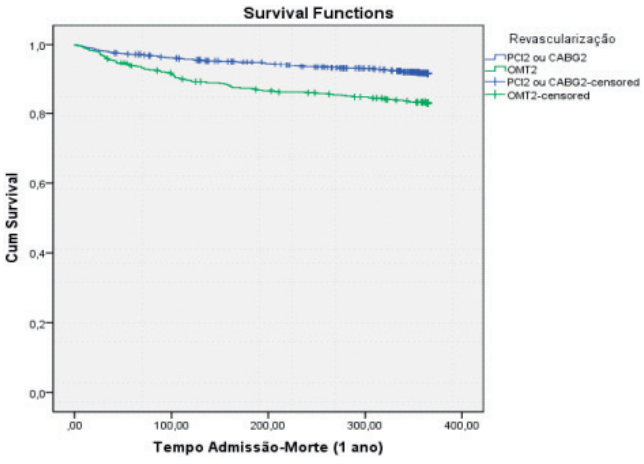
Introduction: In current clinical practice, only a small percentage of patients with myocardial infarction are treated conservatively, receiving neither coronary angiography nor fibrinolysis. Most of these patients are excluded from invasive management strategy due to accompanying comorbidities. The aim of the present study was to assess the effect of revascularazion on a previous myocardial infarction (MI), in patients who present with a new acute coronary syndrome (ACS).

Methods: Data were retrospectively collected and included patients admitted for ACS between 2010 and 2019 with a previous diagnosis of MI (n = 5,085). Patients were divided into one of two groups: those who were revascularized by either CABG or PCI (n = 3,696) on previous MI and those who were treated medically (n = 1,389). The primary outcome of interest for this study was all-cause in-hospital mortality. Secondary outcomes of interest included incidence of in-hospital cardiogenic shock during hospital stay and mortality and re-admissions for cardiovascular events at 1 year. Multivariable logistic regression was utilized to evaluate the influence of previous revascularization on the outcomes of interest, while controlling for demographic characteristics, medical history, and procedural characteristics.

Results: Patients managed medically on previous MI were older, more often female and had higher rate of other comorbidities including heart failure, previous stroke, kidney failure, chronic obstructive pulmonary disease, dementia and previous hemorrhage. They had more frequently multivessel disease on angiography than their previously revascularized counterparts (69.3% vs 61.7%, p < 0.001). They were less likely to receive PCI (40.5% vs 55.5%, p < 0.001) but more likely to receive CABG (10.2% vs 4.2%, p < 0.001). Hospital mortality was higher for patients treated conservatively on previous MI (5.5% vs 3.0%, HR 1.9, 95%CI 1.41-2.56, p < 0.001) as was cardiogenic shock during hospital stay (5.0% vs 3.2%, HR 1.6, 95%CI 1.18-2.17). However, in out adjusted model, there was no difference between groups (HR = 1.13, 95%CI 0.74-1.72, p = 0.584; HR = 0.88, 95%CI 0.57-1.36, p = 0.554, respectively). Regarding 1 year follow-up, survival after discharge was higher in patients with conservative management in previous MI (log rank p < 0.001) but not in the adjusted model (log rank p < 0.085) (Figure). Re-admissions for cardiovascular events (log rank p < 0.5) were not different between groups.



Conclusions: Patients that were not revascularized after an MI have a worse prognosis after a new ACS comparing to those who were submitted to PCI or CABG. This appears to be mainly derived from the higher age and comorbidities associated with these patients.

P 323. PROGNOSTIC VALUE OF ANEMIA AT HOSPITAL ADMISSION IN PATIENTS WITH ST-ELEVATION MYOCARDIAL INFARCTION

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Introduction: Hemoglobin (Hb) levels are an important outcome predictor in several diseases. We aimed to evaluate Hb at hospital admission in patients with ST-segment elevation myocardial infarction (STEMI) as a predictor of in-hospital complications, as well as mortality and heart failure (HF) events during follow-up.
Methods: We retrospectively studied consecutive STEMI patients treated with primary percutaneous coronary intervention between 1st January 2010 and 31st December 2016. Clinical data was retrieved by review of patients' clinical records. Severity of anemia was defined according World Health Organization cut-offs.
Results: Of 864 patients with mean age of 63 ± 13 years, 646 (75%) were male. Mean Hb at hospital admission was 14 ± 2 g/dL, 682 (81%) with normal Hb, 118 (14%) with mild anemia, 45 (5%) with moderate and 2 (0.2%) with severe. Women, smokers, patients with diabetes, hypertension, previous myocardial infarction and peripheral artery disease had higher incidence of anemia at hospital admission. Individuals with anemia presented more with Killip-Kimball (KK) class ≥ II. They also had higher incidence of in-hospital stroke, advanced atrioventricular block, gastrointestinal bleeding and need of transfusion. In-hospital mortality was 9%, higher patients with anemia (13% vs 7%, p = 0.022). Median follow-up was 43 (26-66) months. All-cause mortality was 14%, higher in patients with anemia (27% vs 11%, p < 0.001, Log rank test p < 0.001). In multivariate analysis, only age (HR 1.1, 95%CI 1.0-1.1), diabetes (HR 1.9, 95%CI 1.1-3.4), left ventricular ejection fraction (LVEF) at discharge (if < 50%, HR 3.4, 95%CI 1.6-7.2), and anemia at admission (HR 1.8, 95%CI 1.0-3.2) were independent predictors death during follow-up. Incidence of *de novo* HF, clinical worsening or hospitalization was 18%, higher in patients with anemia (27% vs 17%, p = 0.007, Log rank test p = 0.007). In multivariate analysis, only age (HR 1.1, 95%CI 1.0-1.1), KK class (in II, HR 2.1, 95%CI 1.3-3.5; if III, HR 4.0, 95%CI 1.8-8.9; if IV, HR 2.1, 95%CI 1.2-3.9), body mass index (if obese, HR 2.5, 95 CI 1.4-4.4) and LVEF at discharge (if < 50%, HR 4.2, 95%CI 2.2-7.7), but not anemia at admission (p = 0.633) were independent predictors HF-events.
Conclusions: In our cohort, presence of anemia at hospital admission in patients with STEMI was not only associated with in-hospital complications, but also with important outcomes during follow-up, as all-cause mortality and HF-events.

Painel 7 - Hipertensão 1

P 324. POLYMORPHISM OF THE EPITHELIAL SODIUM CHANNEL SCNN1G G(-173)A IS ASSOCIATED WITH THE HYPERTENSIVE HEART DISEASE

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Introduction: Hypertensive heart disease (HHD) is one of the cardiac complications of hypertension (AHT). It is associated with a higher risk of cardiovascular events. Several studies suggest the influence of genetic factors on the increase of left ventricular mass in hypertensive patients. Environmental factors such as excessive salt intake are also associated with HHD. Thus, polymorphisms that interfere in the water and sodium balance at the kidney level should be candidate genes in the development of this pathology, which is still poorly understood. SCNN1G G(-173)A rs5718 sodium epithelial channel polymorphism is associated with AHT, but it is unknown if it is associated with the development of HHD in hypertensive individuals.
Objectives: To study whether there is an association between the polymorphism of the epithelial sodium channel (SCNN1G G(-173) A) and the appearance of hypertensive heart disease (HHD).
Methods: A case-control study was conducted with a total sample of 588 hypertensive individuals (mean age of 50.9 ± 7.7), including 153 cases with HHD (mean age of 52.0 ± 7.9) and 435 controls without HHD (mean age of 50.5 ± 7.6). SCNN1G G(-173)A frequencies were evaluated in both groups and the genetic models for this variant were calculated. Predictive factors of HHD development (PF HHD) were assessed, namely: age, gender, time of AHT diagnosis and control of AHT. A logistic regression analyzed which PF HHD were associated with the appearance of HHD.
Results: SCNN1G polymorphism was associated with HHD onset under the recessive (OR = 1.620; 95%CI: 1.066-2.462; p = 0.023) and dominant (OR = 1.508, 95%CI: 1.005-2.261; p = 0.046) models. After multivariate analysis, together with the PF HHD, this variant remained in the equation with an OR of 1.660 (95%CI: 1.083-2.546), p = 0.020 (Table).

Logistic regression of PF HHD and SCNN1G for hypertensive heart disease

Variables	OR (95%CI)	p-value
Male sex	1.504 (1.019-2.219)	0.040
Diagnosis time	1.035 (1.010-1.060)	0.006
Controled AHT	1.607 (1.099-2.350)	0.014
SCNN1G		
AA	1.660 (1.083-2.546)	0.020
Constant	0.152	<0.0001

Conclusions: The polymorphism of the sodium epithelial channel SCNN1G G(-173)A is associated with HHD in hypertensive individuals. These results help us to uncover the genetic component in the development of HHD, which may be useful in clinical practice either to prevent HHD in hypertensive patients, or to establish more appropriate therapies for the regression of HHD.

P 325. THE ROLE OF A GENETIC RISK SCORE FOR PREDICTING TARGET ORGAN DAMAGE IN HYPERTENSIVE PATIENTS

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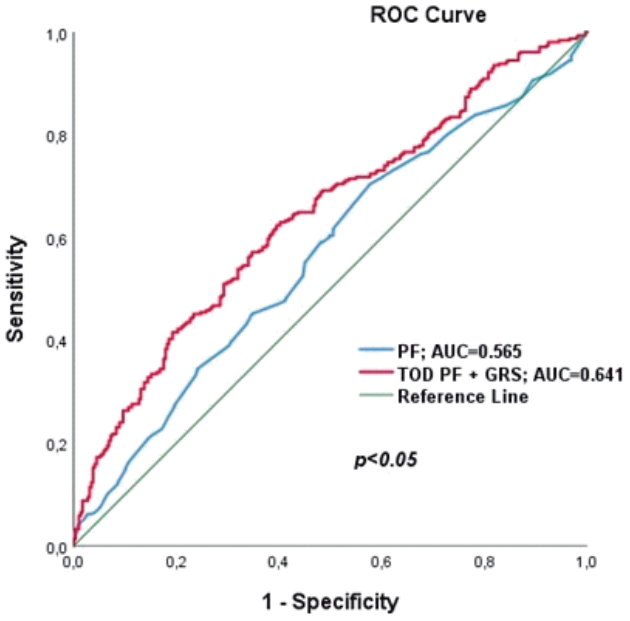
Introduction: Clinical and subclinical lesions of target organs influence the prognosis of hypertensive individuals and play a crucial role in determining overall cardiovascular risk. Several factors interfere with the development of target organ damage (TOD) in hypertensive individuals. However, the contribution of genetics in TOD remains unclear.
Objectives: Study the contribution of a genetic risk score (GRS), consisting of 14 genetic variants related to arterial hypertension (AHT) in TOD risk prediction. Test the improvement of the discrimination and reclassification indices for predicting TOD, when the GRS is added to the model comprising the non-genetic factors related with TOD.

Methods: In a sample of 600 hypertensive patients with a mean age of 50.9 ± 7.7 years, we evaluated the existence of TOD (hypertensive retinopathy, renal failure/microalbuminuria, hypertensive heart disease or cerebrovascular disease). Two groups were constituted: a group with hypertensive patients who presented at least one TOD (n = 308) and another with those who had no TOD (n = 292). In both groups, 14 genetic variants and the predictive factors of TOD development (PF TOD), namely: age, gender, time of diagnosis of AHT and control of AHT. A logistic regression analysis was performed to assess which PF TOD were associated with TOD. GRS was calculated using the multiplicative method. Finally, ROC curves were performed with PF TOD and PF TOD + GRS and results were compared with the *Delong* test.
Results: After logistic regression, corrected for PF TOD, the GRS increased the risk of TOD, with an OR of 1.40 (95%CI: 1.22-1.61; p < 0.0001). In the first ROC curve, including PF of TOD, the AUC was 0.565 (95%CI: 0.519-0.611) and, when GRS was added to the model, it increased to 0.641 (95%CI: 0.598-0.685). Comparing the AUC's by the *Delong* test, the p-value was significant (p < 0.05), indicating a better discriminative power in the joint model.



Conclusions: GRS proved to be an independent risk factor for the appearance of TOD in hypertensive patients and increased the discriminative capacity of PF of TOD. The reclassification analysis revealed that the inclusion of GRS improved our model. This genetic score may be useful in clinical practice, helping to assess hypertensive individuals at higher risk of developing TOD.

P 326. DISLIPIDEMIA E HIPERTENSAO. O *FOLLOW-UP* DE ESTRATÉGIAS TERAPÊUTICAS DE DUAS DÉCADAS!

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[1]Faculdade de Medicina da Universidade do Porto. [2]Centro Hospitalar Universitário de São João.

Introdução e objetivos: Lp(a) é um fator de risco cardiovascular independente, mas intrinsecamente associado a outros fatores de risco similares nomeadamente à hipertensão arterial (HTA), controláveis com terapêuticas e orientações adequadas. O nosso objetivo é estudar o impacto do uso de terapêuticas especificas e combinadas, no decurso de duas décadas, dirigidas entre outras e também à HTA presente em 347 doentes e, com repercussões na evolução da Lp(a). Sendo que os doentes estudados apresentavam elevado risco vascular, sem ECVM e, em prevenção primária.
Métodos: Estudo observacional retrospetivo realizado em 516 doentes dos quais 347 com HTA, selecionados aleatoriamente de um universo de 1.677 indivíduos, que participaram regularmente em consultas de risco vascular e metabolismo entre 1995 e 2015. As patologias observadas e terapêuticas utilizadas foram distribuídas em diferentes grupos nosológicos e grupos farmacológicos, respetivamente. Calculou-se o RV com base em FRS, SCORE e ASCVD e avaliou-se também a evolução do estilo de vida dos doentes.
Resultados: Encontraram-se diferenças significativas (p < 0,001) em quase todas as variáveis metabólicas, exceto insulina (jejum) e péptido-C. Houve uma redução significativa nos níveis de Lp(a) (p < 0,001). A espessura íntima-média carotídia evoluiu favoravelmente, diminuindo de 2,90 mm para 1,40 mm; porém, não houve redução do número de casos de estenose vascular. Dos doentes com esteatose hepática (85,5%), 40,7% apresentaram hepatomegalia. Contudo, poucos doentes (14,5%) apresentaram função hepática alterada. A terapêutica antidislipidemica, especialmente as estatinas, diminuiu significativamente a Lp(a), beneficiando da sinergia com demais tratamentos nomeadamente e fundamentalmente daqueles dirigidos ao tratamento da HTA.
Conclusões: Lp(a) é um indicador global e fundamental de risco vascular frequentemente associado à HTA. Ambas devem ser consideradas alvos terapêuticos no contexto de uma adequada compensação metabólica global. Para além de estilos de vida saudáveis, a prevenção primária deve incluir terapêuticas farmacológicas especificas e tanto quanto possível combinadas, dirigidas a todos os fatores de risco cardiovasculares nomeadamente e também focadas no tratamento da hipertensão arterial no contexto de uma estabilidade metabólica global no sentido de retardar todo o processo aterosclerótico e cardiovascular.

Table 1 Changes in anthropometric and clinical assessments between initial and final visits.

	n	Mean difference	Median difference	Range (min-max)	p
Weight, kg	516	-0.54±9.10	-0.4500	-40.00-57.60	0.069 (WSR)
Height, cm	516	-0.37±4.73	0	-6.00-86.00	0.700 (ST)
BMI, kg/m^2	516	-0.36±3.23	-0.19	-15.94-10.61	0.077 (ST)
Waist circumference, cm	516	-2.03±8.00	-2.00	-43.00-45.00	<0.001 (WSR
Upper arm circumference, cm	516	-1.41±2.75	-2.00	-10.00-10.00	<0.001 (WSR
Triceps skinfold, cm	516	-0.39±0.63	-0.35	-3.00-1.20	<0.001 (ST)
SBP, mmHg	516	-19.35±25.28	-18	-148.00-56.00	<0.001 (ST)
DBP, mmHg	516	-13.35±25.29	15.72	-80.00-30.00	<0.001 (ST)
Heart rate, bpm	493	-10.30±12.90	-10	-104.00-22.00	<0.001 (ST)
Daytime SBP, mmHg	478	-23.24±24.80	-22.50	-147.00-29.00	<0.001 (ST)
Daytime DBP, mmHg	478	-21.45±17.98	-22.00	-86.00-24.00	<0.001 (ST)
Night-time SBP, mmHg	478	-17.77±19.11	-17.00	-127.00-25.00	<0.001 (ST)
Night-time DBP, mmHg	478	-19.07±15.89	-18.00	-81.00-14.00	<0.001 (ST)

BMI: body mass index; DBP: diastolic blood pressure; SBP: systolic blood pressure; ST: sign test; WSR: Wilcoxon signed-rank test.

P 326 Figure

P 327. BLOOD PRESSURE AND ARTERIAL STIFFNESS IN SICKLE CELL DISEASE (SCD) WITH (HT) AND WITHOUT HYPERTENSION (NHT)

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[1]Centro Cardiologia da Universidade de Lisboa. Medicina I. Faculdade de Medicina. Universidade de Lisboa. [2]Serviço de Medicina I-CHULN/FMUL. [3]Serviço de Medicina I-CHULN.

Introduction: Pulse wave velocity (PWV) and aortic augmentation index (AI) are indicators of arterial stiffness and are increased in hypertension patients. Sickle cell disease (SCD) leads to chronic vasculopathy with multiple organ involvement, and probably the combination of the risk two factors increases the vascular lesion. The aim of this study is to evaluate the arterial stiffness and wave reflection in adult SCD.
Methods: The study is a prospectively recruited adult that are send to the hypertension unit because high value of blood pressure determination. Patients underwent clinical examination, body mass index (BMI), routine laboratory tests (complete blood count, serum creatinine level), urine albumin/creatinine ratio measure), and a measure of carotid-femoral pulse wave velocity (cf-PWV) and augmentation index (AI) at a steady state. Patients were divided according the value off ambulatory blood pressure measure in HT and NHT. Both were also compared with a normal group (C) with the same age and sex. The models were t-Student and ANOVA oneway, with $p < 0.01$ (two-tailed).
Results: The study included 42 patients (24 HT/18 NHT) with SCD and 21 C match with the same age and sex. The BMI and routine parameters did not presented significant differences, also the values of cfPWV (C: 6.9 ± 2.2; NHT: 8.4 ± 2.7, HT 10.8 ± 3.3, $p < 0,01$) and the values of central AIx (C: 18.3 ± 11.3; NHT: 23.6 ± 9.7, HT 27.3 ± 8.8, $p < 0,01$) are significative different among the three groups, with an increase of both parameters in the groups with SCD, and this effect was potentiated by the hypertension.
Conclusions: PWV and AI are deeply modified in SCD patients in comparison with healthy controls. The changes were detected in patients with SCD, but was more marked in those who have HT. These data suggest that SCD an important factor for cardiovascular disfunction, but when associated with hypertension the lesions are greater and these patients should be considered as high risk and treated accordingly.

P 328. SHOULD WE REDEFINE HYPERTENSIVE RESPONSE IN STRESS TEST TO BETTER PREDICT CARDIOVASCULAR RISK?

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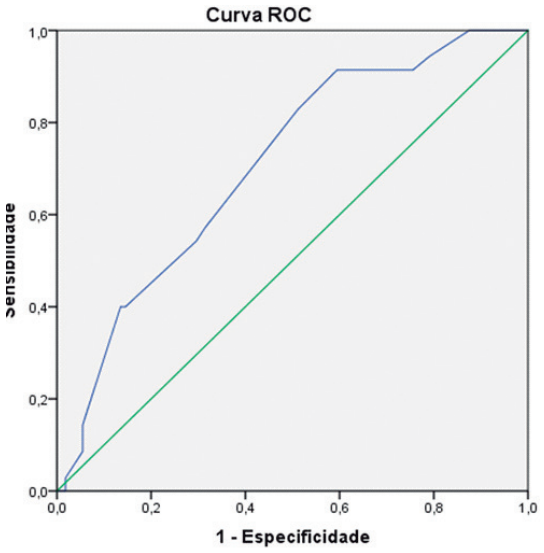
Introduction: Systolic blood pressure (SBP) rise during exercise is normal, but some patients present with hypertensive response to exercise (HRE). The clinical implication of such phenomenon is not fully elucidated, and treatment strategies are still uncertain.
Objectives: To evaluate the relationship between HRE and the development of major cardiovascular events (MACE)-death, acute coronary syndrome (ACS) and stroke.
Methods: Single-center retrospective study of consecutive patients submitted to exercise test (ET) from 2012 to 2015. Patient's demographics, baseline clinical characteristics, vital signs during ET and MACE occurrence during follow-up were analysed. HRE was defined as a peak systolic blood pressure (PSBP) > 210 mmHg in men and > 190 mmHg in women, or a rise of the SBP of 60 mmHg in men or 50 mmHg in women or as a diastolic blood pressure > 90 mmHg or a rise of 10 mmHg.
Results: We included 458 patients with HRE (76% men, 57.5 ± 10.83 years). The most frequent comorbidities were hypertension (83%) and dyslipidaemia (61%). During a mean follow-up of 60 ± 2 months, the incidence of MACE was 9.2% with ACS being the most frequent (4.2%), followed by mortality (3.8%) and stroke (2.1%). Patients with inconclusive ET had a fourfold higher risk of acute coronary events (OR 4.1, 95%CI 1.55-11.14, $p = 0.005$). Baseline SBP and PSBP were predictors of MACE occurrence (OR 1.022, 95%CI 1.004-1.04, $p = 0.016$, OR 1.031 95%CI 1.012-1.051, $p = 0.001$, respectively) and were both associated with cardiovascular hospitalization ($p = 0.006$; $p < 0.001$, respectively). PSBP had moderate ability to predict hospitalization of cardiovascular (CV) cause (AUC 0.71, $p < 0.001$) with a cut-off of 193 mmHg (sensibility 91%, specify 40%) and had moderate ability to predict MACE (AUC 0.67, $p < 0.001$) with a cut-off of 198 mmHg (sensibility 78.6%, specify 46.1%). Regarding mortality, antihypertensive therapy prior to ET was protective ($p = 0.042$), with no difference between different classes of drugs.



PSBP as predictor of cardiovascular hospitalization

Conclusions: Our data reveal a high rate of MACE occurrence between patients with HRE. The finding of diagnosed hypertension as a protective factor of stroke may be explained by the cardioprotective effect of antihypertensive drugs. An increased risk of ACS between patients with an inconclusive ET should lead to consider then for further investigation. HRE should be considered as part of CV risk assessment and adjusted lower HRE cut-off values should be considered in order to better predict MACE occurrence, particularly in high risk patients.

P 329. HYPERTENSIVE RESPONSE IN EXERCISE-A TOOL TO PREDICT STROKE RISK?

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Introduction: There is some evidence suggesting that exaggerated hypertensive response to exercise (HRE) may be associated with higher risk of future cardiovascular events, however the relationship between systolic blood pressure (SPB) during exercise test and stroke is not fully understood.
Objectives: To evaluate the ability to predict the risk of stroke in patients with HRE in exercise test.
Methods: Single-center retrospective study of consecutive patients submitted to exercise test from 2012 to 2015 with HRE to stress test. HRE was defined as a peak systolic blood pressure (PSBP) > 210 mmHg in men and

> 190 mmHg in women, or a rise of the SBP of 60 mmHg in men or 50 mmHg in women or as a diastolic blood pressure > 90 mmHg or a rise of 10 mmHg. Patient's demographics, baseline clinical characteristics, vital signs during the stress test and the occurrence of stroke during follow-up were analysed.
Results: We included 458 patients with HRE (76% men, 57.5 ± 10.83 years). The most frequent comorbidities were hypertension (83%), dyslipidaemia (61%), previously known coronary disease (32%), diabetes (28%) and smoking (38%). Atrial fibrillation was present in 5.9% of patients. During a mean follow-up of 60 ± 2 months, the incidence of stroke was 2.1% (n = 8), all with ischemic origin. Considering the parameters analysed on exercise test, only PSBP demonstrated to be an independent predictor of stroke (HR 1.042, 95%CI 1.002-1.084, p = 0.039,) with moderate ability to predict stroke (AUC 0.735, p = 0.0016) with a most discriminatory value of 203 mmHg (sensibility 56%, specify 67%). Regarding baseline characteristics, after age, sex and comorbidities adjustment, previously controlled hypertension was found to be an independent protective factor of stroke (OR 4.247, 95%CI 0.05-0.9, p = 0.036) and atrial fibrillation was an independent predictor of stroke occurrence (HR 8.1, 95%CI 1.4-46.9, p = 0.018). Atrial fibrillation was also associated with hospitalization of cardiovascular cause and major cardiovascular events occurrence (mortality, coronary syndrome and stroke). Baseline SBP was associated with atrial fibrillation development (p = 0.008).
Conclusions: According to our results, PSBP during exercise test is an independent predictor of stroke occurrence and should be considered as a potencial additional tool to predict stroke occurrence, particularly in high risk patients. The identification of diagnosed hypertension as a protective factor of stroke may be explained by the cardioprotective effect of antihypertensive drugs.

Painel 8 - Enfermagem em Cardiologia 1

P 331. MULTICENTER RANDOMIZED CONTROLLED TRIAL: ERIC-HF PROTOCOL RESULTS

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Introduction: Decompensated Heart Failure (HF) patients are often characterized by functional dyspnea, edema, functional dependence and impairment of performance in activities of daily living. Aerobic exercise training (AET) can benefit these patients, optimizing their functional capacity (FC), increasing exercise tolerance and promoting a better lifestyle. Although the benefits, AET is not yet validated for inpatients. ERIC-HF (early rehabilitation in cardiology-Heart Failure) is an AET program designed to HF inpatients.
Objectives: To evaluate the feasibility, safety and impact on FC of an AET program (ERIC-HR) in decompensated HF inpatients.
Methods: Multicenter randomized single-blind controlled trial developed in 8 cardiology wards. The study is still ongoing and patients are randomized into training group (TG) or control (CG). Data collection include cardiovascular history, HF history and two functional tools: LCADL and Barthel Index (BI). TG patients perform ERIC-HF program twice a day for 5 days/week. ERIC-HF is a supervised AET program, with increasing levels of intensity, divided into 5 stages (respiratory training, cycloergometer training, gait training and climbing stairs). Vital signs are evaluated before and immediately after the exercise, as well as the Borg Modified Perceived Exertion (BMPE) and any adverse event. CG patients perform physical activity in accordance with the guidelines, always supervised too. At discharge, all patients are evaluated with LCADL, BI and a 6-minute walking test (6MWT). The study was published in clinicaltrials.gov with the Identifier: NCT03838003.
Results: Until now, 174 patients are randomized, 95 in TG and 79 in CG with an average of age of 71 (± 11) years old, 96 are male, 76% are in NYHA class III, 28 have diabetes and 54 have resynchronization therapy (CRT). At admission, both groups have the same level of functional dependence according to LCADL and Barthel scores. TG patients performed a total amount of 1,223 session of exercise with an average of 14 sessions each, for 14 (± 12) days of hospitalization. About 32% of patients reached the final stage of the program-climbing stairs. At discharge, TG patients presented lower LCADL score, higher BI score and a 47 meters difference on the 6MWT (p = 0.003) which represents a better FC. Adverse events registered are: BMPE superior to 7 in 65 sessions of exercise, new onset of atrial fibrillation in 14 sessions, transitory precordial pain in 4 sessions and fall of systolic blood pressure after exercise in 210 sessions.
Conclusions: The ERIC-HF program demonstrated to promote FC. Regarding safety, we can infer that the few adverse events registered aren't major, and does not represent that AETcan be deleterious for decompensated HF patients, however more research should be done. Probably AET is safe and viable, for HF patients and must be encouraged. No other study of our knowledge has demonstrated this findings.

P 332. THE THERAPEUTIC REGIMEN MANAGEMENT IN THE CARDIAC REHABILITATION PROGRAM

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Introduction: Coronary artery disease (CAD) is the leading cause of death worldwide and a leading cause of decreased functional capacity and perceived quality of life (WHO, 2014). The Cardiac Rehabilitation program is an essential tool for the recovery of the cardiac patient, promoting the reduction of cardiovascular risk and facilitating the adoption of a healthy lifestyle. The central focus of this program is to provide the patient with a physical activity plan, accompanied by instruction and motivation to control the various cardiovascular risk factors and the therapeutic regimen management.
Objectives: To assess patients' knowledge about the therapeutic regimen management throughout the Cardiac Rehabilitation program. Analyze the results, verify their evolution in the temporal context and adjust the nursing care planning towards the continuous improvement of care and reduction of the cardiovascular risk of the patients.
Methods: Data representing patients' knowledge of the therapeutic regimen management at various times were collected-discharge from hospital (Phase I), beginning and end of outpatient care at cardiovascular rehabilitation unit (Phase II) and maintenance phase (Phase III), which we evaluated in this case 6 months after the beginning of the outpatient phase.
Results: In a sample of 255 patients (year 2018), at the time of discharge, 8% of them showed knowledge of CAD, 6.7% had knowledge about healthy diet, 10% describe which physical activity habits to follow and 29% reveal knowledge about the drug therapy. At the end of Phase II, these values increase respectively to 83% (CAD), 72.3% (healthy diet), 78.4% (physical activity) and 84.6% (drug therapy). In Phase III, the knowledge shown is respectively 76% (CAD), 73.9% (healthy diet), 73.9% (physical activity) and 80.4% (drug therapy).
Conclusions: There is a very low knowledge at the time of discharge, with a slight improvement at the time of admission to the cardiovascular rehabilitation unit. At the end of the phase II higher adherence values and demonstrated knowledge about the therapeutic regimen management are reached. At 6 months there is a slight decrease, probably due to the lower follow-up of the patient.

P 335. IMPACTO DA INSUFICIÊNCIA CARDÍACA NA SEXUALIDADE

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Introdução: A atividade sexual muitas vezes é descurada em detrimento da sintomatologia apresentada. O conhecimento dos problemas vivenciados na esfera sexual, permite informar e encaminhar os utentes, contribuindo

Tabela P 335
Limitação da vida sexual na IC

Em que medida a IC tem limitado a sua vida sexual (50)	Limitado extremamente		Limitado muito		Limitado moderadamente		Limitado pouco		Não tem limitado	
	Masc.	Fem.	Masc	Fem	Masc	Fem	Masc	Fem	Masc	Fem
Com alterações da vida sexual	2 (4 %)	1 (2%)	10 (20%)	1 (2%)	10 (20%)	3 (6%)	6 (12%)	1 (2%)	1 (2%)	-
Sem alterações da vida sexual	-	-	-	-	3 (6%)	1 (2%)	4 (8%)	-	6 (12%)	1 (2%)

para a sua qualidade de vida. Este estudo tem como objetivo caraterizar o grau de satisfação sexual e identificar os fatores que se associam à disfunção sexual.
Métodos: Analisaram-se os doentes seguidos em Consulta de Insuficiência Cardíaca no nosso centro, com disfunção sistólica ventricular esquerda, em classe I-IV da *New York Heart Association*. Foram estudados os doentes que compareceram na Consulta de Enfermagem, entre julho e novembro de 2019. Foi aplicado a todos um questionário padrão que incluiu questões sobre a qualidade de vida e a presença de alterações na vida sexual e apoio solicitado pelos doentes. O questionário foi preenchido pelo doente e parceiro, antes da consulta.
Resultados: Foram analisados 50 doentes, com idade média 60,5 anos, 84% do sexo masculino, 46% com fração de ejeção reduzida e 68% com devices implantados. Referem alteração da vida sexual 70% dos doentes e, apenas 17,14% procurou ajuda. Cerca de 31,03% refere disfunção eréctil, e 24,13% refere diminuição da ereção, o cansaço é sentido em 12% dos utentes e 14% não respondeu. Segundo a classe NYHA, 62,9% os doentes com disfunção sexual estão em classe II e 53,3% dos doentes sem disfunção sexual estão em classe I. Segundo teste chi² não há relação entre a disfunção sexual e a etiologia isquémica da IC, a diabetes, e ter um CRT implantado. A idade e o pro-BNP, estão relacionados com a disfunção sexual.
Conclusões: Urge abordar os aspetos da sexualidade com os doentes de modo a dar resposta as suas necessidades quer sejam farmacológicas ou não.

P 330. ADESÃO AO REGIME MEDICAMENTOSO-UMA REALIDADE

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Introdução: Em Portugal, vive-se cada vez mais anos fruto de vários fatores: melhores condições de vida, avanços da medicina e tecnologia, terapêuticas e medicamentos mais inovadores e eficazes. Em contrapartida, verifica-se um aumento das doenças crónicas e pessoas portadoras de múltiplas comorbilidades. Apesar do decréscimo verificado nos últimos anos, a mortalidade por doenças cardiovasculares continua a ser a principal causa de morte em Portugal (INE, 2017). Segundo o *International Council of Nurses* (2011, p.38) a adesão ao regime medicamentoso é definida como: «A ação auto iniciada para promoção do bem-estar, recuperação e reabilitação, seguindo as orientações sem desvios... Cumpre o regime de tratamento, toma os medicamentos como prescritos, muda o comportamento para melhor, procura os medicamentos na data indicada...». A melhoria dos indicadores de adesão aos regimes terapêuticos propostos no âmbito da doença coronária isquémica é parte integrante da estratégia global definida no Programa Nacional de Prevenção e Controlo das Doenças Cardiovasculares (DGS, 2007). A insuficiente adesão aos regimes terapêuticos leva ao insucesso dos tratamentos, aumento da morbilidade e mortalidade e custos substancialmente acrescidos. Tendo a perceção, que alguns dos doentes internados no serviço não cumprem ou em algum momento não cumpriram a medicação, partiu-se para o presente estudo, tendo como objetivos: conhecer a prevalência da adesão ao regime medicamentoso; identificar as causas de não adesão ao regime medicamentoso e definir ações preventivas e corretivas.
Métodos: Estudo descritivo, transversal, com metodologia quantitativa, com recurso a uma escala-Medida de Adesão aos Tratamentos, aplicada aos doentes, com diagnóstico de Síndrome Coronária Aguda, internados numa Unidade de Cuidados Intensivos Cardíacos do norte do país, de janeiro a abril de 2019.
Resultados: A taxa de não adesão ao regime medicamentoso é de 51%, sendo que, os principais causas de não adesão estão relacionadas com o facto de o doente se ter sentido melhor ou pior com a toma da medicação.
Conclusões: É elevada a taxa de doente que não aderem ao cumprimento do regime medicamentoso, pelo que se torna crucial continuar a apostar em programas educativos, no sentido de sensibilizar/responsabilizar os doentes para a necessidade da adesão aos tratamentos. Nós Enfermeiros somos parte fundamental neste processo.

P 334. CARACTERIZAÇÃO DOS DOENTES SUBMETIDOS A CIRURGIA NUMA UNIDADE DE SAÚDE HOSPITALAR E CONSEQUENTES NECESSIDADES DE CUIDADOS DE ENFERMAGEM-UM ESTUDO RETROSPECTIVO

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Introdução: A colocação da centralidade do cidadão no sistema de saúde significa que, para além de este ser «o objeto» da atenção dos serviços de saúde, ele deve também passar a ser «o sujeito» (o ator principal) no sistema de saúde. Desta forma, também os cuidados de saúde devem ser dirigidos e adaptados ao utilizador dos cuidados de saúde. Esta adequação só pode ser realizada se existir um conhecimento profundo da polução-alvo que cada uma das unidades de saúde serve. Do mesmo modo, a prestação de cuidados de Enfermagem de qualidade só pode ser atingida através deste mesmo conhecimento, levando a uma melhor adequação de recursos (quer humanos quer materiais).
Métodos: Tendo em conta a abrangência nacional desta unidade de saúde e a consequente dificuldade em compreender as necessidades da sua população-alvo, utilizaram-se dados históricos dos utentes dos últimos seis anos, recolhidos através de uma base de dados de gestão dos cuidados de Enfermagem, de forma a realizar um estudo retrospetivo com o objetivo de caracterizar os utilizadores desta unidade de saúde (a nível demográfico e clínico), bem como de descrever as suas necessidades a nível de cuidados de Enfermagem ao longo do internamento.
Resultados e conclusões: Através deste estudo retrospetivo, a unidade de saúde pôde compreender a evolução demográfica e clínica da sua população-alvo (pirâmide etária, distribuição por género e co-morbilidades mais comuns, entre outros indicadores) bem como o nível de dependência nos diferentes autocuidados durante o internamento e à alta. Foram também detetadas as fragilidades/dificuldades mais comuns ao nível da gestão do regime terapêutico. Após reflexão no seio da equipa em relação a estes dados, foram desenvolvidas ações/estratégias de forma a melhorar a qualidade dos cuidados prestados. Como exemplo podem ser referidas estratégias de melhoramento da segurança do doente (com, por exemplo, a otimização da segurança das casas de banho com a colocação de barras e campainhas de segurança mais adequadas) e também ao nível da preparação do doente para o período pós-alta, com a criação formal e identificada visita de referência, com horário de visita alargado, permitindo um maior período de contato com os profissionais de saúde e capacitação para cuidar do doente após a alta hospitalar.

P 333. ENFERMAGEM DE REABILITAÇÃO NA CARDIOLOGIA-UMA REALIDADE

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Introdução: As doenças cardiovasculares são, segundo a Direção Geral de Saúde (DGS), a principal causa de mortalidade, morbilidade e incapacidade, pelo que esta entidade define como missão até 2020 *Reduzir o risco cardiovascular através do controlo dos fatores de risco modificáveis.*
Objetivos: No sentido de colmatar esta problemática, e tendo por base as competências da Enfermagem de Reabilitação (ER): conceção, implementação e monitorização de projetos que visam a prevenção de complicações, a autonomia no autocuidado e a reeducação funcional, assim como o regresso à atividade laboral, foi desenvolvido um projeto de ER em Cardiologia, com o objetivo de melhorar o controlo dos fatores de risco (FR) modificáveis, promover estilos de vida saudáveis e melhorar a qualidade de vida dos doentes.
Métodos: O programa teve início a 4 de novembro de 2019 e será avaliado após um ano. Inicia-se no internamento e tem como prioridade o início da atividade física o mais precoce possível, com o objetivo de reduzir os malefícios do repouso prolongado no leito e, consequentemente, a redução do tempo de internamento hospitalar. Alia-se a educação para a saúde sobre a doença, fatores de risco e autovigilância, de forma a desenvolver o empowerment do doente, promovendo o seu papel ativo no processo de transição saúde/doença e nas suas escolhas de saúde. Após a alta, o doente é seguido durante um ano. Na fase vulnerável (um mês após o internamento), é contactado telefonicamente entre o terceiro e sétimo dia e tem consulta presencial de Enfermagem entre quinze dias a um mês, de forma a esclarecer dúvidas ainda existentes, um meio facilitador do regresso a casa. Após este período, terá consulta aos três, seis e doze meses, com vista à promoção de comportamentos de adesão ao regime terapêutico, farmacológico e não farmacológico. A família e/ou pessoa significativa é envolvida ao longo de todo o processo. O objetivo é ampliar os conhecimentos da família sobre a nova situação de saúde, bem como promover as condições para uma aprendizagem de capacidades que permita um apoio eficaz. A avaliação deste programa terá por base dados objetivos, como a taxa de reinternamentos, mortalidade e controlo de FR modificáveis, com recurso a dados mensuráveis como colesterol, índice de massa corporal, tabagismo e hemoglobina glicosilada. A capacidade funcional é avaliada através do teste de marcha de 6 minutos (TM6M) e o regresso à atividade laboral. Será ainda avaliada a qualidade de vida e o estado de saúde através dos questionários EQ5D e SF36V2.
Conclusões: A importância do controlo dos FRCV para a pessoa, famílias ou sociedade é inquestionável, bem como o papel que o Enfermeiro de Reabilitação pode ter como promotor deste processo, o que traduzirá certamente indicadores de ganhos em saúde a curto prazo e melhorias na qualidade de vida.

Painel 9 - Doença Valvular 9

P 337. FAST-RVD SCORE, A BETTER PREDICTOR OF IN-HOSPITAL MORTALITY IN ACUTE PULMONARY EMBOLISM?

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Introduction: Pulmonary embolism (PE) is a life-threatening disorder associated with significant in-hospital mortality (IHM). Different scores for mortality prediction have been validated in these patients. We aimed to evaluate if the addition of right ventricle dilation/dysfunction signs (RVD) obtained from imaging methods to the recently validated FAST score would refine its ability to predict IHM and long-term death.
Methods: Retrospective analysis of 127 patients admitted for acute PE. Patients with shock or hemodynamic instability at admission were excluded. FAST (variables: syncope, troponin I and heart rate, range 0-5 points), PESI and BOVA scores were calculated for each patient. We evaluated signs of RVD from echocardiographic (defined as TAPSE < 16, Tricuspid S' < 9.5 or dilation of right ventricle as assessed by 2D measures) and pulmonary CT angiography exams (ratio right/left ventricle diameter > 1.0). To the initial FAST score, we added this variable, attributing 2 points to patients with evidence of RVD, and 0 points otherwise. The new score-FAST-RVD-was calculated (range 0-7). ROC curve analysis was performed to evaluate the predictive value of different scores for IHM. Kaplan-Meier analysis was used to assess 8-year follow-up mortality (8YM) and combined endpoint of 8-year rehospitalization or death (8YHD).
Results: Mean age was 62 ± 18y; 60% were female; 14.7% had previous history of venous thromboembolism; 48.7% had no precipitating factor identified; 15% had sigs of RVD on imaging evaluation. 36% had low-risk PE, 54% intermediate-low risk PE and 10% intermediate-high risk PE, as defined by European Society of Cardiology guidelines.Mean PESI score was 94 ± 39, mean BOVA 3.6 ± 2, mean FAST 2.5 ± 1.6, mean FAST-RVD 2.9 ± 1.8. IHM was 2.4%. 8YM and 8YHD rates were 26% and 55.1%, respectively.ROC curve analysis revealed that FAST-RVD score had the best predictive performance for IHM (AUC: 0.909, p = 0.048), followed by FAST score (0.606, p = NS). Other scores had poor predictive performance for this outcome. When stratified by high (≥ 3) and low-risk (< 3) FAST-RVD score, we observed no in-hospital mortality in low risk patients, while high-risk patients had ≈4% IHM risk.Kaplan Meier analysis by risk subgroup revealed higher 8YM in patients with high-risk FAST-RVD (31.1% vs 25%, χ^2 = 0.386, p = 0.534) that did not reach statistical significance. Analysis of 8YHD rate did not reveal significant differences between groups (60.8% vs 50%, χ^2 = 0.814, p = 0.367). High-risk stratification with other scores (PESI > 105, FAST > 3 or BOVA > 4) also did not reveal significant effect on 8YM or 8YHD risk (p = NS).
Conclusions: Evaluation of signs of RVD and their addition to the previously validated FAST score allows better IHM risk prediction in patients hospitalized for PE. This new score might be a better tool for IHM prediction in these patients, particularly by defining a low-risk subgroup with very low IHM risk.

P 338. DOES AGE AT AORTIC COARCTATION REPAIR HAVE AN IMPACT ON LEFT VENTRICLE SIZE AND FUNCTION?

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Introduction: Adults with repaired aortic coarctation (CoA) require lifelong follow-up due to late complications, including left ventricular (LV) myocardial dysfunction. Age at the time of CoA repair is an important prognostic factor in these patients (pts).
Objectives: To evaluate LV size, ejection fraction (EF) and global longitudinal strain (GLS) values using 2D speckle tracking echocardiography (STE) in a population of adult pts with repaired CoA and to assess the relationship between these echocardiographic parameters and age at the time of CoA repair.
Methods: Retrospective analysis of adult pts with repaired CoA, followed in a Grown Up Congenital Heart Disease Centre. Pts with hemodynamically significant concomitant cardiac lesions were ruled out. Epidemiologic and clinical data were obtained from clinical records. Transthoracic echocardiograms were reviewed in order to assess GLS using 2DSTE (Echopac Software, GE).
Results: The study population consisted of 63 pts (61.9% male), with a mean age of 35.3 years at the time of the echocardiographic evaluation. The mean age at the time of the CoA repair was 117 months (95%CI 89.8-144.1 months). Surgical repair was performed in 46 pts (73%): resection with subclavian artery flap aortoplasty (n = 21); patch aortoplasty (n = 15) and head-to-head anastomosis (n = 10). In 10 pts there was no data regarding the type of surgical repair. Seven pts (11.1%) were submitted to percutaneous intervention (6 with aortic stent implantation and 1 with balloon aortic angioplasty). Mean LVEF was 63.4% (95%CI 55.6-71.2%) and mean LV end-diastolic diameter (LVEDD)

was 50mm (95%CI 43-57mm). Mean GLS was-17.3 (95%CI 14.8- 19.8), which is inferior to the mean normal values reported for the software used.Age at the time of CoA repair had a statistically significant positive linear relationship with LVEDD (r = 0.282; p = 0.026) and a linear negative relationship with both GLS (r = -0,29; p = 0.022) and LVEF (r = -0.33; p = 0.05).
Conclusions: Older age at the time of CoA repair was associated with increased LVEDD and decreased GLS and LVEF. Also, GLS may be an important tool for the identification of subclinical LV dysfunction in adult pts with repaired CoA.

P 339. PULMONARY ENDARTERECTOMY IN CTEPH: CLINICAL AND HEMODYNAMIC LONG TERM EFFECT

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Introduction: Pulmonary endarterectomy (PEA) is currently the standard approach for chronic thromboembolic pulmonary hypertension (CTEPH). Although a potential curative effect has been reported, the clinical and hemodynamic long-term effects of PEA remain under investigation.
Objectives: We sought to evaluate the clinical, analytical and hemodynamic impact of patients (pts) submitted to PEA due to CTEPH.
Methods: This was an observational single center study of established diagnose of CTEPH pts undergoing PEA between January 2016 and February 2019. Demographic, clinical, analytic laboratorial and hemodynamic data were collected, and results were obtained using Wilcoxon test.
Results: 24 patients were assigned for PEA (mean age 59.7 ± 12.9 years; 54.2% female, basal weight: 80.3 ± 17.3 Kg). Congenital thrombophilia was diagnosed in 20.8% of pts and 12.5% had criteria of antiphospholipid syndrome. On the preoperative evaluation, pts presented: 6-min walk test of 312.2 ± 90.9 m and 37.5% pts required continuous long term O2 oxygen therapy (mean 3.7 L/min). 87.5% pts were already under treatment with specific vasodilating pulmonary vasodilators therapy (n = 21), presenting a median WHO functional class of 2 On right heart catheterization (RHC) pts fulfilled criteria of pre-capillary PH with a mean PAPm of 51.0 ± 11.6, mean PCWP of 13.4 ± 3.7 and mean PVR of 11.5 ± 4.7. After PEA, pts were evaluated with a mean follow-up of 5.6 ± 6.4 months. 45.8% had persistent PH, however a significant improvement was detected on RHC parameters: PAPm: 49 (42-59) vs 26 (21.3-46.3), p = 0.001; PVR: 11.0 (7.3-15.1) vs 4.2 (2.5-6.2), p = 0.001; cardiac output: 3.6 (3.2-4.2) vs 5.01 (3.8-5.4), p = 0.031; SvO: 57.5 (51.5-61) vs 66.5 (59-70.5), p = 0.001. In addition, pts presented significant improvement on the median WHO functional class (3.0 (2-3) vs 1.0 (1-2), p < 0.001) and 6-min walk test: 312 (245-370) vs 360 (300-460), p = 0.047.
Conclusions: In this carefully selected cohort of chronic thromboembolic disease patients, pulmonary endarterectomy resulted in significant improvement in symptoms and hemodynamic parameters. This is in light with current state of art, reinforcing the indication of surgical intervention in patients with CTEPH.

P 340. OUT-OF-HOSPITAL PAEDIATRIC CARDIORESPIRATORY ARREST-13-YEAR EXPERIENCE

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Introduction: Sudden cardiac arrest is defined as unexplained collapse without previous symptoms and corresponds to 25-30% of cases of sudden death in paediatrics. The success of cardiopulmonary resuscitation depends on cardiorespiratory recovery and survival without neurological sequelae. The prompt and efficient start of basic life support improves survival.
Methods: The authors characterize the extra-hospital cardiorespiratory arrest of cardiac aetiology of patients admitted to a Paediatric Intensive Care Unit, from January 2007 to December 2019 through retrospective analysis of clinical processes.
Results: Among 5,357 admissions, there were 35 admissions caused by cardiorespiratory arrest: 19 respiratory aetiology (7 asphyxia, 8 drowning, 4 respiratory insufficiency), 3 neurologic causes, 1 death with unknown aetiology and 12 primary cardiac aetiology. Twelve children had cardiac aetiology for cardiorespiratory arrest, mean age of 11.4 years. The onset of basic life support ranged from 1 to 40 minutes. Nine patients required defibrillation. Two patients had relevant family history. Five cases had an aetiological diagnosis (three congenital heart diseases and one metabolic disease) and four had previous unrelated symptomatology. In seven cases, the cardiac arrest occurred during physical activity. The echocardiogram revealed the underlying diagnosis in five children and the electrocardiogram was diagnostic in one case. Genetic investigation was positive in four cases and three families were screened for the identified mutation. In two children, metabolic investigation was performed, although inconclusive. There were seven deaths. Concerning the five survivors, four had early basic life support.
Conclusions: Out-of-hospital cardiorespiratory arrest usually has a negative outcome. Early basic life support reduces morbidity and mortality. To prevent sudden death, it is essential to investigate treatable etiologies. A systematized approach is fundamental to improve patient care.

P 341. THE ROLE OF CARDIAC BIOMARKERS ELEVATION IN INTERMEDIATE-HIGH RISK PULMONARY EMBOLISM

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Introduction: Elevated troponin (T), a marker of myocardial injury, and elevated B-type natriuretic peptide (BNP), a sign of right ventricular (RV) dysfunction, have been used in pulmonary embolism (PE) risk assessment. 2014 ESC guidelines on PE defined intermediate-high (IH) risk category as evidence of both RV dysfunction on imaging and elevated cardiac biomarkers, either T or BNP. However, 2019 ESC guidelines give more emphasis to T in risk stratification. This study compares the therapy and prognosis of patients (P) with IH risk PE due to elevation in cardiac T with either normal or elevated BNP (T+BNP-/+) and P now classified as intermediate-low risk because of normal T and elevated BNP (T-BNP+).
Methods: All P admitted for IH risk PE in an Intensive Cardiac Care Unit for 10 years were included. Follow-up (FU) was 2 years for all-cause mortality. Clinical, imaging and laboratory parameters were collected. Troponin I or BNP elevations were defined as concentrations above the laboratory reference range. Statistical analysis used chi-square and Mann-Whitney U tests, binary logistic regressions and Kaplan-Meier curves.
Results: 195 P were studied (mean age 63 ± 18 years; 37.4% male). Mean T levels were 1.3 ± 9.2 ng/mL and mean BNP levels were 305 ± 318 pg/mL. 173 (88.7%) P had T+BNP-/+ and 22 (11.3%) P had T-BNP+. At admission, P with T+BNP-/+ presented more frequently with dyspnea (p = 0.038) or syncope (p = 0.019); higher heart rate (p = 0.020); lower arterial oxygen saturation (p = 0.001); higher D-dimers (p = 0.008) and creatinine (p = 0.004); echocardiographic RV dilation (p = 0.017); higher pulmonary arteries clot load (p = 0.024) and higher Pulmonary Embolism Severity Index (PESI) (p = 0.007). There was no difference in age, gender, TAPSE or in-hospital mortality between the 2 groups. T+BNP-/+ P were submitted more frequently to fibrinolytic treatment (53% vs 27% with T-BNP+, p = 0.024) and T+BNP-/+ was a predictor of fibrinolytic treatment (OR 2.99, 95%CI 1.119-8.021, p = 0.029). This result was independent from PESI (OR 3.194, 95%CI 1.104-9.238, p = 0.032). During FU there was no difference in mortality between the groups (Kaplan-Meier χ^2 = 0.571; p = 0.450).

Conclusions: In IH risk PE, elevated cardiac T was associated with clinical, analytical and imaging risk features. Cardiac T elevation was also associated with necessity of fibrinolytic therapy, even after adjustment for PESI. However, in-hospital mortality and mortality during FU were similar between the groups. Therefore, although P with T-BNP+ have a similar short- and long-term prognosis than T+BNP-/+, recent changes in risk stratification might allow better identification of P that will require fibrinolysis.

P 336. PROGNOSIS OF PULMONARY EMBOLISM: 30-DAY MORTALITY RISK BASED ON THREE ADMISSION PARAMETERS-THE POPE SCORE

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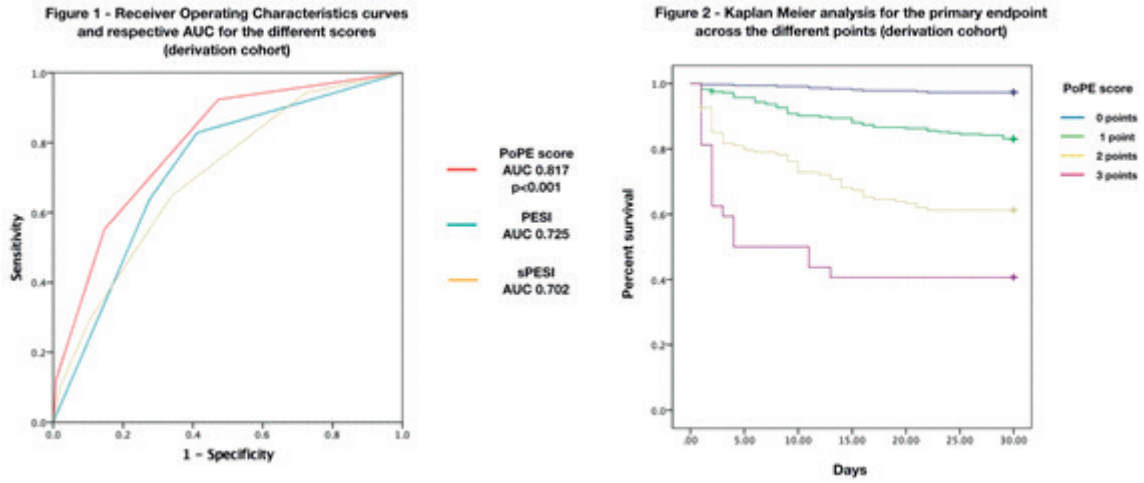
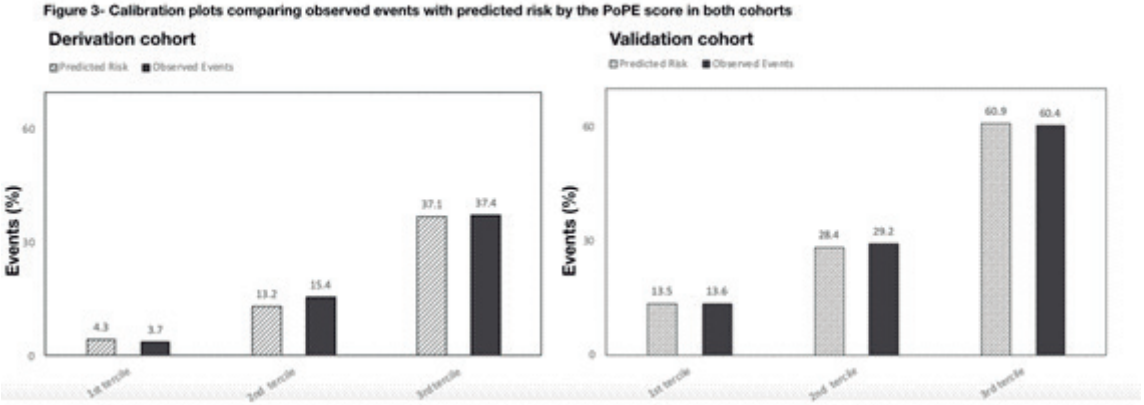
Introduction and objectives: Various scoring systems were developed for risk stratification and mortality prediction in patients with acute Pulmonary Embolism. The Pulmonary Embolism Severity Index (PESI), and its simplified version (sPESI), are widely used, however, the elevated number of parameters make them difficult to use and apply in everyday practice. Our aim was to provide a simple and easy-to-perform score based on three clinical and metabolic parameters obtained at admission and to compare its performance to predict 30-day mortality.

Methods: In a retrospective observational study, 835 patients with confirmed PE were admitted in one medical center. Multivariate analysis was performed to identify clinical and analytical independent predictors of mortality at 30 days (primary endpoint). The model was validated in 280 patients from a second hospital.

Results: The primary endpoint occurred in 207 patients (73 in the validation cohort). Three independent prognostic risk factors were identified: Modified Shock Index ≥ 1.10 (OR 2.85, 95%CI, 1.74-4.69, p < 0.001), Altered Mental State (OR 3.81, 95%CI, 2.32-6.28, p < 0.001) and Lactate concentration ≥ 2.50 mmol/L (OR 4.12, 95%CI, 2.48-6.85, p < 0.001). Based on the similar beta coefficient values for each variable, we attributed 1 point in the presence of each previous conditions, with a total score range from 0 to 3-PoPE score. Receiver operating characteristic analysis showed good discrimination for the new model in the derivation (AUC 0.817, 95%CI 0.779-0.854, p < 0.0001) and in the validation cohort (AUC = 0.803 95%CI, 0.736-0.858, p < 0.0001).

Conclusions: Our model proves an easy and simple tool with good performance which can predict early 30-day mortality in patients admitted for PE.





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