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COMUNICAÇÕES ORAIS (CO)

Sábado, 27 Abril de 2019 | 14H00-15H30

NEPTUNO I | COMUNICAÇÃO ORAL 01 - CARDIOLOGIA DE INTERVENÇÃO

CO 1. SAFETY AND CLINICAL OUTCOMES OF ROTATIONAL ATHERECTOMY: AN ELEVEN-YEAR CENTRE EXPERIENCE

Ana Pereira, Rita Calé, Pedro Santos, Ana Rita Almeida, Ana Marques, Sofia Alegria, Alexandra Briosa, Daniel Sebaiti, Sílvia Vitorino, Ernesto Pereira, Cristina Martins, Hélder Pereira

Hospital Garcia de Orta, EPE.

Introduction: Rotational atherectomy (RA) is an adjunctive tool for the management of heavily calcified coronary lesions during percutaneous coronary intervention (PCI), but the clinical outcomes remain unclear. Access site choice is also poorly defined and there is growing evidence that transradial approach (TRA) is associated with lower complications and lower mortality.
Objectives: To assess the safety and long-term outcomes of RA for calcified coronary lesions and to investigate the influence of vascular access site in the efficacy and safety of the procedure.
Methods: Retrospective single-centre study that included consecutive PCI with RA performed from January 2006 to December 2017. Endpoint was a composite of major adverse cardiac events (MACE), defined as cardiovascular death, nonfatal myocardial infarction, nonfatal stroke and target vessel revascularization, at 1- and 5-year.
Results: 246 procedures were included in a total of 236 patients (pts): mean age 70.1 ± 9.7 years, 73.6% male; 36.2% had previous PCI, 12.2% vascular peripheral disease (VPD), 24% reduced left ventricle ejection fraction (LVEF) and 6.9% were under hemodialysis. PCI with RA was mostly performed due to stable angina (48.9%) and via TRA (55.3%), with a total of 371 treated segments and a median number of 1 vessel treated per intervention. The left anterior descending artery was the most frequently treated artery (67.5%). Single burr was used in 76% of cases (mean number of burrs 1.23; mean burr size 1.5 mm). Procedural success rate was 94.7%. Complications were recorded in 9.3%, with no procedure related death. Clinical follow-up was complete in 98.8% of pts at 1-year and 81.3% at 5-year (mean time 62.3 ± 41.8 months). Survival free of MACE at 1- and 5-year were 83.7% and 73.2%, respectively. Multivariate Cox regression identified 6 independent predictors (only 1 protector) for 1-year MACE (Fig. A) and 6 independent predictors (all of increased risk) for 5-year MACE (Fig. B). TRA was protector of 1-year MACE and Kaplan-Meier curves showed benefit for both 1- and 5-year MACE occurrence (Fig. C and D), without significant difference in procedural success (p = 0.92) and complications (p = 0.45) rate comparing to transfemoral approach.
Conclusions: RA followed by stenting was a safe procedure with a high immediate success rate but an increased number of long-term cardiovascular events. Some clinical conditions, such as previous PCI, VPD and reduced LVEF, seems to adversely influence the long-term outcome while TRA appears to be protective.

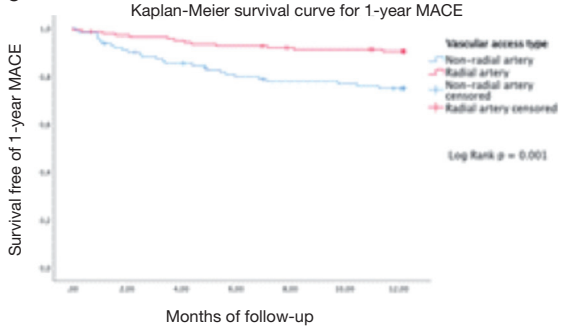
A

Multivariate Cox Regresion 1-year MACE	Hazard Ratio	CI 95% Lower	CI 95% Upper	p-value
Medical history				
Previous PCI	1.921	1.003	3.679	0.049
Peripheral vascular disease	5.026	2.499	10.109	< 0.001
Clinical presention				
Acute coronary syndrome	2.055	1.011	4.177	0.047
Reduced LVEF	2.110	1.034	4.305	0.04
Procedure				
Rotational atherectomy of left main	2.968	1.286	6.848	0.011
Radial artery vascular access	0.475	0.242	0.934	0.031

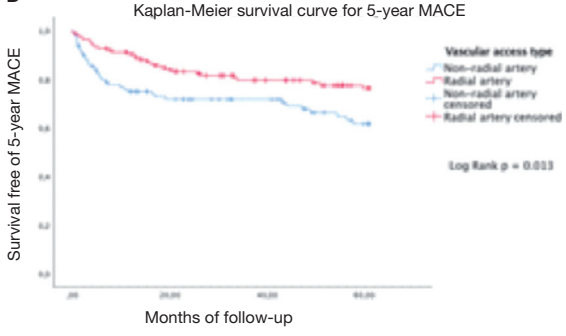
B

Multivariate Cox Regresion 5-year MACE	Hazard Ratio	CI 95% Lower	CI 95% Upper	p-value
Medical history				
Previous PCI	1.757	1.063	2.903	0.028
Hemodialysis	2.896	1.870	6.678	< 0.001
Peripheral vascular disease	3.533	1.870	6.678	0.006
Clinical presention				
Reduced LVEF	2.133	1.240	3.669	0.006
Procedure				
Rotational atherectomy of left main	3.850	1.919	7.725	< 0.001

C



D

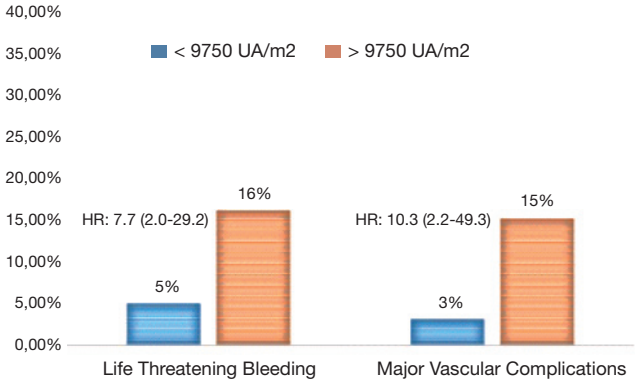


CO 2. THE VASCULAR CALCIUM SCORE: A NEW TOOL TO QUANTIFY VASCULAR CALCIFICATION AND PREDICT BLEEDING IN TRANSFEMORAL TAVI

Afonso Félix de Oliveira, Rui Campante Teles, António Ferreira, João Brito, Pedro Araújo Gonçalves, Luís Raposo, Henrique Mesquita Gabriel, Tiago Nolasco, Gonçalo Cunha, João Abecassis, Carla Saraiva, Manuel Almeida, Miguel Mendes

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

Introduction: Vascular calcification has been associated with worse outcomes in transfemoral TAVI (TF-TAVI). However, there is currently no simple method to assess it and identify different patterns of calcification in an objective and quantitative manner. The purpose of this study was to develop a quantitative score of aortic (Ao) and ileofemural (IF) calcification and to assess its ability to predict life-threatening bleeding (LTB) and major vascular complications during TF-TAVI.
Methods: Case-control single center retrospective study of patients undergoing TF-TAVI between Nov 2015 and Aug 2018 including 183 consecutive patients (99 women, mean age 83 ± 3 years, mean euroscore II - ESII - 6.0 ± 4.1). The Vascular Calcium score was calculated for the entire Ao and IF vessels using a modified Agatston score derived from contrast-enhanced CT images, with calcium threshold locally adjusted for luminal attenuation (mean attenuation + 5× SD). A luminal attenuation threshold > 600 UH impaired vascular calcium evaluation and patients were excluded. LTB and major vascular complications were adjudicated according to the VARC-2 classification and identified by chart review by and independent team.
Results: Thirty patients (16%) suffered major bleeding and 13 (7%) experienced LTB. Major vascular injury occurred in 11 patients (6%). The median total vascular calcium score (TCS) was 11,752 AU (IQR: 6388-19,844) and median IF score (IFS) was 2210 AU (IQR: 865-4170). TCS indexed for body surface area (TCSi) was predictor of LTB (AUC: 0.78 ± 0.07, p < 0.05) and of major vascular complications (AUC: 0.85 ± 0.05, p < 0.05). After multivariate analysis, iTCS and glomerular filtration rate (GFR) remained as predictors of LTB with an HR of 1.11 for each increase in 1000 UA/m² of TCSi (95%CI: 1.03-1.18) and 0.94 (95%CI: 0.88-0.985), respectively, independently of the ESII. iTCS and GFR were also independently associated with major vascular complications (p < 0.05). Patients with an iTCS above 9750 AU/m² have an odds ratio of 7.7 (95%CI: 2.0 - 29.2) for LTB. This cut-off has a sensitivity of 77% and a specificity of 70% for LTB. Similarly, patients with an iTCS above 9750 AU/m² have an odds ratio of 10.3 (95%CI: 22 - 49.3) for major vascular injury.



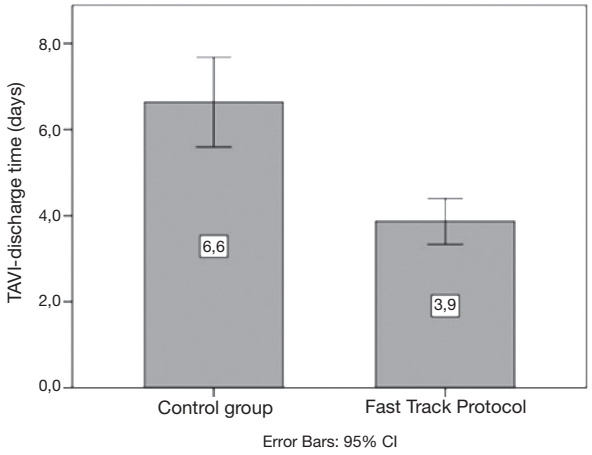
Conclusions: A quantitative score for vascular calcification in contrast-enhanced CT images was developed. iTCS was independently associated with life-threatening bleeding and major vascular complications.

CO 3. TAVI FAST TRACK PROTOCOL: A PROPENSITY MATCHING ANALYSIS OF IN-HOSPITAL AND POST-DISCHARGE RESULTS

Afonso Félix de Oliveira, Rui Campante Teles, João Brito, Luís Raposo, Pedro Araújo Gonçalves, Henrique Mesquita Gabriel, Mariana Gonçalves, António Tralhão, Marisa Trabulo, Jorge Ferreira, Manuel Almeida, Miguel Mendes

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

Introduction: Prolonged hospitalization after transcatheter aortic valve implantation (TAVI) may decrease autonomy and increase frailty in elderly patients. «Fast track» protocols aim to optimize resources and promote early recovery after uncomplicated transfemoral TAVI by minimizing femoral vascular access use, promoting early mobilization and using continuous remote EKG monitoring instead of formal Holter exam.
Methods: We performed a longitudinal retrospective cohort analysis of transfemoral-TAVI cases between Jan-2016 and Jun-2018. The «fast track» protocol was performed in all eligible patients after Jan-2018. Patients with major vascular/bleeding complications, invasive ventilation/general anaesthesia or valve-in-valve procedures were not eligible and were excluded. A 1:1 propensity matching analysis was performed to adjust for baseline characteristics (age, gender, euroscore II (ESII), LVEF, previous pacemaker, valve type and NT-proBNP). The primary outcome was TAVI-to-discharge time and the secondary outcome was mortality at 30-days.
Results: 100 matched patients were included in the study. Mean age was 84 ± 0.9 years in the control group and 83 ± 0.5 years in the fast track group (p = ns). ESII was 5.2% ± 0.4 in the control group and 4.8% ± 0.5 in the fast track group (p = ns). NT-proBNP was 3283 ± 752 pg/mL in the control group and 4087 ± 926 pg/mL in the fast track group (p = ns). Glomerular filtration rate was also non-significant between control and fast-track group (45.8 ± 2.88 *versus* 46.3 ± 2.4, p < 0.05). Pre-procedure, 16% (n = 4) in control *versus* 8% (n = 8) in the fast track cohort had a permanent pacemaker (p = ns). During hospital stay, 69% (n = 29) *versus* 26% (n = 12) performed an Holter exam in control and fast track group respectively (p < 0.05), while in-hospital pacemaker implantation rate was not statistically different (23.8% n = 10 *versus* 21.7% n = 10). The primary endpoint of TAVI-to-discharge time was significantly higher in the control group in comparison to the fast track patients (6.6 ± 0.6 *versus* 3.9 ± 0.3, p < 0.05). The secondary endpoint of mortality at 30-days was similar between groups, without any event recorded in either group.



Conclusions: A fast track protocol in TAVI procedures is feasible, effective and shortens hospitalization. Further investigation is needed to address long-term effects of such strategy.

CO 4. IMPACT OF SEVERE AORTIC STENOSIS TREATMENT STRATEGY IN LOW-RISK PATIENTS: A PROPENSITY MATCHED ANALYSIS OF SURGICAL AORTIC VALVE REPLACEMENT *VERSUS* TRANSCATHETER AORTIC VALVE IMPLANTATION

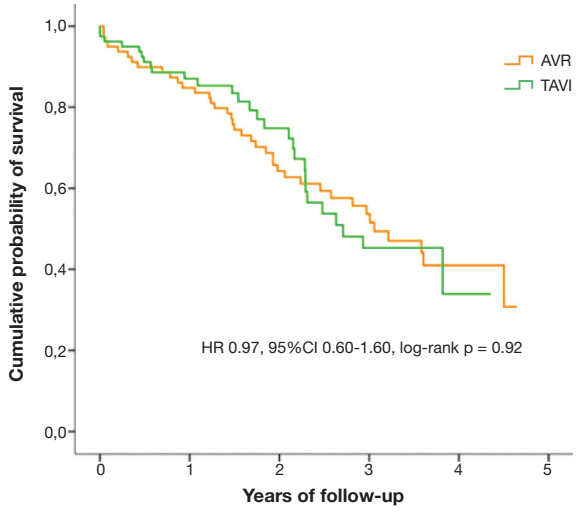
Catarina Brízido, Márcio Madeira, João Brito, Mariana Gonçalves, João Carmo, Rui Campante Teles, Tiago Nolasco, José Pedro Neves, Manuel de Sousa Almeida, Miguel Mendes

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

Introduction: Recent studies suggest that transcatheter aortic valve implantation (TAVI) benefits might extend to lower risk populations. Our goal was to compare the impact of treatment strategy selection in a low-risk severe aortic stenosis (AS) population.
Methods: Single-center retrospective study which screened patients undergoing intervention from June/2009 to July/2016 (682 isolated aortic

valve replacement [AVR] patients) and from June/2009 to July/2017 (400 TAVI patients). Low-risk was defined as euroscore II (ESII) < 4% for single non-CABG procedure. After excluding patients with ESII ≥ 4%, previous cardiac surgery and/or undergoing pre-treatment percutaneous coronary intervention, 544 AVR and 119 TAVI patients were included. TAVI patients were propensity score paired in a 1:1 ratio with a group of AVR patients, matched by age, NYHA class, DM, COPD, AF, creatinine clearance and LVEF < 50% (mean standardized difference < 10% for matching variables). Outcomes were adjudicated according to VARC2 criteria.

Results: A total of 158 patients (79 AVR and 79 TAVI) were analyzed (mean age 79 ± 6 years, 79 men). The 30-day mortality was 2.5% (n = 2 in each group) and there were no differences in in-hospital complications. At median follow-up of 3.8 years (IQR 2.1-6.1), 67 deaths occurred —39 on the AVR group and 28 on the TAVI group, and treatment strategy did not influence all-cause mortality (HR 0.97, 95%CI 0.60-1.60, log-rank p = 0.92) —figure. By multivariate analysis, need for dialysis during hospitalization remained the only independent predictor of all-cause mortality (adjusted HR: 6.40, 95%CI: 1.57-28.14, p = 0.01).



Conclusions: In this low-risk AVR population, treatment strategy did not influence mortality neither complications. These results suggest that both options are safe for low-risk patients, even though Heart Team remains essential to contemplate other variables that might alter patient management.

CO 5. PERIPROCEDURAL MYOCARDIAL INJURY PROGNOSTIC VALUE AFTER SUCCESSFULLY TREATED CHRONIC TOTAL OCCLUSION

Luís Graça Santos[1], Joana Silva[2], Marco Costa[2], Luís Paiva[2], Hilário Oliveira[2], Francisco Soares[1], Elisabete Jorge[2], Cristina Neves[2], Lino Gonçalves[2]

[1]Centro Hospitalar de Leiria / Hospital de Santo André. [2]Centro Hospitalar e Universitário de Coimbra.

Introduction: Periprocedural myocardial injury (PMI) has been generally associated with major adverse cardiac events. Limited studies addressed the clinical implication of PMI following chronic total occlusion (CTO) percutaneous coronary intervention (PCI) and all defined PMI according to creatine kinase myocardial band values.

Objectives: To evaluate the prognostic implication of PMI in patients undergoing CTO-PCI using two different troponin I (Tn-I) based definitions.

Methods: We retrospectively examined 125 consecutive CTO patients who underwent PCI attempt between December 2013 and December 2017 in our Centre. Angiographic success was achieved in 115 patients (92.0%) and measurement of Tn-I values was obtained 12-24 hours after stent implantation. Two different analysis were performed using 2 different Tn-I cut-offs to define PMI: A - Tn-I > 5 times the 99th percentile upper reference limit (URL), according to the 3rd Universal Definition of Myocardial Infarction; B - Tn-I > 35 times the URL (Academic Research Consortium-2). Baseline demographic, clinical, angiographic and procedural characteristics were compared between groups according to each PMI definition. Multivariate analysis was performed to determine the correlates of PMI and major adverse cardiovascular events (MACE) at 1-year follow up, defined as a composite of cardiovascular death, non-fatal myocardial infarction (MI) and target lesion revascularization (TLR).

Results: Overall, mean age was 67 ± 17 years, 25 (21.7%) patients were female, and 26 (22.6%) CTO were diagnosed following an acute coronary syndrome. PMI occurred in 41 patients (35.7%) according to definition A and in 8 patients (7.0%) using definition B. Regardless of the definition, PMI was more frequent among patients undergoing retrograde technique (RT) which was used in only 7.0% (n = 8) of the procedures. Both PMI definitions were associated with higher rates of 1-year MACE and non-fatal MI (Fig. 1) but failed to predict 1-year MACE. Coronary perforation and RT were associated with worse outcome while significant collateralization (RENTROP 3) showed a protective role (Fig. 2).

Conclusions: In this study, low rates of PMI following CTO-PCI were observed and it was not associated with worse outcome, regardless of the definition used. Coronary perforation, RT and collaterals RENTROP 3 showed prognostic significance. More research is needed regarding troponin based PMI definition and prognostic relevance in this scenario.

CO 6. PREVALENCE AND DETERMINANTS OF USE OF INVASIVE PHYSIOLOGIC ASSESSMENT: ANALYSIS OF LARGE COHORT OF 40.823 PROCEDURES OVER A 12-YEAR PERIOD

Mariana Gonçalves[1], David Roque[2], Luís Raposo[1], Sérgio Bravo Baptista[2], Sérgio Madeira[1], Paulo Leal[2], Sílvio Leal[1], Miguel Santos[2], João Brito[1], Pedro Magno[2], Pedro Araújo Gonçalves[1], Rui Campante Teles[1], Pedro Farto e Abreu[2], Manuel Almeida[1], João Morais[2], Miguel Mendes[1]

[1]Centro Hospitalar de Lisboa Ocidental, EPE / Hospital de Santa Cruz. [2]Hospital Prof. Doutor Fernando Fonseca.

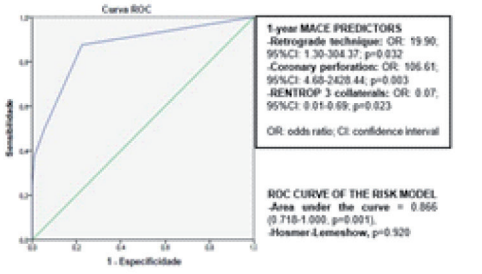
Introduction and objectives: The actual use of invasive physiology for risk stratification and guiding treatment decisions in patients undergoing

Figure 1. DIFERENCES BETWEEN GROUPS ACCORDING TO EACH PMI DEFINITION – VARIABLES OF INTEREST (univariate analysis)

Variables	PMI Definition A (Tn-I > 5x URL)			PMI Definition B (Tn-I > 35x URL)		
	Non PMI patients (64.3%, n=74)	PMI patients (35.7%, n=41)	p-value	Non PMI patients (93.0%, n=107)	PMI patients (93.0%, n=8)	p-value
Glomerular filtration rate (ml/min/1.73m2)*	88.5±29.9	71.6±25.0	0.003	83.1±28.7	74.5±38.5	0.427
Troponin I levels (nanogram/millilitre)	0.07±0.04	1.84±4.80	0.002	0.17±0.19	7.79±9.00	0.001
Procedure duration (minutes)	59.6±29.6	77.3±39.9	0.008	66.1±33.7	64.0±46.7	0.872
Fluoroscopy duration (minutes)	29.0±18.1	40.8±24.6	0.007	32.3±20.5	41.2±29.3	0.255
Retrograde technique	2.7% (2/74)	14.6% (6/41)	0.024	4.7% (5/107)	37.5% (3/8)	0.011
Multivessel disease (≥2 vessels)	68.9% (51/74)	82.9% (34/41)	0.123	72.9% (78/107)	87.5% (7/8)	0.678
Calcification (J-CTO score)	20.8% (11/53)	45.8% (11/24)	0.031	27.8% (29/72)	40.0% (2/5)	0.620
Significant collateralization (RENTROP 3)	85.1% (63/74)	75.6% (31/41)	0.218	83.2% (89/107)	62.5% (5/8)	0.159
Total stent length (millimetres)	39.9±20.5	49.8±22.5	0.019	42.6±20.6	54.1±31.9	0.146
Procedural Complications	2.7% (2/74)	29.3% (12/41)	0.001	10.3% (11/107)	37.5% (3/8)	0.056
-Coronary perforation	1.4% (1/74)	7.3% (3/41)	0.129	0.9% (1/107)	37.5% (3/8)	0.001
-Coronary dissection / mural hematoma	1.4% (1/74)	24.4% (10/41)	0.001	9.3% (10/107)	12.5% (1/8)	0.565
1-year Major Cardiovascular events	4.1% (3/74)	19.5% (8/41)	0.016	7.5% (8/107)	37.5% (3/8)	0.028
-Cardiovascular death	2.7% (2/74)	0.0% (0/41)	0.537	1.9% (2/107)	0.0% (0/8)	1.000
-Non-fatal myocardial infarction	0.0% (0/74)	7.3% (3/41)	0.043	0.0% (0/0)	37.5% (3/8)	0.001
-Target lesion revascularization	1.4% (1/74)	14.6% (6/41)	0.008	5.6% (6/107)	12.5% (1/8)	0.405

PMI – Periprocedural myocardial lesion; Tn-I – Troponin I; URL – 99th percentile upper reference limit; *Cockcroft-Gault equation

Figure 2. PREDICTORS OF WORSE PROGNOSIS AND DESCRIMINATIVE POWER OF THE RISK MODEL



CO 5 Figure

coronary angiography remains largely unknown in the real world. We aimed to describe the prevalence of invasive physiological assessment, its pattern of use and main determinants, in a non-selected population of patients in daily practice.
Methods: Patient and procedural characteristics were collected using a dedicated electronic database. Overall, 40,823 procedures performed between 2007 and 2018 were included (42% PCI and 58% diagnostic only). Physiology assessment was considered *per-procedure*.
Results: Over the entire study period, the overall use of physiology was 4.1% (n = 1670). According to important landmarks (publication of major clinical trials) the prevalence was 1.3% until 2009, 4.7% between 2010 and 2017 (after FAME-1) and after 2017 (following release of iFR trials) it was 5.3% (p < .001). The proportion of procedures in which physiology was used, according to the clinical setting, was 6.1% for stable CAD, 2.9% of pts sustaining an ongoing Non-ST ACS, 1.6% of pts with a recent ACS (mostly non-culprit lesions after STEMI), 0.6% in pts with underlying valve disease and 1.6% in other miscellaneous indications.Overall, patients in whom invasive indexes were used were younger, more likely to be man, with higher prevalence of cardiovascular risk factors and a higher CVD burden. Although CAD extent (N diseased segments 2.1 *versus* 1.6; p < .001) was greater in those who had invasive interrogations, the association between CAD extent and performance of physiology was inconsistent. Among stable CAD patients who finally underwent PCI, FFR/iFR was used in only 6.8% of those with absent non-invasive information (either anatomical or functional). Conversely, in 26% of stable patients ultimately submitted to PCI there was no objective non-invasive evidence of ischemia nor was physiology performed. Interestingly, younger operators were more likely to use physiology (5.4% *versus* 2.0% *versus* 0.7% for age < 40, 40-55 and > 50 y.o., respectively; p < .001) and cases starting > 6PM were less likely to include invasive measurements (2.9% *versus* 4.4%).
Conclusions: This large registry clearly indicates that the use of invasive physiologic assessment is very low in routine daily practice. Strategies are warranted to increase the awareness of the advantages of its integration into patient management algorithms and the implementation of current recommendations.

CO 7. PERCUTANEOUS LEFT ATRIAL APPENDAGE CLOSURE: DATA FROM THE REAL WORLD

Carolina Saleiro[1], João Lopes[2], Rogério Teixeira[1], Diana de Campos[1], Luís Puga[1], Joana M. Ribeiro[2], José Pedro Sousa[1], Luís Paiva[1], Marco Paulo Alves da Costa[1], Lino Gonçalves[3]

[1]Centro Hospitalar e Universitário de Coimbra, EPE / Hospital Geral. [2]Centro Hospitalar e Universitário de Coimbra. [3]Centro Hospitalar e Universitário de Coimbra / Hospitais da Universidade de Coimbra.

Introduction: Atrial fibrillation (AF) is associated with high thromboembolic risk, which can be reduced by anticoagulant therapy. In patients with contraindication to oral anticoagulants (OAC) or therapy failure, percutaneous closure of the left atrial appendage (LAA) is a promising therapy.
Objectives: To assess the feasibility and safety of LAA closure in patients with contraindication to OAC or OAC therapy failure.
Methods: 128 consecutive patients who underwent LAA closure between May 2010 and November 2018 were included in the analysis. Short-term follow-up was done at 7 days and long-term at 20 ± 21 months.
Results: Mean age was 73 ± 8years old, with 63.3% male patients. Previous history of stroke/transitory ischemic attack or coronary artery disease was present in 35.2% and 14.8%, respectively. Moreover, a third of our patients were diabetic and another third had chronic renal failure. The mean CHA2DS2VASc stroke risk score in this population was 4.4±1.4 and the mean HAS-BLED bleeding score was 3.0 ± 1.0 (≥ 3 in 67.2%). The main indications for LAA closure were: major bleeding (53.9%), high bleeding risk (20.3%), embolic events while on OAC therapy (15.6%) or recurrent minor bleeding (12.5%). The procedural success rate was 96.1%. It was guided by transesophageal echocardiography (52.3%) or intracardiac echocardiography (ICE) (51.6%), with a predominance of ICE in the last 3 years. The most used device was Amulet (63.5%), AMPLATZER Cardiac Plug (25.4%) and Watchman (11.1%). Cumulative complications rate at 7-days follow-up was 14.8%, including one death. One patient had a thrombus in association with the device. 11 patients were dead during long-term follow-up. Embolic and bleeding events were less frequent than expected from the observed CHA2DS2VASc (expected stroke rate/year 5.6% *versus* observed stroke rate/year 0.5%; 91% risk reduction) and HAS-BLED (expected major bleeding rate/year 4.7% *versus* observed major bleeding rate/year 2.1%; 55% risk reduction) scores.
Conclusions: According to our data, LAA percutaneous closure was feasible and safe. The procedure seems to offer a significant ischemic and bleeding protection for high-risk AF patients.

Sábado, 27 Abril de 2019 | 14H00-15H30

NEPTUNO II | COMUNICAÇÃO ORAL 02 - ARRITMIAS SUPRAVENTRICULARES

CO 8. LONG-TERM PREDICTORS OF NEW ONSET ATRIAL FIBRILLATION AFTER DUAL CHAMBER PACEMAKER IMPLANTATION

Vera Ferreira, André Viveiros Monteiro, Guilherme Portugal, Pedro Silva Cunha, Ana Lousinha, Paulo Osório, Bruno Valente, Susana Covas, Manuel Brás, Alice Areias, Alexandra Castelo, Pedro Garcia Brás, Rui Cruz Ferreira, Mário Oliveira

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

Introduction: Preserving atrioventricular synchrony has been accepted as a significant advantage of atrial and dual-chamber (DDD) pacing. However, little is known about the incidence of atrial fibrillation (AF) after DDD implantation and its prognostic predictors in long-term follow-up.
Objectives: To determine the incidence of new AF episodes and to identify risk factors and predictors for new-onset AF and all-cause mortality after implantation of DDD pacemaker (PM).
Methods: 713 consecutive patients (P) who underwent DDD PM implantation, due to AV block (AVB) or sinus node disease (SND), with no prior history of AF, from 2011 to 2015. Through periodic PM interrogation, occurrence of AF («automatic mode switch» episodes with documented AF), switch to ventricular pacing (VVIR), pacing site (apical or septal) and cumulative right ventricular (RV) pacing % were analysed.
Results: Follow-up data was available for 669 P (93.8%) for a mean follow-up (FU) time of 47.8 ± 22.7 months. Mean age was 72.9 ± 10.8 years with 60.1% male. New occurrence of AF was observed in 345 P (51.6%); 45.7% of them were consequently anticoagulated. Median time to 1st AF episode since implantation was 21.6 months. In 50.9% of the cases it lasted ≥ 1hour. In univariate analysis, 1st AF episode lasting more than 1 hour and existence of at least one episode longer than 24 hours were directly related to switch to VVIR (p < 0.0005), as well as prescription of anticoagulation (p = 0.001). Compared to non-AF P, those with AF were older (74.0 ± 9.9 years *versus* 71.8 ± 11.7 years; p = 0.008), had higher prevalence of SND (50.0% *versus* 40.20%; p = 0.015), had superior % of RV pacing (65.9 ± 39.3% *versus* 58.3 ± 44.3%; p = 0.021) and had more frequently RV apical pacing (70.1% *versus* 57.3%; p = 0.001). The prevalence of hypertension, diabetes *mellitus* and dyslipidemia were similar in the two groups. With multivariable Cox-regression, age (HR: 1.02; p = 0.017), SND (HR: 1.49; p = 0.01), admission for heart failure (HR: 1.55; p = 0.012) and % of RV pacing (HR: 1.01; p = 0.003) were significantly associated with the incidence of AF. Predictors of all-cause mortality in

Cox regression were the occurrence of AF in 1st FU (HR: 1.67; p = 0.018) and % RV pacing (HR: 1.01; p = 0.043).

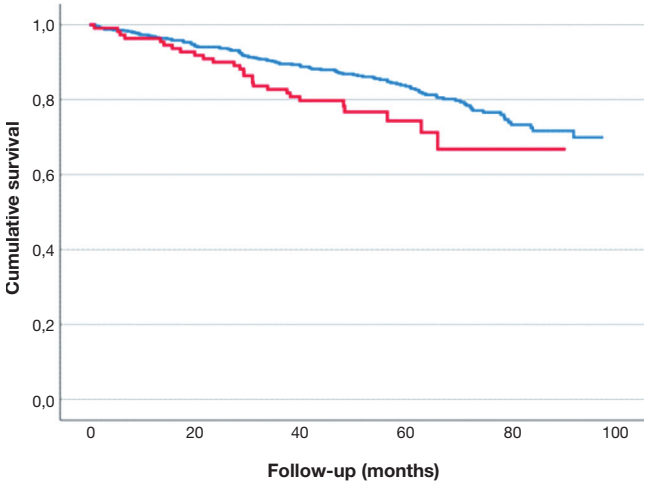


Figure 1. Kaplan-Meier curve for long term survival in patients according the onset AF in 1st year of FU.

Conclusions: New onset AF is a frequent finding after DDD PM implantation and is associated with all-cause mortality in long-term. Age, admission for heart failure, SND and % of RV pacing were independent predictors for AF during follow-up.

CO 9. ABLATION INDEX-GUIDED ABLATION *VERSUS* SECOND-GENERATION CRYOBALLOON ABLATION FOR FIRST PULMONARY VEIN ISOLATION IN ATRIAL FIBRILLATION: SHORT-TERM RESULTS - A SINGLE CENTER EXPERIENCE

João Carmo[1], Francisco Moscoso Costa[1], Diogo Cavaco[1], Pedro Carmo[1], António Ferreira[1], Adriana Barbosa[1], Gustavo Rodrigues[1], António Fontes[2], Afonso Oliveira[1], Daniel Matos[1], Francisco Morgado[1], Pedro Adragão[1], Miguel Mendes[1]

[1]Centro Hospitalar de Lisboa Ocidental, EPE / Hospital de Santa Cruz. [2]Hospital do Divino Espírito Santo, Ponta Delgada.

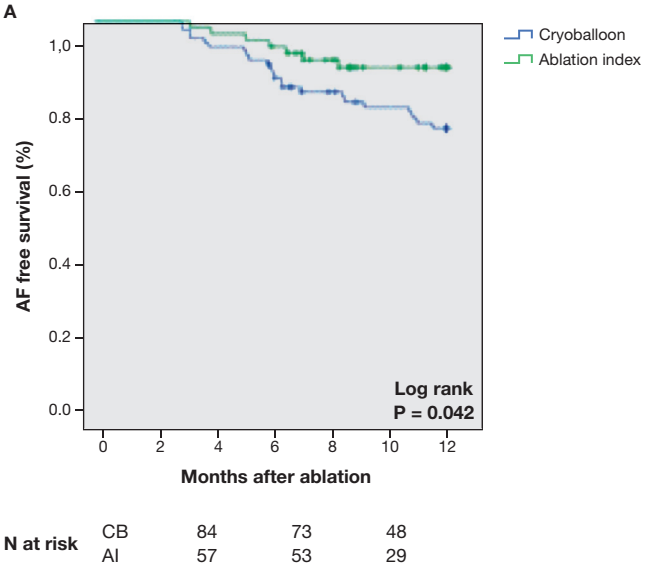
Introduction: In a recent trial, cryoballoon (CB) ablation was non-inferior to radiofrequency ablation regarding effectiveness in atrial fibrillation (AF). Ablation index (AI) provides a more accurate estimation of ablation quality using three variables: power delivered with time, contact force and catheter stability. The additional benefit of AI-guided ablation *versus* CB ablation is unknown.
Objectives: To compare AI-guided ablation and CB ablation for first pulmonary vein isolation (PVI) in patients with AF.
Methods: We assessed 141 patients (62 ± 12 years old, 76 men and 126 paroxysmal AF) with drug refractory symptomatic AF submitted to AI-guided PVI (Thermocool SmartTouch®) or second-generation CB catheter (Arctic Front Advance®). Endpoint was AF/AT/AFL recurrence after a 3-month blanking period with a minimum follow-up of 6 months. Cox regression was used to assess the relationship between type of ablation and AF recurrence.
Results: Fifty-seven patients underwent AI-guided PVI and 84 patients underwent CB ablation. The baseline characteristics are described in Figure A. Procedure duration was significantly higher in AI group (150 *versus* 111 min, p < 0.001) although requiring significant less fluoroscopy time (5 min *versus* 20 min; p < 0.001). There was a transient phrenic nerve palsy in CB group and a cardiac tamponade in AI group. During a mean follow-up of 10 ± 3 months there were 23 recurrences (27%) in CB group *versus* 7 recurrences (12%) in AI group (log-rank 0.042) (Fig. B). When adjusted for CHA_2DS_2-VASc score, left atrium diameter (mm) and type of AF (Cox regression), there was lower arrhythmia recurrence in AI group (HR: 0.42; 95%CI: 0.18-0.99; p = 0.047).

A

	Cryoballoon (84 patients)	Ablation index (57 patients)	P value
Age - years (IQR)*	63 (56-69)	63 (53-71)	0.614
Female sex (%)	52%	37%	0.069
BMI - kg/m2 (IQR)*	28 (25-30)	28 (25-30)	0.945
Hypertension (%)	63%	60%	0.680
Diabetes (%)	14%	8.8%	0.324
Coronary artery disease (%)	3.6%	8.8%	0.190
Previous stroke (%)	4.8%	7.0%	0.570
Paroxysmal AF 8%)	89%	90%	0.972
Left atrium AP diameter - mm (IQR)*	40.4 (36.0-42.9)	40.8 (38.0-43.0)	0.737
CHA2D52-Vasc (IQR)*	1.5 (0-3)	2 (1-3)	0.250
Procedure time - min (IQR)*	111(87-135)	150 (125-160)	< 0.001
Fluoroscopy time - min (IQR)*	20 (12-28)	5 (3-7)	< 0.001

* Median and interquartiel range (IQR)

A



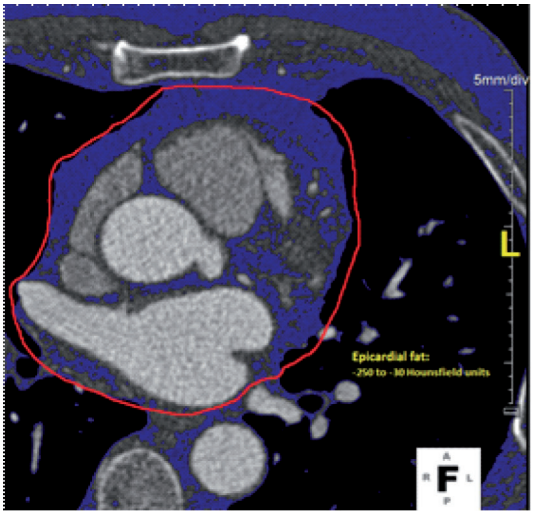
Conclusions: In this analysis, AI-guided ablation was associated with lower arrhythmia recurrence when compared with CB ablation. This hypothesis should be further evaluated in a prospective randomized trial.

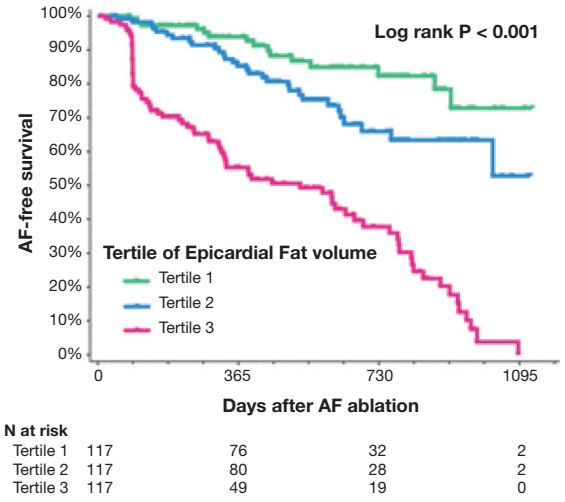
CO 10. EPICARDIAL FAT IS MORE ABUNDANT IN AF PATIENTS THAN CONTROLS AND IS A POWERFUL PREDICTOR OF RELAPSE

Daniel Matos, António Miguel Ferreira, Pedro Freitas, Sara Guerreiro, Gustavo da Rocha Rodrigues, João Carmo, Maria Salomé Carvalho, João Abecasis, Ana Coutinho Santos, Pedro Carmo, Carla Saraiva, Diogo Cavaco, Francisco Morgado, Miguel Mendes, Pedro Adragão

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

Introduction: Epicardial adipose tissue has been implicated in the pathophysiology of atrial fibrillation (AF), but its clinical relevance remains uncertain. The goals of this study were to assess the relationships between epicardial fat and: 1) the presence and severity of AF; 2) AF recurrence after percutaneous pulmonary vein isolation (PVI).
Methods: We assessed 351 patients (139 men, age 61 ± 13 years, 261 paroxysmal AF) with symptomatic AF undergoing cardiac CT prior to a first PVI procedure. Epicardial fat was quantified on contrast-enhanced images using a simplified semi-automated method.For the first goal, a subset of AF patients without coronary atherosclerosis (no plaque on CT) were matched on a 1:1 basis with patients without know AF undergoing CT for other reasons (but also with no coronary plaque). A propensity score was used to match individual patients for age, sex, body mass index (BMI) and major cardiovascular risk factors. For the second goal, the entire cohort of 351 AF patients was reviewed for recurrence of AF after PVI.





N at risk

Tertile 1	117	76	32	2
Tertile 2	117	80	28	2
Tertile 3	117	49	19	0

CO 10 Figure

Cox regression was used to assess the relationship between epicardial fat and AF relapse.

Results: The propensity score yielded two groups of 86 patients each, well matched for baseline characteristics. Epicardial fat volume indexed to body surface area (BSA) was significantly higher in the AF group *versus* controls (1.7 ± 0.9 *versus* 1.3 ± 0.7 mL/m^2, p = 0.001). Among patients with AF, epicardial fat was more abundant in non-paroxysmal *versus* paroxysmal AF (2.7 ± 1.4 *versus* 2.2 ± 1.3 mL/m^2, p = 0.004). The correlation between epicardial fat volume and BMI was weak (Pearson's R 0.34). Over a median follow-up of 15 months (IQR 7-23), 122 patients (35%) relapsed. Survival analysis showed significant differences in AF-free survival across tertiles of epicardial fat. After adjustment for BMI and other univariate predictors of relapse, three variables emerged independently associated with AF recurrence: non-paroxysmal AF (HR: 2.45, 95%CI: 1.67-3.57, p < 0.001), indexed left atrial volume (HR: 1.24, 95%CI: 1.12-1.37, p < 0.001), and indexed epicardial fat volume (HR: 1.50, 95%CI: 1.32-1.71, p < 0.001).

Conclusions: Epicardial fat is more abundant in AF patients than in matched controls and is an independent predictor of relapse after percutaneous AF ablation. Both these findings suggest a clinically significant (and possibly causal) association between epicardial fat and the development and perpetuation of AF. The underlying mechanisms deserve further investigation.

CO 11. LONG-STANDING PERSISTENT ATRIAL FIBRILLATION: WHAT CAN WE ACHIEVE WITH ABLATION?

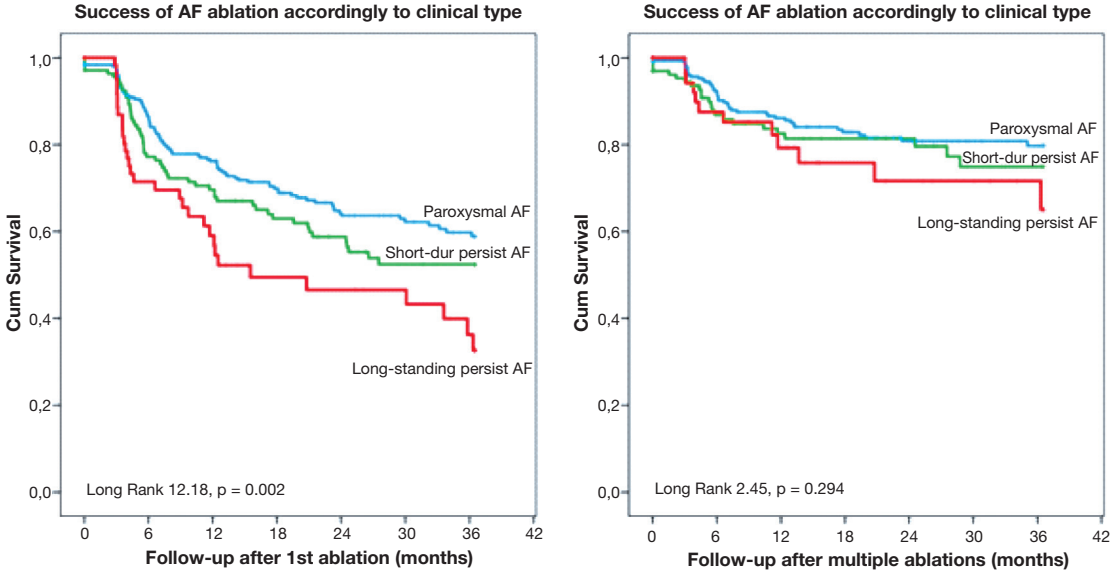
Afonso Nunes Ferreira[1], Nuno Cortez-Dias[2], Pedro Silvério António[2], Gustavo Lima da Silva[2], Inês Aguiar-Ricardo[2], Joana Rigueira[2], Joana Quaresma[2], Ana Bernardes[2], Luís Carpinteiro[2], Fausto J Pinto[2], João de Sousa[2]

[1]Centro Hospitalar de Lisboa Norte, EPE / Hospital de Santa Maria. [2]Serviço de Cardiologia, Departamento Coração e Vasos, CHULN, CCUL, Faculdade de Medicina, Universidade de Lisboa, Lisboa.

Introduction: Atrial fibrillation (AF) ablation presents suboptimal results in patients (pts) with persistent long-lasting forms (LSPAF, AF ≥ 12 months). Recently, the STAR AF-II trial has shown that in these pts complex additional strategies do not improve success compared to only performing pulmonary vein isolation (PVI).

Objetives: To evaluate the success of AF ablation, particularly in long-standing persistent AF

Methods: Single-center prospective study of pts with AF submitted to ablation. The strategy, regardless of the type of AF, was based on PVI,



CO 11 Figure

complemented by cavo-tricuspid isthmus line (CTI) in pts with history of flutter. Additional ablation strategies were selectively considered in pts with stable atypical flutter conversion, persistent triggers or no electrograms in the VPs. Pts were monitored with Holter/7-day event loop recorder (3, 6, 12 months and annually up to 5 years). Success was assessed from the 90th day after ablation, with the absence of recurrences of any sustained atrial arrhythmias (> 30 sec). Cox regression and Kaplan-Meier survival were used to compare the success of ablation as a function of the clinical type of AF in our population and with pts included in STAR-II AF trial.
Results: 620 patients were submitted to AF ablation, 67% male, 58 ± 12 years, including 78 pts (13%) with LSPAF - pts with paroxysmal and persistent short duration AF represented 61% and 26% of the population. In LSPAF, VPI was performed with irrigated catheter (n = 33), PVAC (N = 44) or nMARQ (n = 1), complemented by CTI ablation in 15, linear left atrial lesions in 3, ablation of areas of low voltage in 3 and elimination of fractionated electrograms in 1 patient. With a median follow-up of 426 days (94-98), the 3-year success rate after a single procedure was 53% in LSPAF, lower than that observed in patients with paroxysmal AF (69%) or short-duration persistent AF (61%) – log-rank p = 0.002. The risk of arrhythmias was double in LSPAF *versus* paroxysmal AF (HR: 2.0; p = 0.001). However, after an average of 1.2 procedures/patient, the success rate in LSPAF was 80% at 3 years, comparable to that observed for other types of AF (log-rank 2.5, p = 0.29). Effectively, the long-term success rate of our LSPAF pts treated with PVI and very selective additional strategies was higher than that observed in the STAR-II AF pts treated with PVI and indiscriminate complex ablations (80% *versus* 69%, t-test p < 0.001, mean follow-up 21 *versus* 18 months).
Conclusions: AF ablation is more effective if it is performed earlier in the natural history of the disease. However, even in LSPAF, high success rates are achieved through PVI-based ablation strategies, although more procedures are required.

CO 12. CLINICAL OUTCOME AFTER CRYOBALLON BASED PULMONARY VEIN ISOLATION FOR THE TREATMENT OF PAROXYSMAL AND PERSISTENT ATRIAL FIBRILLATION: LARGE TWO-CENTER EXPERIENCE

Pedro Silva Cunha[1], Paulo Fonseca[2], Bruno Tereno Valente[1], Fernando Montenegro Sá[3], Guilherme Portugal[1], Helena Gonçalves[2], Mário Oliveira[1], João Primo[2]

[1]Centro Hospitalar de Lisboa Central, EPE / Hospital de Santa Marta. [2]Centro Hospitalar de Vila Nova de Gaia/Espinho. [3]Centro Hospitalar de Leiria / Hospital de Santo André.

Introduction: Pulmonary vein isolation (PVI) using the cryoballoon (CB) in patients with paroxysmal (PAF) and as well as persistent atrial fibrillation (PersAF) has demonstrated encouraging acute and mid-term results. However, follow-up data on outcome beyond one year in Portugal is lacking.
Objectives: The aim of this study is to characterize patients (P) submitted to CBA of AF in two Portuguese tertiary centers, and verify AF recurrence rates (between P with persistent and paroxysmal) and AF in a 12-month follow-up period after CBA.
Methods: 246 patients with paroxysmal (207/246 [84.1%] patients) or persistent AF (39/246 [15.9%] patients) underwent CB-based PVI in two centers with large AF ablation experience. Freeze-cycle duration was 240 seconds. After successful PVI a bonus freeze-cycle of the same duration was applied in 223 patients while the bonus freeze was omitted in 23 patients. A total of 954 (99,1%) pulmonary veins were successfully isolated. Regarding anatomic variations of the venous ostia, we found that they were present in 13,8% (34/246) of the P (27 P had a left common ostia, 4 P had a right common ostia, 3 P had 3 right pulmonary vein separate ostia and 1 P had 3 left pulmonary veins separated ostia).
Results: The mean procedure time was 123.1 ± 36.4 minutes. There were 15 (6.1%) transitory phrenic nerve palsys, that lead to stop acutely the application and repositioning the cryballoon, but in only 1 P the phrenic nerve palsy persisted at 6 months. After a mean follow-up duration of 23.1 months, 185 (75.2%) patients remained in stable sinus rhythm. 61 P had a recurrence, 42 (20.3%) P in paroxysmal AF group and 19 (48.7%) P in the persistent AF group. Out of the 61 P with recurrence, 27 P received a second procedure (in all P with radiofrequency ablation).
Conclusions: CB-based PVI in two Portuguese tertiary centers results in a 75.2% single-procedure success rate. The CB ablation procedure in experienced centers is globally safe and effective.

CO 13. COMPLEX LEFT ATRIAL TACHYCARDIAS: WHERE TO BLOCK THE MITRAL «ISTHMUS»?

Gustavo Lima da Silva[1], Inês Gonçalves[2], Afonso Nunes-Ferreira[2], Pedro Silvério António[2], Nuno Cortez-Dias[2], Luís Carpinteiro[2], Fausto J. Pinto[2], João de Sousa[2]

[1]Centro Hospitalar de Lisboa Norte, EPE / Hospital de Santa Maria. [2]Serviço de Cardiologia, Departamento Coração e Vasos, CHULN, CCUL, Faculdade de Medicina, Universidade de Lisboa, Lisboa.

Introduction: Ablation of complex left atrial tachycardias (CLAT) is challenged by the heterogeneity of the underlying mechanisms, commonly with double circuits of diverse locations. The inferior mitral line (IML) is a classic element of the ablative strategy, aiming at blocking the perimitral circuits. However, the anatomical characteristics of the region (atrial muscle thickness and cooling by the adjacent circumflex artery) make ablation difficult, justifying the investigation of alternative strategies, such as anterior ML (AML), from a superior pulmonary vein to the anterior or anteroposterior region, of the mitral annulus.
Objectives: To assess the pathophysiological relevance of anterior wall fibrosis in left atrial (LA) in the CLAT and the therapeutic potential of the pulmonary vein isolation (PVI) strategy and AML in the treatment of CLAT.
Methods: Prospective unicentric study of consecutive patients with CLAT undergoing electrophysiological study with high density three-dimensional mapping (Carto 3® or Ensite Precision®). The strategy consisted sequentially in: (1) map in bipolar voltage mode; (2) substrate analysis and location of low voltage areas < 0.3mV; (3) interpretation of the arrhythmia mechanism by analyzing activation maps and Ripple™ (Carto 3®) or SparkleMap™ (Ensite Precision®); (4) definition of the ablation strategy directed to the region of the circuit shared by the different loops and with lower speed of conduction; (5) line validation. We selected the cases in which the arrhythmia ended during the first set of radiofrequency ablation (RF), confirming the interpretation of the arrhythmia mechanism. According to the established mechanism, the therapeutic potential of AML was determined in the treatment of CLAT.
Results: 38 CLAT procedures were completed with RF application (n = 30, 60% men, 68 ± 9 years, 47% with structural heart disease and 53% submitted to IVP in the past). All patients had areas of low voltage in LA, particularly in the anterior wall (87%). The arrhythmia mechanism was macroreentrada in 77% of the CLAT and reentrant located in 33%. In the peri-mitral CLATs (n = 14), 50% presented a *single-loop* mechanism and the remaining *dual-loop*. Both IML and AML would have terminated *single-loop* arrhythmias, but the AML would terminate 57% of the *dual loop* cases, while the IML would have ended only 43%. In patients with CLAT not previously submitted to PVI, the performance of PVI and AML would terminate the arrhythmia in 79% of the cases. The strategy of IVP + LMI would be effective in only 63%.
Conclusions: Fibrosis in the anterior wall LA is prevalent, being the most frequent location of slow conduction isthmus. The arrhythmias raised thereby have often *dual-loop* mechanisms that can be treated with AML. Ablation of AML should be the preferred ablation strategy in patients with CLAT in whom peri-mitral involvement is detected.

CO 14. PREDICTORS OF RECURRENCE AFTER CATHETER ABLATION OF ATYPICAL ATRIAL FLUTTER

António Xavier Fontes[1], Pedro Azevedo[2], Gustavo Rodrigues[3], João Carmo[3], Maria Salomé Carvalho[3], Francisco Costa[3], Pedro Carmo[3], Diogo Cavaco[3], Francisco Morgado[3], Pedro Adragão[3]

[1]Hospital do Divino Espírito Santo, Ponta Delgada. [2]Centro Hospitalar e Universitário do Algarve. [3]Centro Hospitalar de Lisboa Ocidental, EPE / Hospital de Santa Cruz.

Introduction: Atypical atrial flutter (AAF) is often associated with structural heart disease, prior cardiac surgery or extensive catheter ablation for the

treatment of atrial fibrillation (AF). The precise mechanism generating AAF can be mapped during electrophysiology studies (EPS) and ablation can be tailored to eliminate the reentrant circuit.
Objectives: The aim of the study is to assess the predictors of AAF recurrence after catheter ablation.
Methods: Retrospective single center analysis of consecutive AAF patients referred for ablation from October 2007 to July 2018. Clinical characteristics and EPS features were evaluated. The primary endpoint was documented recurrence of AAF. Cox regression model was used to identify independent predictors of AAF recurrence.
Results: A total of 90 AAF patients were included in the analysis, 57.7% male, with an median age of 64 (57.8-70.3) years old. The majority (88%) of the patients had a previous diagnosis of atrial fibrillation, prior AF ablation (76%) and a minority prior cardiac surgery with atriotomy (19%). During median follow-up of 43 (13.5-80.5) months, AAF recurrence was observed in 1/3 of the patients. Patients without recurrence after ablation had more frequently prior history of AF (94% *versus* 77%, p = 0,013), have been more frequently submitted to pulmonary vein isolation (68% *versus* 45%, p = 0,028) and presented more frequently spontaneous reversal to sinus rhythm during radiofrequency (RF) applications in the index procedure (68% *versus* 45%, p = 0,028).Conversion to sinus rhythm during RF ablation independently predicted ablation success during follow up (HR: 2,4, 95%CI: 1,03-5,63; p = 0,043).
Conclusions: In our population of AAF patients submitted to a first procedure of ablation, spontaneous conversion to sinus rhythm during RF energy delivery was the most powerful predictor of success during follow up and was associated with 2,4 chance of remaining without the arrhythmia.

Domingo, 28 Abril de 2019 | 11H30-13H00

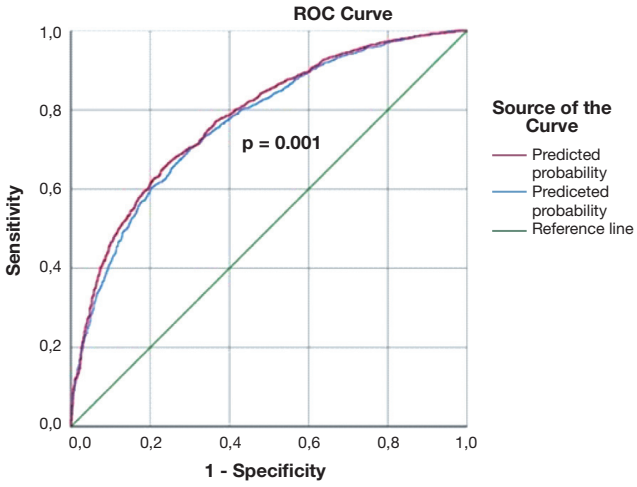
NEPTUNO I | COMUNICAÇÃO ORAL 03 - DOENÇA CORONÁRIA

CO 15. IMPACT OF LPA GENE VARIATION ON THE RISK OF CORONARY DISEASE

Andreia Pereira[1], Maria Isabel Mendonça[2], João Adriano Sousa[1], Flávio Mendonça[1], Micaela Neto[1], Ana Célia Sousa[2], Eva Henriques[1], Sónia Freitas[3], Sofia Borges[2], Ilídio Ornelas[1], Ana Isabel Freitas[2], António Drumond[2], Roberto Palma dos Reis[4]

[1]Hospital Dr. Nélio Mendonça. [2]Hospital Dr. Nélio Mendonça - Hospital Central do Funchal. [3]Hospital Dr. Nélio Mendonça. [4]Faculdade de Medicina da Universidade de Lisboa.

Introduction: The rs3798220 variant of the LPA gene encoding lipoprotein (a) is strongly associated with increased plasma levels of Lp (a), reduction in the number of copies of type 2 Kringle IV and lower lipoprotein size, which leads to a more deleterious lipoprotein. It is not so clear the influence of LPA gene and coronary artery disease.
Objectives: Investigate the association of LPA rs3798220 with plasma levels of Lp (a) and the risk of coronary disease (CAD) in our population. Estimate whether the inclusion of high levels of Lp (a), in a model with tradicional risk factors, increases the predictive capacity for CAD.
Methods: A case-control study was carried out with 3050 subjects (1619 coronary patients with 53.3 ± 8 years; 77.8% male and 1431 controls with 52.8 ± 7.8 years; 76.6% male) from the GENEMACOR study population. Traditional risk factors (TRF) were investigated, as well as the LPA rs3798220 and its plasma levels. Lp (a) ≥ 30 mg/dL was considered elevated. Bivariate and multivariate (logistic regression) analyzes estimated the risk of CAD. A ROC curve and respective AUC were designed to evaluate the predictive capacity of the addition of Lp (a) ≥ 30 mg/dL to the model with the TRF to predict CAD.
Results: In our population, there was an association between the LPA gene and Lp (a) plasma levels, being higher in the CT genotype (mean 81.09 ± 64.2 mg/dL) than in the TT genotype (mean 30.30 ± 33.7 mg/dL), with statistical significance (p < 0.0001). After multivariate analysis, LPA gene was significantly and independently associated with CAD risk (OR = 2.33; 95%CI: 1.52-3.62; p < 0.0001). A second multivariate analysis indicated that high plasma levels (Lp (a) ≥ 30) were significantly associated with CAD (OR = 2.11, 95%CI: 1.77-2.52; p < 0.0001), in contrast to Lp (a) < 30, that was protective for CAD. The inclusion of high levels of Lp (a) to TRF model to predict CAD, the AUC increased from 0.768 to 0.780 (DeLong test p = 0.0001), improving the predictive capacity of the initial model.



Conclusions: Our study confirmed that LPA rs3798220 variant is associated with CAD risk as well as with elevated plasma levels of Lp (a), which represent an independent risk factor for this disease. A better understanding of the regulation and metabolism of Lp (a) may lead to new pharmacological targets to reduce Lp (a) levels, with potential benefit in the treatment and prevention of CAD.

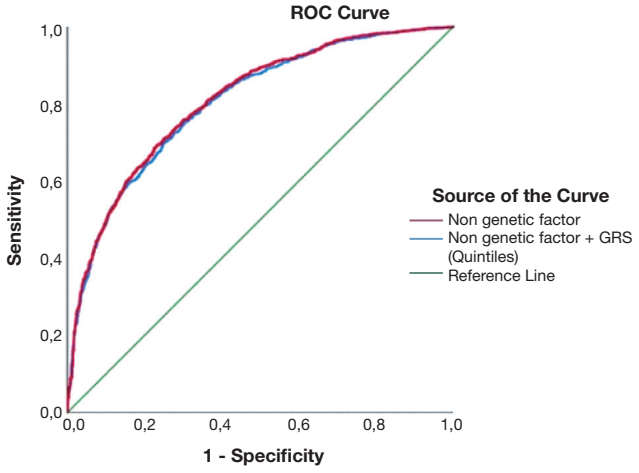
CO 16. ASSESSMENT OF THE ADDITIONAL CAPACITY OF A GENETIC RISK SCORE IN THE PREDICTION OF CORONARY ARTERY DISEASE

Joel Ponte Monteiro[1], Maria Isabel Mendonça[1], Andreia Pereira[2], João Adriano Sousa[1], Flávio Mendonça[2], Micaela Neto[2], Ana Célia Sousa[1], Eva Henriques[2], Sónia Freitas[3], Sofia Borges[1], Graça Guerra[1], Ilídio Ornelas[2], António Drumond[1], Roberto Palma dos Reis[4]

[1]Hospital Dr. Nélio Mendonça - Hospital Central do Funchal. [2]Hospital Dr. Nélio Mendonça. [3]Hospital Dr. Nélio Mendonça. [4]Centro Hospitalar de Lisboa Norte, EPE / Hospital Pulido Valente.

Introduction: Predicting future coronary artery disease (CAD) in healthy adults, even using the new risk factors beyond the traditional ones, seems sometimes disappointing.
Objectives: Investigate the role of 33 genetic variants emerged from GWAS apart from phenotypic and behaviour information, in prediction and discrimination of CAD.
Methods: A case-control study was performed with 3050 subjects (1619 coronary patients with 53.3 ± 8 years; 78.9% male and 1431 controls with 52.8 ± 8 years; 76.6% male) from GENEMACOR. Traditional and new risk factors (TRF) such as smoking, dyslipidaemia, diabetes, family history, hypertension, body mass index, physical inactivity, heat rate, creatinine clearance, alcohol consumption, pulse wave velocity, homocysteine, glucose, fibrinogen, lipoprotein (a), APO B lipoprotein, CRP (as) were investigated, as well as the 33 genetic variants previously associated with CAD. A multiplicative genetic risk score (GRS) with these 33 variants was calculated. Multiple logistic regression models adjusted for potential confounders were used to estimate the OR and 95%CI, without and with GRS (5th quintile). Area under the ROC curve (AUC) of each one was compared using Delong test.
Results: In our population, the mean of GRS was 0.64 ± 0.75 (in patients) and 0.46 ± 0.51 (in controls), p < 0.0001. After multivariate model with all

the studied risk factors, the following : alcohol consumption, pulse wave velocity, body mass index, lipoprotein (a), APO B, PCR (hs) did not remain in the equation and all others showed independency and significance for CAD. When the last quintile of GRS is added to the model, CAD risk is 1.93 (95%CI: 1.56-2.40; p < 0.0001). In the ROC curve with all risk factors, the AUC was 0.80. Adding the last quintile of GRS the AUC increased slightly to 0.81, with statistical significance (p = 0.002).



Conclusions: Genetic information together with the non-genetic add a slight predictive power for CAD risk. Future knowledge about rare genetic variants and other SNPs as well as their complex interactions both with genetic and environmental factors, can provide an improved clinical utility of the GRS.

CO 17. OPTIMIZING DIAGNOSIS OF OBSTRUTIVE CORONARY ARTERY DISEASE BY CT ANGIOGRAPHY AND ISCHEMIA TEST. A RANDOMIZED CLINICAL TRIAL

João Ferreira Reis, Ruben Ramos, Pedro Modas Daniel, Sílvia Rosa Aguiar, Luís Morais, Madalena Cruz, Rita Ilhão Moreira, Tiago Mendonça, André Monteiro, Cecília Leal, Hugo Marques, Luísa Figueiredo, Rui Cruz Ferreira

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

Introduction: In patients with suspected coronary artery disease (CAD), computed tomographic angiography (CTA) may improve patient selection for invasive coronary angiography (ICA) as alternative to functional testing. However, the role of CTA in symptomatic patients after abnormal functional test is incompletely defined.
Methods: This randomized clinical trial conducted in single academic tertiary center selected 218 symptomatic patients (pts) with mild to moderately abnormal functional test referred to invasive coronary to receive either the originally intended ICA (n = 103) or CTA (n = 115). CTA interpretation and subsequent care decisions were made by the clinical team. Patients with high risk features on functional tests, previous acute coronary syndrome, previously documented CAD, chronic kidney disease (GFR < 60mL/min/1.73m^2) or persistent atrial fibrillation were excluded.
Results: The primary endpoint was the percentage of ICA with no significant obstructive CAD (no stenosis ≥ 50%) in each group. Diagnostic and revascularization yields of ICA in either group were also assessed. Subjects averaged 68 ± 9 years of age, 60% were male, 29% were diabetic. Nuclear perfusion stress test was used in 33.9% in CTA group and 31.1% in control group (p = 0.655). Mean post (functional) test probability of obstructive CAD was 34%. Overall prevalence of obstructive CAD was 32.1%. In the CTA group, ICA angiography was cancelled by referring physicians in 83 of the pts (72.2%) after receiving CTA results. For those undergoing ICA, non-obstructive CAD was found in 5 pts (15.6%) in the CTA-guided arm and 60 (58.3%) in the usual care arm (p < 0.001). Mean cumulative radiation exposure related to diagnostic work up was similar in both groups (6 ± 14 *versus* 5 ± 14 mSv, p = 0.152), but a greater cumulative contrast dose in the CTA-guided group (87.5 ± 21 *versus* 77 ± 40, p = 0.026) was observed. Both diagnostic (84.4% *versus* 41.7%, p < 0.001) and revascularization (71.9% *versus* 38.8%, p = 0.001) yields were significantly higher for CTA-guided ICA as compared to standard functional test-guided ICA.
Conclusions: In patients with suspected CAD and mild to moderately abnormal functional test, a diagnostic strategy including computed tomographic angiography as gatekeeper is effective and significantly improves diagnostic and revascularization yields of invasive coronary angiography.

CO 18. SHOULD WE CONTINUE TO ROUTINELY REVASCULARIZE PATIENTS DURING VALVE SURGERY IN OPTIMAL MEDICAL THERAPY ERA?

João Ferreira Reis[1], Christopher Strong[2], David Roque[3], Luís Morais[1], Tiago Mendonça[1], Pedro Daniel Modas[1], Pedro Farto e Abreu[3], Manuel Almeida[2], Duarte Cacela[1], Carlos Morais[3], Miguel Mendes[2], Rui Cruz Ferreira[1], Sérgio Bravo Baptista[3], Luís Raposo[2], Rúben Ramos[1]

[1]Centro Hospitalar de Lisboa Central, EPE / Hospital de Santa Marta. [2]Centro Hospitalar de Lisboa Ocidental, EPE / Hospital de Santa Cruz. [3]Hospital Prof. Doutor Fernando Fonseca.

Introduction: Optimal management of stable obstructive coronary artery disease (CAD) in patients (pts) undergoing heart valve surgery remains controversial. The aim of the present study is to evaluate the effective prognostic role of CABG in pts undergoing valve surgery who had concomitant CAD.
Methods: We conducted a retrospective multicenter survival analysis using multivariable Cox models and Kaplan-Meier curves of consecutive pts undergoing valve surgery with or without concomitant CABG between January 2015 and February 2017.
Results: From 1196 consecutive pts undergoing valvular surgery in 3 portuguese centers, 257 (21.5%) were found to have obstructive CAD (55.6% male, mean age 74 ± 8 y.o., mean follow-up time 16 ± 8 months, aortic valve disease 78.8%). No coronary revascularization (R) was attempted in 177 pts, complete R was achieved in 40 and R was anatomically incomplete in the remaining 40 pts. Age (75 *versus* 77.3 y.o.; p = 0.202), multivessel disease (46.3% *versus* 53.8%, p = 0.270), aortic valve disease (91.0% *versus* 92.5%, p = 0.683), left ventricular ejection fraction < 40% (11.8% *versus* 19.4%, p = 0.272) were comparable between non-revascularized and revascularized pts; SYNTAX score was low and also similar in both groups (7 ± 12 *versus* 7 ± 5, p = 0.856). Left main disease (8.5% *versus* 17.5%, p = 0.034) and euroscore II risk score (2.3 ± 2 *versus* 3.2 ± 2, p = 0.011) was higher for those with any revascularization. Non-revascularized pts had significantly lower all-cause mortality at follow up than those with any R (10.2% *versus* 21.2%, p = 0.016). However, both in-hospital (4% *versus* 7.5%, p = 0.230) and cardiovascular mortality (6.9% *versus* 7.1%, p = 1.00) were similar. In a multivariate analysis, independent predictors for all-cause mortality were: any surgical R (HR: 4.52, CI95% 2.09-9.78), baseline atrial fibrillation (HR 2.51, CI95% 1.07-5.90), left main disease (HR: 3.153, CI95%: 1.26-7.90) and peripheral artery disease (HR: 2.95, CI95%: 1.036-8.421). All-cause mortality for pts with obstructive CAD was higher than in pts with no CAD (13.6% *versus* 6.2, p < 0.001). Interestingly, however, after multivariable adjustment, complete R was not found to be protective as compared to no R (HR: 0.79, IC95%: 0.31-2.06, p = 0.633).
Conclusions: Significant CAD is associated with worse outcomes in pts undergoing valve surgery. In this study, standard angiographically-guided R was not associated with improved results. Randomized controlled trials are needed to further assess risk stratification and the role of coronary R of stable CAD in this setting.

CO 19. LIPOPROTEIN-ASSOCIATED PHOSPHOLIPASE A2 PREDICTS HEART FAILURE READMISSION IN CORONARY HEART DISEASE

Cátia Santos Ferreira, Rui Baptista, João André Ferreira, James Milner, José Almeida, Ana Sofia Martinho, Anália Carmo, João Pego, Lino Gonçalves

Centro Hospitalar e Universitário de Coimbra / Hospitais da Universidade de Coimbra.

Introduction: Lipoprotein-associated phospholipase A2 (Lp-PLA2), a vascular-specific inflammatory biomarker,is involved in multiple stages of

atherosclerosis. Lp-PLA2 is associated with coronary heart disease (CHD) and stroke. After an admission for an acute cardiovascular event, the prognosis of patients with CHD is often difficult to stratify. We analysed the association between Lp-PLA2 and short-term adverse outcomes in patients with CHD.
Methods: We conducted a prospective, observational cohort study, including 108 patients with CHD admitted to a Cardiac Care Unit from January to April of 2018. Two groups were created: group 1 (G1) with Lp-PLA2 < 200 ng/mL (n = 89) and group 2 (G2) with Lp-PLA2 ≥ 200 ng/mL (n = 19). This cut-off was predefined, considering Lp-PLA2 ≥ 200 ng/mL portend a moderate-to high-risk of cardiovascular disease. Patients were followed for a median (interquartile range) period of 7 (7-8) months.

Baseline characteristics			
	<200 ng/dl (n = 89)	≥200 ng/ml (N = 19)	P value
Age - years	68.1±12.9	60.5±13.2	0.03
Male - no. (%)	68 (77.3)	11 (57.9)	0.94
BMI - kg/m2	28.5±4.8	27.5±3.8	0.31
Hypertension - no. (%)	68 (77.3)	11 (57.9)	0.08
DM - no. (%)	24 (27.3)	6 (31.6)	0.78
Total cholesterol - mg/dL	162.8±43.6	221.2±62.9	0.01
HDL cholesterol - mg/dL	40.5±11.6	39.6±13.6	0.75
LDL cholesterol - mg/dL	110.5±36.2	167.4±45.3	<0.001
Triglycerides - mg/dL	146.3±133.5	167.4±63.6	0.31
Glucose at admission - mg/dL	162.7±107.2	139.9±42.5	0.13
HbA1c - mmols/mol	6.1±1.1	5.7±0.4	0.09
Creatinine - mg/dL	1.4±1.4	1.2±0.8	0.36
GFR - mL/min	73.5±31.4	81.6±31.1	0.31
CRP - mg/dL	3.5±6.7	5.0±10.0	0.54
Leucocytes - x109 /L	12.4±10.4	12.8±4.5	0.81
Troponin at admission - ng/mL	26758±75535	28236±63055	0.93
Peak Troponin - ng/mL	52197±45928	45927±64024	0.74
Current smokers - no. (%)	16 (18.2)	8 (42.1)	0.02
Previous MI - no. (%)	14 (15.9)	0 (0)	0.06
Previous CABG - no. (%)	5 (5.7)	0 (0)	0.28
LVEF - %	46.2±11.8	49.3±8.8	0.21

Abbreviations: BMI, body mass index; DM, diabetes mellitus; LDL, low density lipoprotein; HDL, high density lipoprotein; HbA1c, glycated haemoglobin; GFR, glomerular filtration rate; CRP, C-reactive protein; MI, myocardial infarction; CABG, coronary artery bypass grafting; LVEF, left ventricular ejection fraction.

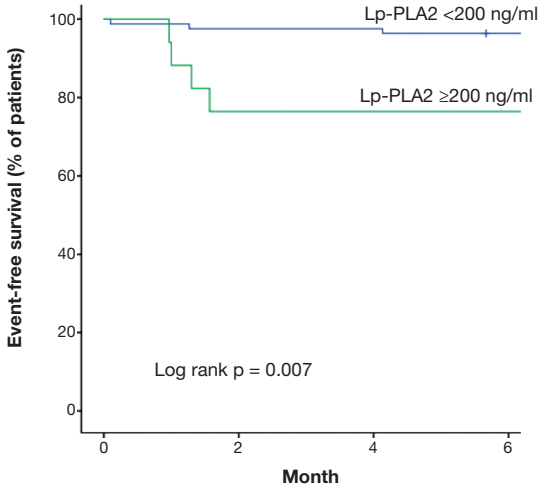


Figure 1. Kaplan–Meier Estimate of heart failure hospitalization in the different Lp-PLA2 levels.

Results: Demographic data was similar among groups except for age (G1: 68 ± 13 *versus* G2: 61 ± 13 years, p = 0.03), LDL cholesterol (G1: 111 ± 36 *versus* G2: 167 ± 45 mg/dL, p = 0.01) and smoking habits (G1: 18% *versus* G2: 42% smokers, p = 0.02). The majority of the patients were admitted for acute coronary syndrome (40.7% for ST-Elevation MI (STEMI), 37% for non-STEMI and 12% for unstable angina), while 4.6% presented with heart failure (HF), 4.6% with ventricular arrhythmias and 0.9% with pericarditis. Globally, the in-hospital mortality was 4.6% and was not associated with Lp-PLA2. At follow-up (FU), there were 2 MI, 3 unscheduled revascularizations, 8 HF hospitalizations, no strokes, and 4 deaths. Lp-PLA2 was not associated with MI, revascularization, stroke and mortality. However, patients with a Lp-PLA2 ≥ 200 ng/mL had a 22-fold risk of admission due to decompensated HF, after adjusting for age, gender, LDL, smoking status, left ventricular ejection fraction and prior HF hospitalization (HR: 21.9, 95%CI: 1.1-231.1, p = 0.01). Among the patients with prior HF hospitalization (n = 8), only 3 had a readmission; conversely, the remaining 5 patients with decompensated HF at FU never had an HF admission before.
Conclusions: In this prospective cohort of patients with CHD, Lp-PLA2 levels ≥ 200 ng/mL were associated with a significantly increased risk of 6-month readmission due to decompensated HF. Further studies are warranted to understand if LpA2 is on the causal pathway of HF or if it only specifically reflects a higher inflammatory state that is present in severe HF.

CO 20. DETERMINANTS OF PERIPROCEDURAL MYOCARDIAL INJURY AFTER SUCCESSFULLY TREATED CHRONIC TOTAL OCCLUSION

Luís Graça Santos[1], Joana Silva[2], Marco Costa[2], Luís Paiva[2], Hilário Oliveira[2], Francisco Soares[1], Elisabete Jorge[2], Cristina Neves[2], Lino Gonçalves[2]

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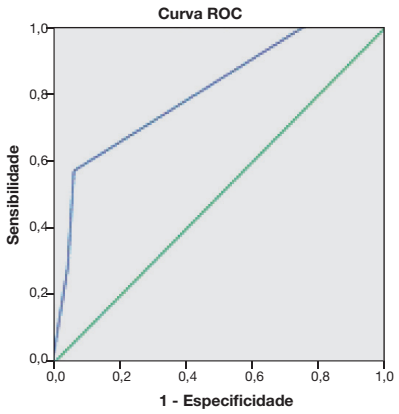
Introduction: Periprocedural myocardial injury (PMI) has been generally associated with worse prognosis regardless of the different definitions used. Limited studies have adressed the rates and risk factors of PMI in patients undergoing chronic total occlusion (CTO) percutaneous coronary intervention (PCI).
Objectives: This study sought to evaluate the frequency and determinants of PMI in successful CTO-PCI.
Methods: We retrospectively examined 125 consecutive CTO patients who underwent PCI attempt between December 2013 and December 2017 in our Centre. Angiographic success was achieved in 115 patients (92,0%) and measurement of troponin I (Tn-I) values was obtained 12-24 hours after stent implantation. PMI was defined, according to the 3rd Universal Definition of Myocardial Infarction (MI), as an asymptomatic elevation of Tn-I > 5 times the 99th percentile upper reference limit (URL). Baseline demographic, clinical, angiographic and procedural characteristics were compared between groups. Multivariate analysis was performed to determine the independent risk factors of PMI.
Results: Overall, mean age was 67 ± 17 years, 25 (21.7%) patients were female, and 26 (22.6%) CTO were diagnosed following an acute coronary event. Retrograde technique (RT) was used in only 7.0% (n = 8) of the procedures. PMI occurred in 41 patients (35.7%) and was more frequent among patients with lower glomerular filtration rate and more severe CTO calcification; in longer procedures; in cases of RT use, greater total stent length or complicated with vessel dissection or mural hematoma. PMI patients also showed higher rates of 1-year major adverse cardiovascular events (a composite of cardiovascular death, non-fatal MI and target lesion revascularization) (Fig. 1). Multivessel disease (odds ratio [OR]: 21.7; 95% confidence interval [CI]: 1.9-247.3; p = 0.013) and procedure complication with vessel dissection or mural hematoma (OR: 5.1; 95%CI: 1.0-25.2; p = 0.046) were identified as independent predictors of PMI. A risk model encompassing these variables showed good discrimination and calibration (Fig. 2).
Conclusions: In this cohort, asymptomatic PMI following successful CTO-PCI occurred in about one third of the patients and was predicted by the presence of angiographic multivessel disease and iatrogenic vessel dissection or mural hematoma. These patients had worse ischemic outcomes. More research is needed to evaluate the clinical implications of CTO-PCI related PMI.

Figure 1. Differences between groups - variables of interest (unvariate analysis)

	Non PMI patients (64,3%; n=74)	PMI patients (35,7%; n=41)	p-value
Glomerular filtration rate (ml/min/1.73m2)*	88.5±29.9	71.6±25.0	0.003
Troponin levels (nanogram/milliliter)	0.07±0.04	1.84±4.80	0.002
Procedure duration (minutes)	59.6±29.6	77.3±39.9	0.008
Fluoroscopy duration (minutes)	29.0±18.1	40.0±24.6	0.007
Retrograde technique	2.7% (2/74)	14.6% (8/41)	0.024
Multi-vessel disease (≥2 vessels)	68.9% (51-74)	82.9% (34/41)	0.123
Calcification (J-CTO score)	20.8% (11/53)	45.8% (11/24)	0.031
Total stent lenght (millimeters)	39.9±20.5	49.8±22.5	0.019
Procedural Complications	2.7% (2/74)	29.3% (12/41)	0.001
- Coronary perforation	1.4% (1/74)	7.3% (3/41)	0.129
- Coronary dissection / mural hematoma	1.4% (1/74)	24.4% (10/41)	0.001
1-year Major Cardiovascular events	4.1% (3/74)	19.5% (8/41)	0.016
- Cardiovascular death	2.7% (2/74)	0.0% (0/41)	0.537
- Non-fatal myocardial infarction	0.0% (0/74)	7.3% (3/41)	0.043
- Target lesion revascularization	1.4% (1/74)	14.6% (8/41)	0.008

PMI - Periprocedural myocardial lesion; *Cockcroft-Gault equation

Figure 2. Risk model for periprocedural myocardial injury prediction



Area under the curve = 0.801
(0.628-0.974, p=0.008)

Hosmer-Lemeshow, p=0.72

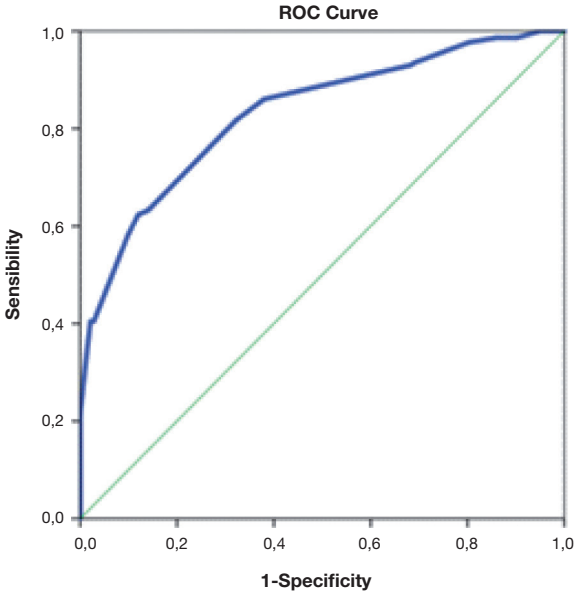
CO 20 Figure

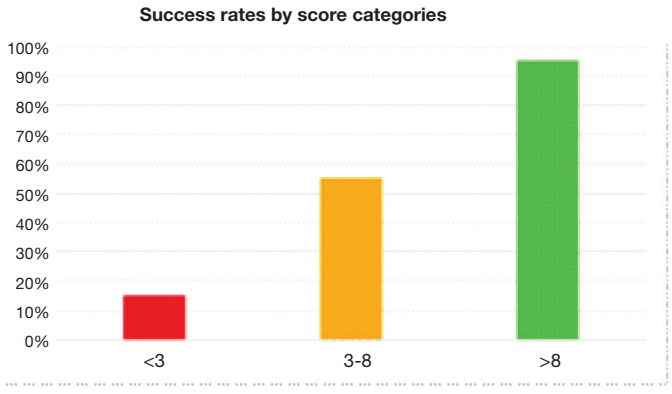
CO 21. CTO-ABCDE SCORE: A NEW PREDICTOR OF SUCCESS IN CTOS

Inês Aguiar Ricardo, Pedro Cardoso, Joana Rigueira, Miguel Nobre-Menezes, Pedro Carrilho, Eduardo Infante-Oliveira, Cláudia Jorge, Diogo Torres, José Marques da Costa, José Duarte, Fausto J. Pinto, Pedro Canas da Silva

Serviço de Cardiologia, Departamento Coração e Vasos, CHULN, CCUL, Faculdade de Medicina, Universidade de Lisboa, Lisboa.

Introduction: The selection of patients for angioplasty (PCI) for chronic occlusion (CTO) is crucial for the success of the procedure. The intention is to identify independent predictors of success in PCI for CTOs, in order to create a score of good acuity.
Methods: Unicentric observational recording of PCI in CTOs. Demographic and clinical characteristics of the patients and anatomical characteristics of the coronary disease were registered. To identify predictors of success, linear regression analysis was used for quantitative variables and logistic regression for qualitative variables. Based on the results, a predictive success score was constructed. Its acuity was verified by analysis with the Receiver Operator Curve (ROC curve).
Results: 377 interventions were performed in 334 patients (68 ± 11 years, 75% men), success rate per patient was 65% and per procedure was 60%. In a univariate analysis, the following were predictors of success: absence of active smoking (OR: 2.02, 95%CI: 1.243-3.29, p = 0.005); presence of a sharp stump (C) (OR: 5.2, 95%CI: 2.7-10.2, p < 0.001), absence of significant intraocclusion tortuosity (To) (OR: 6.44, 95%CI: 3 (OR: 1.95, 95%CI: 1.08-3.51, p = 0.026), absence of significant calcification (C) (OR: 3, p < 0.001), absence of bifurcation (95%CI: 3.10-5.41, p < 0.001), anterior descending target vessel (D) (OR: 1.9, 95%CI: 1.0-3.5, p = 0.048), and extension of the occlusion < 20 mm (E) (OR 3.00, 95%CI: 1.69-5.3, p < 0.001). In a multivariate analysis, only anatomical factors were independent predictors of success, with no clinical predictors. Based on these data an anatomical score was created with high acuity (AUC 0.831), with values between 0 and 11. A score < 3 was associated with a reduced success probability (15%), a score between 3-8 with intermediate probability (55%), and a score > 8 high probability of success (95%).
Conclusions: in patients undergoing CTO PCI, only the anatomical characteristics of the disease are predictive of success when adjusted for clinical factors. The creation of a success score of good acuity may allow to select the cases that can be intervened by any operator, those in which an operator dedicated to occlusions will be desirable, and those in which the





CO 21 Figure

probability of success is extremely low, and should be considered if the case conservative management, surgical revascularization.

Domingo, 28 Abril de 2019 | 11H30-13H00

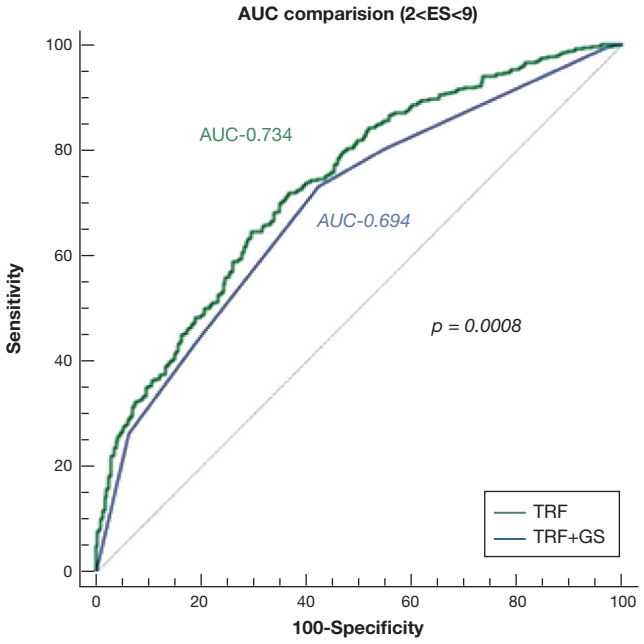
NEPTUNO II | COMUNICAÇÃO ORAL 04 - PREVENÇÃO/REABILITAÇÃO

CO 22. RECLASSIFICATION OF THE INTERMEDIATE GROUP CLASSIFIED ACCORDING TO HEARTSCORE TAKING IN CONSIDERATION INDIVIDUAL GENETIC PREDISPOSITION TO CAD

Andreia Pereira[1], Maria Isabel Mendonça[1], João Adriano Sousa[1], Flávio Mendonça[1], Joel Monteiro[2], Micaela Neto[1], Ana Célia Sousa[3], Eva Henriques[1], Mariana Rodrigues[2], Sofia Borges[3], Ana Isabel Freitas[3], Ilídio Ornelas[1], António Drumond[3], Roberto Palma dos Reis[4]

[1]Hospital Dr. Nélio Mendonça. [2]Hospital Dr. Nélio Mendonça. [3]Hospital Dr. Nélio Mendonça - Hospital Central do Funchal. [4]Faculdade de Medicina da Universidade de Lisboa.

Introduction: Cardiovascular risk stratification has included traditional cardiovascular risk factors (TRF) including smoking, diabetes and hypertension adjusted to age and sex. The utility of genetic risk scores (GRS) as predictors of cardiovascular risk remains inconclusive.
Objectives: Evaluate the ability of a multi-locus GRS within the intermediate risk subgroup, defined by the European Heart score, to provide additive power to predict coronary artery disease (CAD).
Methods: After applying European SCORE (ES) stratification to a total population of 2703 Portuguese individuals, 639 individuals with 59.0 ± 4.3 years were considered to be at intermediate risk subgroup (2 < ES < 9). A Multiplicative GRS based on 33 genes associated with CAD was determined in the whole population. Multivariate analysis and respective ROC curves and Area Under Curve (AUC) were performed using the TRF and GRS. ROC Curves were compared with DeLong test and Net Reclassification Index (NRI) was determined using R (version 3.2.0).
Results: GRS was an independent predictor for CAD (OR: 2.41; p < 0.0001). Smoking (OR: 3.15; p < 0.0001), Diabetes (OR: 3.19; p < 0.0001), hypertension (OR: 2.20; p = 0.003) were also significantly associated with CAD. AUC increased from 0.694 to 0.734 after adding GRS to TRF. When discriminated by tertiles of GRS, the AUC for TRF was maximum for the 2nd GRS tertile [AUC (TRF) = 0.734] and lower for the 1st and 3rd tertiles (AUC = 0.673 and AUC = 0.671, respectively). NRI showed better increase in the intermediate risk subgroup with 35.2% interpreted as the proportion of patients reclassified to a more appropriate risk category, and 29.4% on the lower risk subgroup.



Comparision of the AUC between the ROC curve with TRF and TRF+GRS in the population of intermediate risk subgroup (2<ES>9).

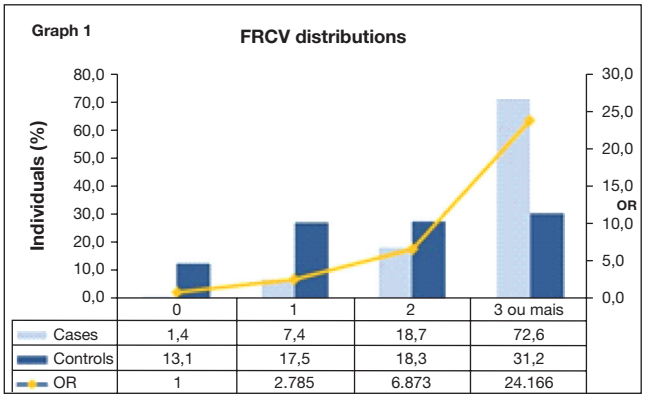
Conclusions: In our population, the GRS increased the predictive value of TRF in the subgroup of patients at intermediate risk by the European score. The predictive value of TRF is lower in patients with higher GRS. In this subgroup, the inclusion of genotyping may be considered for better stratification of cardiovascular risk.

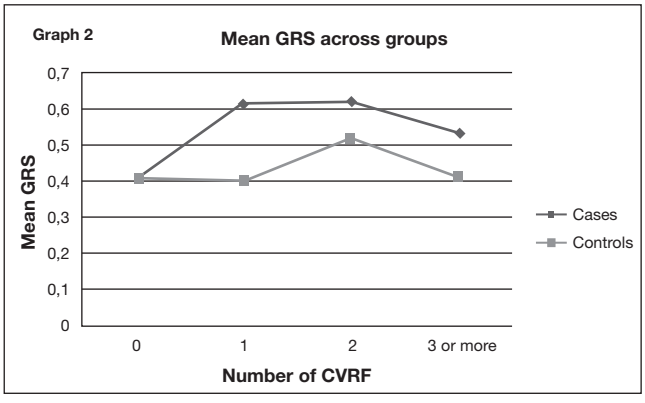
CO 23. THE CONTRIBUTION OF GENETICS TO PREMATURE CAD THROUGH DIFFERENT DEGREES OF LIFESTYLE FACTORS: A MATTER OF RELATIVE SIGNIFICANCE?

João Adriano Sousa[1], Palma dos Reis[2], Andreia Pereira[1], Joel Ponte Monteiro[3], Micaela Neto[1], Flávio Mendonça[1], Ana Célia Sousa[3], Sónia Freitas[1], Graça Guerra[3], Ilídio Ornelas[1], A. Drumond Freitas[3], Isabel Mendonça[1]

[1]Hospital Dr. Nélio Mendonça. [2]Faculdade de Medicina da Universidade de Lisboa. [3]Hospital Dr. Nélio Mendonça - Hospital Central do Funchal.

Introduction: Coronary artery disease (CAD) is a multifactorial process with substantial genetic contribution. However, genetic predisposition among patients with a different number of lifestyle factors and premature CAD, remains a complex and thoroughly unexplored topic.





CO 23 Figure

Methods: A case-control prospective study was conducted with 1075 patients from the GENEMACOR study population, under 50 years-old (555 cases, 86.8% male, mean age 44.1 ± 4.9 years and 520 controls, 86.2% male, mean age 44.3 ± 4.8 years). Univariate analysis addressed the association of different modifiable risk factors with premature CAD. Genetic risk score (GRS) was computed comprising 33 genetic risk variants in a multiplicative method. GRS was compared according to the number of traditional risk factors and risk for premature CAD was estimated and its independent predictive value estimated by logistic regression.
Results: 72.6% of patients had ≥ 3 risk factors *versus* 31.2% of controls ($p < 0.0001$). In comparison with having no risk factors (rf), patients with 1 rf had an OR of 2.79 (1.19-6.53; $p = 0.015$), patients with 2 risk factors had a OR of 6.87 (3.03-15-57, $p < 0.0001$) and patients with 3 modifiable risk factors had a OR of 24.17 (10.87-53.73, $p < 0.0001$) - graph 1. In this young population, mean GRS level was consistently higher among patients with coronary artery disease and lower in a healthy population (0.6 ± 0.6 *versus* 0.4 ± 0.4, $p < 0.0001$, respectively) - graph 2. GRS in multivariate analysis, proved to be an independent predictor for premature CAD (OR: 1.71, CI95%: 1.25-2.34, $p = 0.001$), but a slight decrease of risk estimated by all risk factors was noticed.
Conclusions: In our population, GRS was an independent predictor for premature CAD. In young patients with ≥ 3 risk factors, genetics play a less decisive role in the development of CAD. Even in young patients, modifiable risk factors should be addressed aggressively as they may represent a higher burden than genetic predisposition itself.

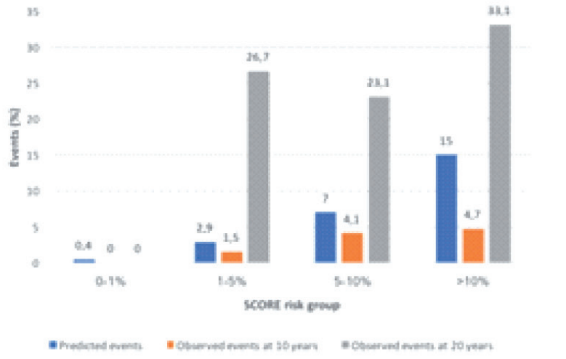
CO 24. PREDICT TO TREAT: THE SCORE AND THE ASCVD RISK SCORES IN A PRIMARY PREVENTION PORTUGUESE POPULATION

Cátia Santos Ferreira, Rui Baptista, Manuel Oliveira-Santos, Patrícia Alves, Ana Vera Marinho, Célia Domingues, Patrícia Dias, José Pereira de Moura, Lino Gonçalves

Centro Hospitalar e Universitário de Coimbra / Hospitais da Universidade de Coimbra.

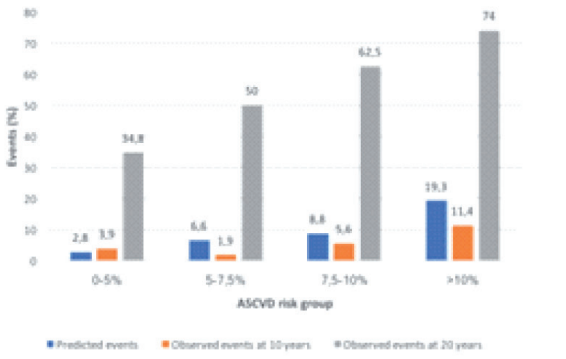
Introduction: The Systematic COronary Risk Evaluation (SCORE) and theAtherosclerotic Cardiovascular (CV) Disease risk (ASCVD) calculators are recommended tools to assess CV risk and to make therapeutic options. We aimed to assess the performance of both risk systems in a Portuguese population, at the predefined 10-year landmark and at a longer, 20-year landmark.
Methods: We prospectively included 489 CV events-naïve patients treated at a Lipidology Clinic from 1994 to 2007. Patients < 40 years were excluded.

A. SCORE Risk System



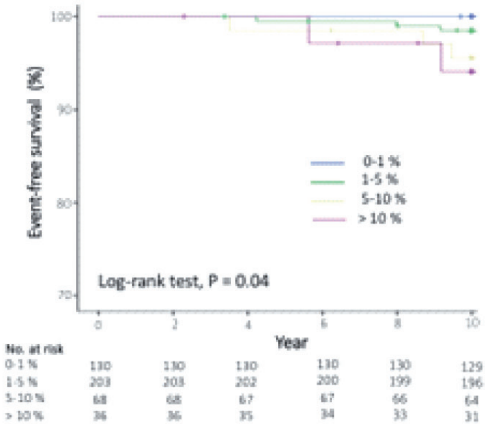
Risk groups	Predicted event rate	Observed event rate at 10 years	P value	Observed event rate at 20 years	P value
0-1%	0,4	0	<0.001	0	<0.001
1-5%	2,9	1,5	<0.001	26,7	<0.001
5-10%	7	4,1	<0.001	23,1	<0.001
>10%	15	4,7	<0.001	33,1	<0.001

B. ASCVD Risk System

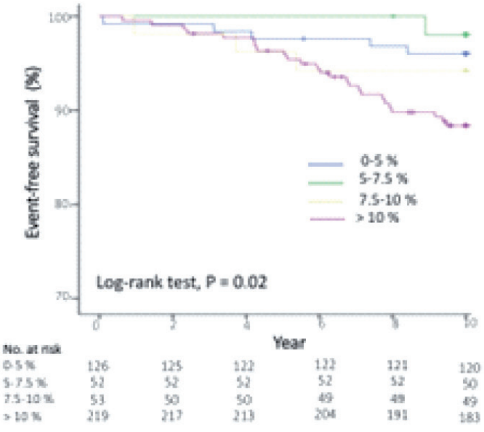


Risk groups	Predicted event rate	Observed event rate at 10 years	P value	Observed event rate at 20 years	P value
0-5%	2,8	3,9	<0.001	34,8	<0.001
5-7,5%	6,6	1,9	<0.001	50	<0.001
7,5-10%	8,8	5,6	<0.001	62,5	<0.001
>10%	19,3	11,4	<0.001	74	<0.001

C. Kaplan-Meier Estimates of SCORE Risk System



D. Kaplan-Meier Estimates of ASCVD Risk System



CO 24 Figure

The median (interquartile range) follow-up time was 14 (11-17) years. Outcomes were matched to those of the risk systems: CV death for SCORE and a combined endpoint of major adverse cardiovascular events (MACE): CV death, myocardial infarction (MI) and stroke for ASCVD. Baseline SCORE (for low-risk countries) and ASCVD risks were calculated. The cohort was stratified in groups based on the SCORE (1%, 5% and 10%) and the ASCVD risk cut points (5%, 7.5% and 10%).

Results: The mean age was 55 ± 10 years; 62% were male. Regarding risk factors, 18% were smokers, 16% type 2 diabetics and 54% were on anti-hypertensive drugs. Mean arterial systolic pressure was 139 ± 20mmHg and mean total cholesterol 272 ± 77mg.dL^{-1}. The 10-year incidence rate of CV death, MI and stroke was 1.8%, 4.1% and 3.1%, respectively. The median 10-year CV death risk, estimated by SCORE, was 2.7% (P_{25-75}: 0.7-5.1%). The low-risk patients (SCORE < 1%) experienced no events at 10 years; in the other risk groups, the observed event rate was slightly lower than estimated (figure). Regarding ASCVD, the median estimated MACE risk was 9.4% (P_{25-75}: 4.2-18.9%). Surprisingly, in the group of CV risk < 5%, the observed rate was higher than the expected one (3.9% *versus* 2.8%, p < 0.001). In the remaining risk groups, the observed rate was inferior to the estimated rate (figure). The area under the ROC curve (AUC) for SCORE was 0.81 (p = 0.003) (endpoint CV death) and 0.64 for ASCVD (p = 0.006) (endpoint MACE). Both calculators were well calibrated. At the 20-year landmark analysis, no events were registered in the low-risk SCORE stratum. In the remaining groups of both risk scores, an acceleration of the CV risk was seen, with observed rates 3- to 7-fold higher than the estimated ones for 10 years (figure).

Conclusions: In a Portuguese cohort, both the SCORE and the ASCVD systems are well calibrated for CV risk prediction and discriminate correctly the patients. Our results strongly support their use for CV risk assessment.

CO 25. LP(A) LEVELS ARE ASSOCIATED WITH ATHEROSCLEROTIC PLAQUE INSTABILITY AND WITH MACE FOLLOWING ACUTE MYOCARDIAL INFARCTION

Joel Ponte Monteiro[1], Maria Isabel Mendonça[2], Andreia Pereira[2], João Adriano Sousa[2], Flávio Mendonça[2], Micaela Neto[2], Ana Célia Sousa[1], Eva Henriques[2], Sónia Freitas[3], Mariana Rodrigues[3], Ilídio Ornelas[2], António Drumond[1], Roberto Palma Dos Reis[4]

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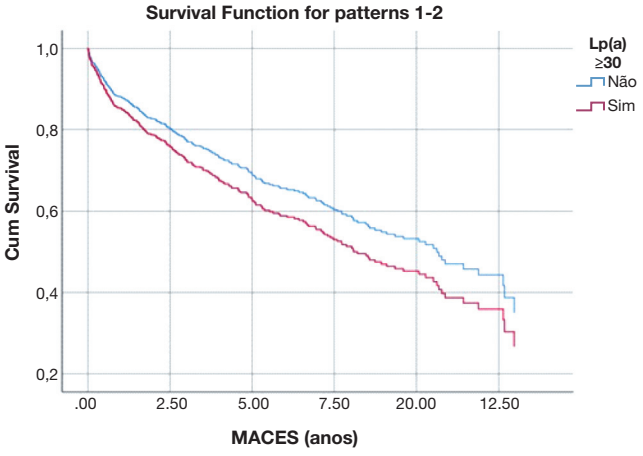
Introduction: Previous work has shown that LPA gene variant increases its expression as well as plasma levels of Lp(a). Elevated levels of this lipoprotein have been associated with earlier events in patients after acute myocardial infarction (AMI).



Objectives: Investigate in our population whether high plasma levels of Lp (a) are associated with the onset of cardiovascular events (MACE) and whether event-free time is lower than in those with low Lp (a) levels.

Methods: This study included 1181 patients with history of AMI from the GENEMACOR population. Traditional risk factors (TRF) such as smoking, dyslipidemia, diabetes, family history, hypertension, body mass index, alcohol consumption, physical inactivity and others considered new risk factors were studied (creatinine clearance, pulse wave velocity, homocysteine, fibrinogen, Lp (a), APO B, and PCR (as)). Bivariate analysis was used, followed by multivariate Cox regression, adjusted for all potential confounding factors, calculating the risk of CAD. Finally, a Kaplan Meier analysis was performed to estimate event-free time in coronary patients with high and low plasma levels of Lp (a) (≥ 30 mg/dL and < 30 mg/dL, respectively).

Results: Patients with high Lp (a) levels had a HR of MACE of 1.33 (95%CI: 1.06-1.65; p = 0.012) after Cox regression. At the end of the mean follow-up of 4.5 ± 3.6 years, 62.7% of patients with Lp (a) < 30 had MACE *versus* 77.8% of patients with Lp (a) ≥ 30.

Conclusions: In our population, higher Lp (a) levels in patients with a history of AMI increases the risk of MACE and reduces event-free time. We can hypothesize that the increase of Lp (a) plasma levels influences the destabilization of the atherosclerotic plaque increasing its vulnerability. A better understanding of the genetic regulation of Lp (a) may lead to new pharmacological targets in the prevention of events in patients with an AMI.

CO 26. LIPOPROTEIN AS A CARDIOVASCULAR RISK FACTOR WHEN CHOLESTEROL LDL IS CONTROLLED

Marina Raquel Gomes Santos[1], Andreia Pereira[1], Adriano Sousa[1], Flávio Mendonça[1], Micaela Neto[1], Joel Monteiro[2], Ana Célia[2], Mariana Rodrigues[2], Sónia Freitas[2], Ilídio Ornelas[1], António Drumond[2], Palma dos Reis[3], Isabel Mendonça[2]

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Introduction: Coronary artery disease (CAD) remains a leading cause of morbidity and mortality worldwide, despite optimized therapy. According to several studies, the plasma level of LDL cholesterol (LDL-C) is strongly associated with atherosclerosis, and its reduction with statins has led to a decrease in the incidence of CAD. However, some studies show that the residual cardiovascular risk of some individuals remains high even with controlled LDL-C levels, so other factors, including lipoprotein a (Lpa), appear to be responsible for this phenomenon. Despite recognition of the role of Lpa as an independent risk factor for CV events, the medical knowledge is still limited and Lpa is rarely appreciated.

Objectives: To evaluate Lpa as a risk factor for increased risk of major adverse cardiovascular events (MACE) when LDL-C < 100mg/dL in CAD patients.

Methods: Study analyses of 1607 subjects selected from GENEMACOR study population, with at least one > 75% coronary stenosis by angiography (median age 53.3 ± 8 and 78.9% men): 689 had LDL-C < 100mg/dL (median age 54.1 ± 7.7 and 76.4% men). χ^2 and Student *t*-tests were used to analyze the demographic, laboratorial, angiographic and anthropometric characteristics of the population according to Lpa level. LDL-C was determined at least a month after angiography under maximum statin therapy. Lpa was determined by immunoturbidimetry, and a level superior to 30 mg/dL was considered high. Adverse cardiovascular events (MACE) was adjudicated by cox regression analysis, with a mean follow-up of 4.5 ± 3.6 years.

Results: In our population Lpa > 30mg/dL was associated with increased risk of MACE (OR: 1.572, 95%CI: 1.1-2.2, p = 0.015). Patients with more adverse events were more sedentary (p = 0.007), diabetic (p = 0.063), had inferior levels of HDL-C (p = 0.001), superior levels of ApoB (p = 0.018) and of homocysteine (p = 0.05). 32.1% patients with Lpa > 30mg/dL *versus* 23.1% patients with Lpa < 30mg/dL had MACE (p = 0.015) had more MACE, by cox analyses.

Conclusions: In our population in patients under statin therapy with controlled LDL (< 100mg/dL) higher Lpa levels were associated with adverse prognosis and higher occurrence of MACE. To date, there are no drugs available for the reduction of Lpa, so new drugs towards Lpa levels may indeed improve prognosis even on patients under statins.

CO 27. GANHOS PROPORCIONADOS PELO PROGRAMA DE REABILITAÇÃO CARDÍACA NA CAPACIDADE FUNCIONAL E NA QUALIDADE DE VIDA RELACIONADA COM A SAÚDE

Luís Moreno, Anaí Durazzo, Gustavo Sá Mendes, Sofia Santos, Mónica Neto, Miguel Mendes

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

Introdução: Os programas de reabilitação cardíaca (PRC) condicionam ganhos funcionais cujo impacto na Qualidade de Vida Relacionada com a Saúde (QdVRS) nem sempre é percecionado positivamente pelos participantes.
Objetivos: Os objetivos deste trabalho foram quantificar os ganhos condicionados pelo PRC em termos de capacidade funcional (treino aeróbio e treino da força, prova de esforço cardiorespiratória (PECR) e na QdVRS considerando os seus diferentes domínios (global, físico e emocional).
Métodos: Foram revistos os registos clínicos referentes ao treino aeróbio e da força muscular, PECR e QdVRS de todos os participantes no nosso PRC entre Março de 2016 a Setembro de 2018. Foram excluídos os participantes que não realizaram PECR máxima (QR > 1,05) ou em que não estavam disponíveis dados dos Questionários EuroQoL pré e pós programa, os que não efetuaram os exercícios-padrão do treino aeróbio e da força, assim como os que tiveram assiduidade inferior a 75% no PRC. Considerou-se a marcha em tapete rolante como modelo de treino aeróbio, avaliada pelo trabalho realizado (produto do peso corporal pela distância vertical) e o volume de exercício no *lateral pulldown* (produto do número de repetições pela carga) como referência do treino da força. Para avaliar a capacidade funcional a nível submáximo e máximo utilizou-se, respetivamente, o VO_2 ao nível dos limiares (VT1 e VT2) e do pico de esforço. A QdVRS foi avaliada através do EuroQoL nos seus componentes físico, emocional e global.
Resultados: Foram selecionados para a análise 83 participantes, 89% do sexo masculino (n = 75), média de idade de 56 ± 11,8 (23-84) anos, NYHA classe III em 18% (n = 15). Etiologia isquémica em 88% (n = 74). Verificaram-se ganhos ao nível do trabalho aeróbio de 10.199 para 50.429 kg (p = 0,000), e no volume de exercício na força de 132 ± 275 para 1.052 ± 350 kg (p = 0,01), no EuroQoL global de 26,6 ± 8,4 para 31,3 ± 9,4 (p = 0,001), físico de 19,1 ± 6,8 para 22,4 ± 7,0 (p = 0,02) e emocional de 8,5 ± 5,9 para 9,5 ± 3,8 (p = ns). Nos parâmetros da PECR, verificou-se ganho ao nível do VT1 de 12,8 ± 2,9 para 13,8 ± 3,8 (p = 0,048) e tendência de ganhos ao nível do VT2 e do VO_2 de pico.
Conclusões: O programa de reabilitação cardíaca proporcionou ganhos significativos nos dois componentes do treino físico (aeróbio e força muscular), tolerância ao esforço ao nível sub-máximo, com repercussão significativa nos domínios global e físico da QdVRS avaliada pelo EuroQoL.

CO 28. CARDIORESPIRATORY OPTIMAL POINT AS A PREDICTOR OF OUTCOMES IN PATIENTS ENROLLED IN A CARDIAC REHABILITATION PROGRAM

Alexandra Castelo, Pedro Rio, Ana Sofia Silva, Sandra Alves, Pedro Garcia Brás, Vera Vaz Ferreira, Tânia Branco Mano, João Reis, Rita Moreira, Inês Rodrigues, Tiago Mendonça, Luís Morais, Madalena Cruz, António Valentim Gonçalves, Rui Cruz Ferreira

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

Introduction: The cardiopulmonary exercise test (CEPT) allows the evaluation of peak and sub-maximal tolerance to the effort, giving us relevant information for clinical decisions. Evidence has emerged that Cardiorespiratory Optimal Point (COP) > 30, calculated as the minimum ratio between ventilation and oxygen (VE/VO_2) may be a good predictor of events.
Objectives: The aim was to characterize the population of the cardiac rehabilitation (CR) appointment that performed CEPT, evaluate COP as a predictor of events and determine the best cut off for our population.
Methods: Retrospective analysis of CR appointment patients who performed CEPT between 2014 and 2017 in a single center. We compared the mortality and hospitalizations according to COP and COP > 30. We established the appropriate Cut Off for our population and compared the same with the occurrence of events.
Results: 207 patients (P) (83.6% men) were included, with a mean age of 57 years. The mean COP was 23.6 ± 5.8 (IC: 24.06-25.66). 15.9% P had COP > 30 and 33.8 had COP < 22. The majority (96.6%) had a cardiovascular disease or risk factors and 99% were medicated. The majority (87.9%) was referred for CR with isquemic cardiopathy (AMI or stable or unstable coronary disease), 9.2% with heart failure (HF) and 9.2% with valvulopathy. 6.9% P died for any cause, 33.8% had an hospitalization (78.6% from a cardiovascular reason). Higher COP values correlated with higher number of all causes hospitalizations (H) (CC = 0.123, p = 0.032), cardiovascular H (CC = 0.123, p = 0.032), heart failure H (CC = 0.189, p = 0.001) and device placement H (CC = 0.173, p = 0.003). COP did not correlate with mortality (p = 0.453). The cut off of 30 only correlated with HF hospitalization in this population (OR = 5, IC: 1.429-17.494, p = 0.006). In our population, COP was a good predictor for all cause H and heart failure H (AUC = 0.8 in both). A cut off of 25 had a sensitivity (S) of 78% with a specificity (E) of 70% for all cause hospitalization and S 73% and E 68% for heart failure H. Values above this cut off correlate with more all cause H (OR: 1.928, IC: 1.06-3.507, p = 0.031) and heart failure H (OR: 5.63, IC: 1,44-21.94, p = 0.006). COP was an independent predictor of all-cause H (p = 0.018) and heart failure H (p < 0.0001). Other independent predictors of HF hospitalization are BNP (p = 0.0011) and ejection fraction (p < 0.0001).
Conclusions: COP was a good independent predictor of all-cause hospitalizations and HF hospitalization. In our population the cut off 25 for COP had the greatest S and E for predicting events. In our population this factor was not a good predictor of mortality.

Domingo, 28 Abril de 2019 | 14H30-16H00

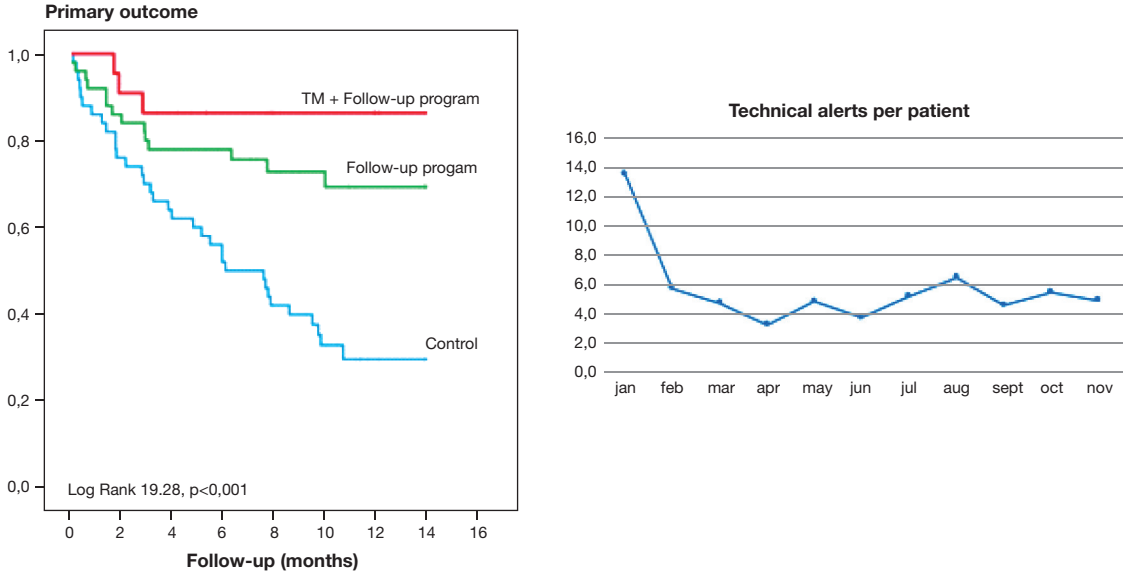
NEPTUNO I | COMUNICAÇÃO ORAL 05 - INSUFICIÊNCIA CARDÍACA

CO 29. CLINICAL IMPACT OF NON-INVASIVE TELEMONITORING IN PATIENTS WITH CHRONIC HEART FAILURE

Afonso Nunes Ferreira[1], João R Agostinho[2], Joana Rigueira[2], Inês Aguiar-Ricardo[2], Rafael Santos[2], Tiago Rodrigues[2], Nelson Cunha[2], Pedro Silvério António[1], Fátima Veiga[1], Mónica Mendes Pedro[2], Fausto J. Pinto[2], Dulce Brito[2]

[1]Centro Hospitalar de Lisboa Norte, EPE / Hospital de Santa Maria.
[2]Serviço de Cardiologia, Departamento Coração e Vasos, CHULN, CCUL, Faculdade de Medicina, Universidade de Lisboa, Lisboa.

Introduction: Non-invasive remote monitoring of patients with heart failure (HF) may be useful in the early detection of signs and symptoms of decompensation, allowing therapeutic optimization and avoiding rehospitalization.
Objectives: To assess the efficacy of telemonitoring (TM) integrated in a protocol-based follow-up program (PFP) of patients with HF.
Methods: Prospective and single center study of patients (pts) discharged from hospital after an episode of decompensated HF, with nested-case control design. Three groups of pts were considered: a group of 50 pts integrated in a PFP after hospital discharge, another group of 22 pts who integrated the PFP together with a telemonitoring program (TM), and a control group of 50 pts who were discharged before the PFP had been put into practice. Pts in the 3 groups were matched according to age, NYHA at discharge and ejection fraction (EF). The TM group included only patients with HF and reduced EF plus ≥ 1 HF hospitalization in the last year. In these pts, biodata were evaluated remotely and generated clinical alerts whenever altered in relation to the limits defined for each patient, with evaluation by the clinical team 24/7. TM success was assessed by primary outcome (death or hospitalization) at 12 months, using Cox regression and Kaplan-Meier survival analysis.



CO 29 Figure

Results: Patients included concomitantly in PFP and TM were 66 ± 9 years-old, 72% were male, median EF 26% (IQR 20-31), median NTproBNP 2123 pg/mL (IQR 592-4757), 82% were in NYHA II or III, 55% had dilated cardiomyopathy, and the median follow-up time was 244 days (IQR: 216-361). During the TM program, alerts were generated mainly because of changes in heart rate and systolic blood pressure. However, only in 3% were clinical alerts confirmed. During the program there has been a significant reduction in technical alerts per patient, which were due to difficulties in the measurement or in transmission of the biodata, demonstrating a learning process of the patients, and also decreasing the team workload. At 12-months of follow-up, a higher success rate regarding the primary outcome was observed in the TM group *versus* the control group (86% *versus* 32%, HR: 0.17, 95%CI: 0.05-0.56, p = 0.001), with a relative risk reduction (RRR) of 83%. This reduction was superior to that demonstrated with the PFP alone (72% *versus* 32%, HR: 0.36, 95%CI: 0.19-0.67, p = 0.001), which presented RRR of 64%. Similar results were found in rehospitalization for HF (log-rank p = 0.016), all-cause rehospitalization (log-rank p = 0.016) and death (log-rank p < 0.01).

Conclusions: When integrated into a structured clinical follow-up program, TM is associated with a marked reduction in mortality, readmissions for HF, and rehospitalization for any cause, compared to usual follow-up. This study further suggests that the addition of a TM program to a protocol-based follow-up program of pts with HF can improve results already considered optimized.

CO 30. PROGNOSTIC CAPACITY AND OPTIMAL CUT-OFF VALUE OF PEAK OXYGEN CONSUMPTION IN OBESE PATIENTS WITH HEART FAILURE

Rita Ilhão Moreira, Tiago Pereira da Silva, António Valentim Gonçalves, Tânia Mano, Vera Vaz Ferreira, Tiago Mendonça, Madalena Coutinho Cuz, Pedro Rio, Joana Feliciano, Rui Soares, Rui Cruz Ferreira

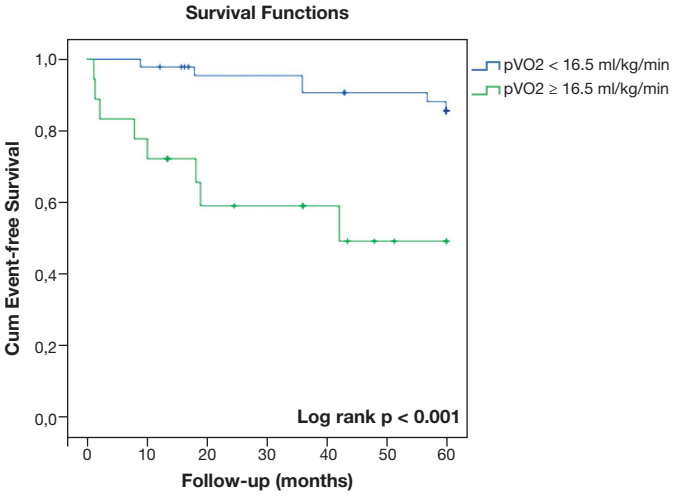
Centro Hospitalar de Lisboa Central, EPE / Hospital de Santa Marta.

Introduction: The optimal cut-off value of peak oxygen consumption (pVO_2) for determining prognosis and helping guide timing of heart transplantation in obese patients (pts) with heart failure (HF) and reduce ejection fraction is still debatable. International guidelines suggest that a higher lean body mass-adjusted pVO_2 could serve as an optimal threshold to guide prognosis, however this is weakly supported by evidence (Class IIb, Level of Evidence B).

Objectives: We sought to evaluate the accuracy of pVO_2 to guide prognosis in obese pts and define the optimal cut-off value in this population.

Methods: Ambulatory pts with symptomatic HF and left ventricular ejection fraction (LVEF) ≤ 40%, followed in our center, prospectively underwent a baseline comprehensive evaluation including cardiopulmonary exercise testing (CPET) parameters. The combined endpoint was cardiac death, urgent heart transplantation or need for mechanical circulatory support. All pts were followed-up for 60 months. Pts were divided according to body mass index (BMI ≤ 30 and > 30 kg/m²). pVO_2 was normalized for body mass and in obese pts adjusted to lean body mass. Association of pVO_2 and combined endpoint was investigated by ROC curve and an optimal cut-off was calculated by means of the Youden-Index.

Results: In the 282 enrolled pts (75% male, 54 ± 12 years, LVEF 27 ± 7%), 22.7% had BMI > 30 kg/m². Obese pts had higher LVEF (28 ± 1% *versus* 26 ± 2%, p = 0.004) and higher Heart Failure Survival score (p = 0.048). There were no statistically differences regarding CPET parameters. Combined endpoint occurred in 69 pts and higher BMI was associated with better prognosis (HR: 0.941, 95%CI: 0.886-0.998, p = 0.043). pVO_2 was an accurate predictor of adverse outcomes in obese and non-obese pts (AUC: 0.725, p = 0.011 and AUC: 0.786, p < 0.001, respectively). In non-obese pts, an optimal cut-off was calculated at 14.5 mL/kg/min (sensibility 56%, specificity 94%). In obese pts, an optimal cut-off was calculated at 16.5 mL/kg/min (sensibility 57%, specificity 80%), which was associated with adverse outcomes even after correction for HFSS (HR: 3.501, 95%CI: 1.169-12.642, p = 0.046). In obese pts, Kaplan-Meier analysis revealed an event free survival for subjects with < 16.5 and ≥ 16.5 mL/kg/min of 55.6% and 87.0%, respectively (Fig.).



Conclusions: Peak oxygen consumption was an accurate predictor of adverse outcomes in HF obese pts. Higher cut-off values should serve as an optimal threshold to guide prognosis in those pts.

CO 31. PROGNOSTIC OF CARDIOPULMONARY EXERCISE TEST IN HEART FAILURE PATIENTS WITH ATRIAL FIBRILLATION

António Valentim Gonçalves[1], Tiago Pereira-da-Silva[1], Rui Soares[1], Rita Ilhão Moreira[1], Joana Feliciano[1], Pedro Rio[1], Ana Abreu[2], João Reis[1], Tiago Mendonça[1], Tânia Mano[1], Madalena Cruz[1], Pedro Brás[1], Alexandra Castelo[1], Vera Ferreira[1], Rui Cruz Ferreira[1]

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[2]Centro Hospitalar de Lisboa Norte, EPE / Hospital de Santa Maria.

Introduction: Atrial fibrillation (AF) is associated with increasing mortality in Heart Failure (HF) patients. Whether AF patients can be precisely stratified by cardiopulmonary exercise test (CPET) cut-offs for Heart Transplantation (HT) selection is not established.
Objectives: The aim of the study was to compare the prognostic importance of CPET parameters in HF patients with AF *versus* sinus rhythm (SR).
Methods: The study was a prospective evaluation of 274 consecutive HF patients with left ventricular ejection fraction ≤ 40%. The primary endpoint was a composite of cardiac death or urgent HT in the first year of follow-up. Secondary endpoints included all-cause mortality, sudden cardiac death and death for worsening HF. For the purpose of selecting patients who would benefit from early selection for HT, the guideline recommended cut-off value of peak VO_2 (≤ 12 mL/kg/min) and VE/VCO_2 slope (> 35) for HT selection were compared for positive and negative predictive value (PPV and NPV, respectively) of the primary endpoint in AF and sinus rhythm (SR) patients. Patients with elective HT during the follow-up period were excluded from the analysis.
Results: There were 51 patients in the AF group and 223 in the SR group. Primary outcome was more frequent in the AF group (17.6% *versus* 8.1%, p 0.038), as well as all-cause mortality (17.6% *versus* 6.3%, p 0.008) and sudden cardiac death (7.8% *versus* 2.2%, p = 0.043). Table represents the area under the curve of each parameter analysed. The cut-off value of peak VO_2 for HT selection showed a PPV of 100% and an NPV of 95.5% for the primary outcome in the AF group, while the cut-off value for VE/VCO_2 slope showed lower values of PPV (33.3%) and similar NPV (92.3%).

Conclusions: Despite the fact that AF carries a worse prognosis for heart failure patients, a peak VO_2 ≤ 12 mL/kg/min can precisely stratify this high-risk group with a higher PPV than VE/VCO_2 slope.

CO 32. RESTING HEART RATE, EXERCISE CAPACITY AND OUTCOMES IN HEART FAILURE PATIENTS: A COMPARISON OF ATRIAL FIBRILLATION AND SINUS RHYTHM

Rita Ilhão Moreira, Tiago Pereira Silva, António Valentim Gonçalves, Madalena Coutinho Cruz, Tiago Mendoça, Tânia Mano, Pedro Brás, Alexandra Castelo, Joana Feliciano, Rui Soares, Rui Cruz Ferreira

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

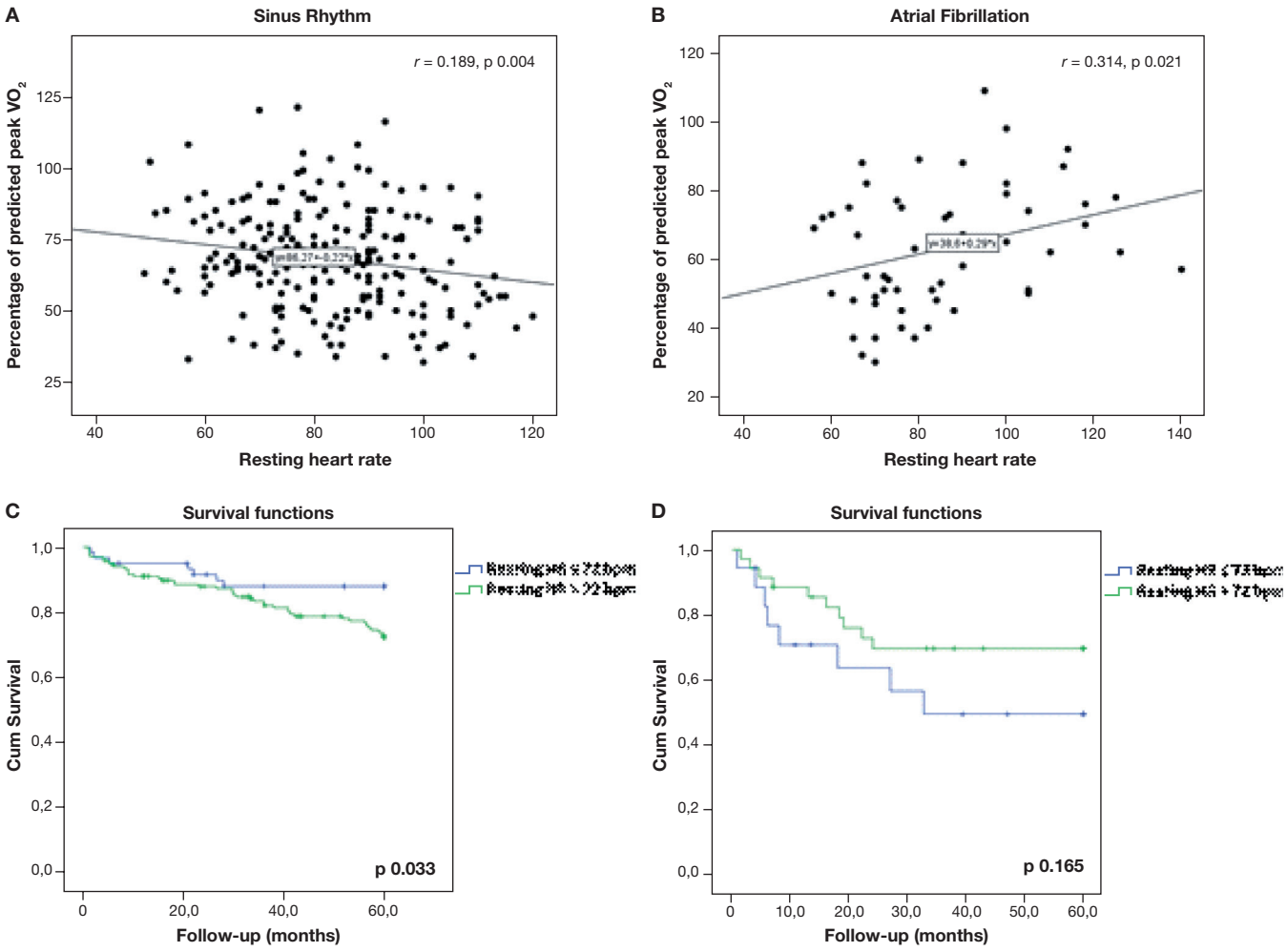
Introduction: Higher resting heart rate (HR) is associated with lower exercise capacity and worse prognosis in patients (pts) with heart failure (HF). However, recent studies question this relationship in HF pts in atrial fibrillation (AF).
Objectives: To examine and compare the relationships between resting HR, exercise capacity and outcomes in HF pts in AF and sinus rhythm (SR).
Methods: Ambulatory pts with symptomatic HF and left ventricular ejection fraction ≤ 40%, followed in our center, prospectively underwent a baseline comprehensive evaluation including clinical, laboratorial, electrocardiographic, echocardiographic, and cardiopulmonary exercise testing parameters. Pts were divided according to rhythm status into SR and AF group. All pts were followed for 60 months and the combined endpoint was defined as cardiac death, urgent heart transplantation or need for mechanical circulatory support.
Results: In the 282 pts enrolled (75% male, 54 ± 12 years, LVEF 27 ± 7%), 19.1% had AF. As compared with pts in SR, AF pts were older (p = 0.002), more predominantly men (p = 0,029), had higher BNP levels (p = 0.027) and lower Heart Failure Survival score (p = 0.001). There were no differences regarding maximal effort (respiratory exchange ratio), but AF group had lower peak oxygen consumption (VO_2) (p = 0.001) and higher ventilation equivalent of carbon dioxide (VE/VCO_2) slope (p = 0.002). Percentage of predicted pVO_2 was a strong predictor of adverse outcomes in both SR and AF pts (AUC: 0.798, p < 0.001 and AUC: 0.834, p < 0.001, respectively). In the SR group, there was an inverse relationship between resting HR and exercise capacity (fig. A). In the AF group, this relationship was reversed as higher resting HR was associated with better exercise tolerance (fig. B). Regarding

Table 1 Relationship beteween CPET[1] prognostic parameters and primary outcome

	All		SR		AF		
CPET parameters	Wald; HR[2]; 95% CI[3]; p	AUC[4]; 95% CI;	Wald; HR; 95% CI p	AUC; 95% CI;	Wald; HR; 95% CI p	AUC; 95% CI;	Comparison of AUCs (SR vs AF) (p-value)
pVo2[5]	31.74; 0.718; 0.640-0.806; <0.001	0.845; 0.759-0.931;	17.56; 0.746; 0.651-0.856 <0.001	0.826; 0.718-0.935;	11.08; 0.681 0.543-0.854 0.001	0.869; 0.713-1.000;	0.336
pVo2 predicted (%)	37.81; 0.903 0.874-0.933 <0.001	0.896; 0.849-0.942;	25.30; 0.902 0.867-0.935 <0.001	0.903; 0.857-0.948;	10.32; 0.914 0.865-0.965 0.001	0.878; 0.764-0.992;	0.393
pVo2 at AT[6]	37.09; 0.664 0.582-0.758 <0.001	0.852; 0.779-0.926;	24.12; 0.675 0.577-0.789 <0.001	0.851; 0.747-0.938;	10.32; 0.665 0.518-0.853 0.001	0.849; 0.711-0.988;	0.492
VE/VCO2 slope	61.648; 1.149; 1.110-1.190 <0.001	0.894; 0.846-0.941;	42.696; 1.150; 1.103-1.200 <0.001	0.906; 0.856-0.955;	13.415; 1.143; 1.064-1.228 <0.001	0.844; 0.711-0.977;	0.264
OUES[7]	25.35; 0.093; 0.037-0.235 <0.001	0.804; 0.704-0.904;	14.682; 0.111 0.036-0.342 <0.001	0.798; 0.681-0.905;	8.322; 0.082; 0.015; 0.448 0.004	0.833; 0.636-1.000;	0.375

1 - cardiopulmonary exercise test; 2 - hazard ratio; 3 - confidence interval; 4 - area under the curve; 5 - peak O2 consumption; 6 - anaerobic threshold; 7 - oxygen efficiency slope

CO 31 Figure



CO 32 Figure

outcomes, the composite endpoint occurred in 24.4% during follow-up. Pts in SR with a resting HR higher than 72 bpm had higher risk of composite outcome than those with lower resting HR (fig. C). In AF pts, resting HR demonstrated an opposite effect for the composite endpoint though it did not achieve statistical significance (fig. D).
Conclusions: The impact of resting HR on exercise capacity and prognosis differed entirely between AF and SR, suggesting that HR control may need to be managed differently for AF and SR in HF pts.

CO 33. HEART FAILURE AND MORTALITY IN ATRIAL FIBRILLATION PATIENTS AFTER CARDIAC RESYNCHRONIZATION THERAPY

Ricardo Costa, Raquel Santos, Maria Trêpa, Marta Oliveira, André Frias, Maria J. Sousa, Carla Roque, A. Pinheiro Vieira, Vítor Lagarto, António Hipólito Reis, Mário Santos, Severo Torres

Centro Hospitalar do Porto, EPE / Hospital Geral de Santo António.

Introduction: Atrial fibrillation (AF) is associated with a diminished response to cardiac resynchronization therapy (CRT) in patients with heart failure with reduced ejection fraction (HFrEF). We aimed to compare the rate of heart failure (HF) hospitalizations and all-cause mortality between patients with and without AF, submitted to CRT.
Methods: We retrospectively studied consecutive HF-patients with left ventricular ejection fraction (LVEF) = 35%, New York Heart Association (NYHA) class ≥ II and QRS = 130 milliseconds submitted to CRT at a tertiary hospital between January 2002 and March 2016. Clinical and outcome data were retrieved by review of the patient's records.
Results: We included 264 patients with 69±10 years old, 68% were male. Pre-CRT rhythm was sinus rhythm (SR) in 50% of the individuals, paroxysmal AF in 17% and permanent AF in 33%. The group of patients with permanent AF had a higher proportion of male gender (p = 0.011) and baseline NYHA class was higher in the two groups with AF (p = 0.005). Biventricular pacing percentage was inferior in patients with permanent AF (SR: 98%, paroxysmal AF: 97%, permanent AF: 93%, p < 0.001). Mean increase of LVEF was similar between groups: 9 ± 11% in SR, 7 ± 10% in paroxysmal AF and 8 ± 11% in permanent AF (p = 0.365). There were no significant differences in NYHA functional class improvement after CRT (SR: 71%, paroxysmal AF: 79%, permanent AF: 71%, p = 0.556). The rate of post-CRT HF hospitalizations, during a median follow-up time of 32.5 (14-64.8) months, was higher in patients with permanent AF, with a 5-year event rate of 36%, while in patients without permanent AF was 21.2% (log-rank test p = 0.016). In multivariate analysis, permanent AF was not independently associated with HF hospitalization (p = 0.737); only post-CRT LVEF (HR: 0.91, 95CI: 0.86-0.96) and post-CRT NYHA class (if ≥ III, HR: 4.33, 95%CI: 1.82-10.31) were independent predictors. Overall post-CRT mortality was 34%, with a median time to event of 40 (12-67.5) months. Survival time was worse in patients with permanent AF (log-rank test p = 0.02). Only age (HR: 1.05, 95CI: 1.02-1.10), diabetes (HR: 2.14, 95%CI: 1.09-4.20) and post-CRT LVEF (HR: 0.93, 95%CI: 0.90-0.97) were independent predictors of death.
Conclusions: Despite the overall worse prognosis compared to patients in SR and paroxysmal AF, permanent AF was not independently associated with HF hospitalization and mortality in this HFrEF cohort undergoing CRT.

CO 34. MARKED CARDIOPULMONARY EXERCISE TEST PARAMETERS IMPROVEMENT FOLLOWING SACUBITRIL-VALSARTAN THERAPY

António Valentim Gonçalves[1], Tiago Pereira-da-Silva[1], Ana Galrinho[1], Pedro Rio[1], Rita Ilhão Moreira[1], Rui Soares[1], João Reis[1], Tânia Mano[1], Joana Feliciano[2], Sofia Silva[1], Sandra Alves[1], Eunice Capile[1], Madalena Cruz Coutinho[1], Pedro Modas Daniel[1], Rui Cruz Ferreira[1]

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

Introduction: Sacubitril/valsartan (LCZ696) had prognosis benefit demonstrated in PARADIGM-HF trial, however less is known about LCZ696 use in a real world Heart Failure (HF) population.The aim of this study is to compare several data before and after LCZ696 therapy, in HF patients.

Methods: The study was a prospective evaluation of 42 chronic HF patients with optimized standard of care therapy and LV ejection fraction ≤ 40%, in which LCZ696 therapy was started as it become available in Portugal. The protocol was approved by the hospital ethics committee. Clinical, laboratorial, electrocardiographica and cardiopulmonary exercise test (CPET) data was gathered in the week before starting LCZ696 therapy and 6 months after therapy.The paired samples t-Test was used for the analysis of the variables. Statistical differences with a p value < 0.05 were considered significant.

Results: Of the 42 patients, 35 (83.3%) completed the six-months follow-up with LCZ696, since 2 patients (4.8%) died and 5 patients (11.9%) discontinued treatment for adverse events (2 patients with acute kidney injury and 3 patients with hypotension). No patient was lost during the follow-up. Mean age was 58.6 ± 11.1 years, with 82.9% of male patients and 42.9% with ischemic etiology for HF. Table represents the mean values for some of the data

Table CO 34. Data before and after 6 monts of Sacubitril-Valsartan treatment (n=35)

	Time 0	6 months	P
Clinical data – characteristics			
Body mass index (kg/m^2)	28.09 ± 3.77	27.90 ± 3.77	0.208
NYHA class	2.54 ± 0.56	1.77 ± 0.60	<0.001
Heart Failure Survival Score	7.20 ± 0.98	7.89 ± 0.92	0.001
Seattle Heart Failure Model (1-year expected survival)	89.66 ± 6.84	88.18 ± 7.76	0.217
MAGGIC score	18.20 ± 5.35	15.60 ± 6.26	0.006
3-years MAGGIC score risk of dying (%)	23.03 ± 11.18	19.20 ± 11.78	0.044
Loop diuretic (Fuoresemide equivalent dose – mg)	43.64 ± 27.59	39.09 ± 26.50	0.191
Beta-blocker (Biosoprolol equivalent dose - mg)	6.88 ± 2.86	7.06 ± 2.80	0.278
Aldosterone receptor antagonist dose (mg)	25.78 ± 9.49	26.58 ± 12.18	0.640
Laboratorial Data			
Hemoglobin (mg/dL)	13.81 ± 1.63	14.03 ± 1.49	0.264
INR	1.41 ± 0.64	1.51 ± 0.91	0.483
Total bilirubin (mg/dL)	0.77 ± 0.33	0.84 ± 0.39	0.275
Alanine transaminase (U/L)	28.25 ± 13.88	24.13 ± 12.12	0.078
Glomerular filtration rate (ml/min – Cockcroft-Gault)	92.10 ± 28.20	83.29 ± 21.07	0.005
Urea (mg/dL)	48.38 ± 14.30	46.66 ± 14.56	0.449
Posassium (mEq/L)	4.46 ± 0.37	4.56 ± 0.42	0.292
Sodium (mEq/L)	138.66 ± 2.79	139.16 ± 2.91	0.340
Troponin I (pg/ml)	23.11 ± 33.71	16.57 ± 24.34	0.049
NT-proBNP (pg/ml)	1453.25 ± 1342.17	1078.49 ± 1000.65	0.105
Electrocardiographic data			
Heart rate (bpm)	72.31 ± 13.02	67.14 ± 11.57	0.067
PQ interval (msec)	176.59 ± 21.38	174.64 ± 24.79	0.724
QRS interval (msec)	125.09 ± 33.523	120.84 ± 31.089	0.033
QTc interval (msec)	451.90 ± 48.072	416.03 ± 46.086	<0.001
SV_2 + RV_5 (mm)	21.19 ± 11.88	16.90 ± 9.80	0.001
Biventricular pacing (% - n=8)	97.43 ± 3.41	99.00 ± 0.816	0.183
Cardiopulmonary Exercise Test Data			
Maximal heart rate (bpm)	114.10 ± 27.23	118.93 ± 24.72	0.110
Maximal HR predicted (%)	70.67 ± 16.00	73.90 ± 14.73	0.083
Initial systolic blood pressure (mmHg)	115.83 ± 18.25	109.33 ± 16.50	0.094
Maximal systolic blood pressure (mmHg)	140.00 ± 29.77	139.67 ± 23.60	0.946
Peak oxygen consumption (ml/kg/min)	14.35 ± 6.00	18.26 ± 4.92	<0.001
Peak oxygen consumption predicted (%)	49.57 ± 18.70	65.74 ± 15.53	<0.001
VE/VCO_2 slope	36.67 ± 7.17	31.07 ± 5.76	<0.001
Peak ratio exchange ratio	0.97 ± 0.14	1.02 ± 0.10	0.096
Duration of exercise (sec)	487.83 ± 289.32	640.27 ± 269.27	<0.001
Duration of exercise until anaerobic threshold (sec)	269.65 ± 277.10	292.45 ± 253.18	0.623
Oxygen consumption at anaerobic threshold (ml/kg/min)	12.03 ± 4.29	13.67 ± 3.57	0.087

Values are mean ± standard deviation.

collected before and 6 months after LCZ696 therapy. A significant glomerular filtration rate (GFR) decrease (92.10 *versus* 83.29 mL/min, p = 0.005) was noted, however only the 2 patients who had his treatment discontinued had a decrease in the GFR to below 60 mL/min. NYHA class was improved by one and two stages in 24 (68.6%) and 2 (5.7%) patients, respectively. 6 patients (17.1%) had a ventricular arrhythmia in the 6 months previous to LCZ696 therapy *versus* 2 patients (2.7%) during the same LCZ696 therapy period. A significant reduction in the QRS and QTc intervals were noted, as well as a prognostic improvement as assessed by the Heart Failure Survival score and the MAGGIC score. A marked improvement in peak oxygen consumption (14.35 *versus* 18.26 mL/kg/min, p < 0.001), VE/VCO_2 slope (36.67 *versus* 31.07, p < 0.001) and in the duration of exercise were noted with LCZ696 therapy.
Conclusions: LCZ696 therapy is associated with marked CPET parameters improvement as well as in NYHA class and HF scores. The precise mechanism of LCZ696 to decreases ventricular arrhythmias remains unclear, but a significant reduction in the QTc interval in this patients could have a benefit effect.

CO 35. A STRUCTURED HEART FAILURE CLINIC: A COMPREHENSIVE ANALYSIS TO PLAN THE FUTURE

Bruno M. Rocha[1], Gonçalo Cunha[1], Rita Gomes[2], Inês Araújo[3], Cândida Fonseca[3]

[1]*Centro Hospitalar de Lisboa Ocidental, EPE / Hospital de Santa Cruz.* [2]*Hospital Vila Franca de Xira.* [3]*Centro Hospitalar de Lisboa Ocidental, EPE / Hospital de S. Francisco Xavier.*

Introduction: Heart Failure (HF) clinics represent an opportunity to establish a structured follow-up for patients living with chronic HF. The main goals of this investigation were to: (1) determine the features of stable HF with reduced (HFrEF), midrange (HFmrEF) and preserved ejection fraction (HFpEF); (2) evaluate the treatment and optimization of HFrEF as per the European Society of Cardiology (ESC) current guidelines on HF; and (3) investigate the interactive role of chronic HF appointment with the Day Hospital as a supportive structure.
Methods: This study is based on a single-center cohort enrolling consecutive patients evaluated at routine medical appointment from January to May 2018. The diagnosis and treatment rationale, i.e. optimal medical treatment (OMT), was based on the ESC recommendations on HF (2016).
Results: Of the overall cohort (n = 256), most patients had HFpEF (53,1%) or HFrEF (28,1%). Those with HFpEF were found to be more often elderly (mean age 79,0 ± 13,0 years; p = 0,001) with hypertensive etiology (44,0%; p < 0,001) and had a higher rate of comorbidities. In contrast, those with HFrEF were significantly younger (73,0 ± 15,0 years; p = 0,001) with more ischemic HF (59,7%; p < 0,001). Those with HFmrEF had intermediate features. Patients with HFrEF were more often receiving angiotensin-converting enzyme (ACE) inhibitors, angiotensin II receptor blockers (ARBs) or sacubitril-valsartan (84,5%), mineralocorticoid receptor antagonists (MRAs) (73,2%) and beta-blockers (90,1%). Furthermore, 27,5% of those with HFrEF were still on additional disease-modifying drug uptitration. Finally, at the day of the appointment, 10,5% of the overall cohort was sent to the Day Hospital, mostly referred to receive intravenous (IV) furosemide treatment (48,1%) due to decompensated HF, IV iron deficiency correction (37,1%), IV potassium or blood transfusion (14,8%).
Conclusions: In a dedicated specialized HF clinic, most patients were already on OMT or received further drug uptitration at the day of the appointment. As the expected benefit in HF is dose-dependent, additional strategies for timely uptitration can be considered. The Day Hospital could provide the means for such desirable goal. Notably, this structure is paramount for adequate HF care and allows several interventions at the day of the appointment, especially mandatory IV drugs (i.e., diuretics, iron and potassium), thus avoiding hospitalizations or emergency room visits and decreasing costs.

Table CO 35. Baseline demographics

		HFrEF	HFmrEF	HFpEF	p-value
Demographics					
Age, year	Median±IQR	73 ± 15	71 ± 19	79 ± 13	0,001†‡
Male sex, %	n (%)	52 (73,2%)	25 (59,50%)	64 (46,7%)	0,001†
LVEF, %	Mean±SD	29 ± 6	44 ± 3	55 ± 7	0,000†‡§
Euvolemic, %	n (%)	64 (90,1%)	37 (88,1%)	126 (92,0%)	0,732
NYHA I/II/III %	n (%)	31,4 /45,7 /18,6	26,8 / 46,3 / 24,4	28,7 / 47,1 / 24,3	0,874
Comorbidities					
HTA, %	n (%)	49 (69,0%)	31 (73,8%)	112 (81,8%)	0,124
MI, %	n (%)	43 (60,6%)	25 (59,5%)	43 (31,4%)	0,000†‡
AF, %	n (%)	36 (50,7%)	25 (59,5%)	91 (66,4%)	0,097
DM, %	n (%)	30 (42,3%)	16 (38,1%)	48 (35,0%)	0,597
Laboratory Evaluation					
Creatinine, mg/dL	Median±IQR	1,3 ± 0,8	1,2 ± 0,5	1,2 ± 0,5	0,109
eGFR, mL/min/1,73m²	Mean±SD	56 ± 21	60 ± 21	57 ± 21	0,617
K+, mEq/L	Mean±SD	4,6 ± 0,5	4,6 ± 0,5	4,5 ± 0,6	0,666
Systolic BP, mmHg	Median±IQR	117 ± 37	127 ± 30	127 ± 28	0,034†
Treatment					
Metolazone, %	n (%)	9 (12,7%)	10 (23,8%)	18 (13,2%)	0,317
ACEi, %	n (%)	49 (69,0%)	29 (69,0%)	77 (56,6%)	0,135
ARB, %	n (%)	4 (5,6%)	4 (9,5%)	20 (14,7%)	0,093
MRA, %	n (%)	52 (73,2%)	18 (42,9%)	38 (27,9%)	0,000†§
Beta Blocker, %	n (%)	64 (90,1%)	35 (83,3%)	97 (71,3%)	0,002†
Sacubitril Valsartan, %	n (%)	7 (9,9%)	1 (2,4%)	1 (0,7%)	0,044†

AF = Atrial Fibrillation; BP = Blood Pressure; DM =Diabetes mellitus; eGFR = estimated Glomerular Filtration Rate (MDRD Equation); HTA = Hypertension; IQR = Interquartile Range; LVEF = Left Ventricular Ejection Fraction; MI = Myocardial Infarction; NS = Non-significant (p-value ≥0,05); SD = Standard Deviation; *Reported p-values by ANOVA, when Levine's test shows homogeneity of variances, and by Welch, if homogeneity of variance is not observed. **Reported p-values by Bonferroni test, when Levine's test shows homogeneity of variances, and by Games-Howell, if homogeneity of variances is not observed. †HFrEF vs HFpEF; ‡HFpEF vs HFmrEF; §HFrEF vs HFmrEF.

Domingo, 28 Abril de 2019 | 17H00-18H00

PÉGASO I | COMUNICAÇÃO ORAL - PRÉMIO JOVEM INVESTIGADOR (INVESTIGAÇÃO CLÍNICA)

CO 78. ENDOCARDIAL *VERSUS* EPICARDIAL VENTRICULAR TACHYCARDIA ABLATION: A PROPENSITY SCORE MATCHED ANALYSIS

Daniel Matos[1], Diogo Cavaco[1], Pedro Freitas[1], António Miguel Ferreira[1], Gustavo da Rocha Rodrigues[1], João Carmo[1], Maria Salomé Carvalho[1], Francisco Costa[2], Pedro Carmo[1], Francisco Morgado[1], Miguel Mendes[1], Pedro Adragão[1]

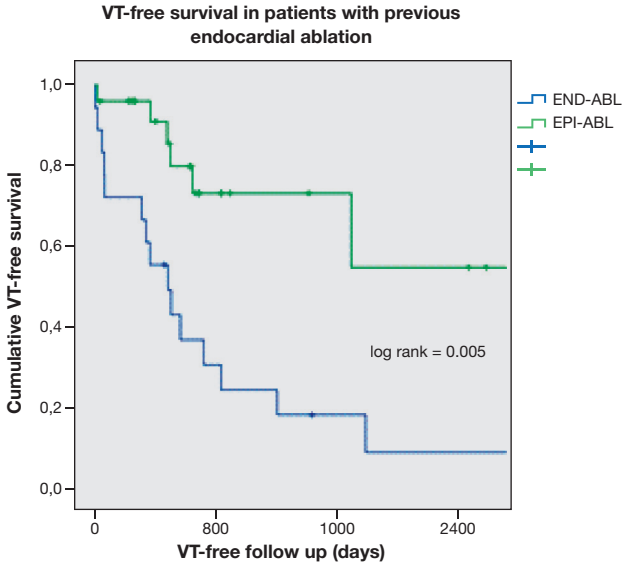
[1]Centro Hospitalar de Lisboa Ocidental, EPE / Hospital de Santa Cruz. [2]Ucardio, Centro Clínico - Unidade Cardiovascular

Introduction: Direct comparisons of long-term clinical outcomes of endocardial *versus* epicardial catheter ablation techniques for drug-resistant ventricular tachycardia (VT) have been scarcely reported. We aim to compare the long-term efficacy and safety of endocardial *versus* epicardial catheter ablation (END-ABL and EPI-ABL, respectively) in a propensity score (PS) matched population.
Methods: Single-center observational registry including 215 consecutive patients who underwent END-ABL (181) or EPI-ABL (n = 34) for drug-resistant VT between January 2007 and June 2018. Efficacy endpoint was defined as VT-free survival after catheter ablation, while safety outcomes were defined by 30-days mortality and procedure-related complications. A propensity score was used to match patients in a 1:1 fashion according to the following variables: VT storm at presentation, left ventricular ejection fraction (LVEF), New York Heart Association (NYHA) class III/IV at presentation, ischemic ethology, presence of implantable cardioverter-defibrillator (ICD), and previous endocardial catheter ablation. Independent predictors of VT recurrence were assessed by Cox regression.
Results: The PS yielded two groups of 31 patients each well matched for baseline characteristics (Table). Over a median follow-up of 2 years (IQR 1-3), 58% (n = 18) ENDO-ABL patients had VT recurrence *versus* 26% (n = 8) in the EPI-ABL group (p = 0.020). The yearly rates of VT recurrence were 28%/year for END-ABL *versus* 11%/year for EPI-ABL (p = 0.021). Multivariate survival analysis identified previous endocardial ablation (HR: 3.52, 95%CI: 1.17-10.54, p = 0.026) and VT storm at presentation (HR: 3.57, 95%CI: 1.50-8.50, p = 0.004) as independent predictors of VT recurrence. EPI-ABL was independently associated with fewer VT recurrences (HR: 0.28, 95%CI, 0.12-0.69, p = 0.005), but only in patients with a previous endocardial ablation (p for interaction = 0.004) - Figure A. No patients died at 30-days post-procedure. Hospital length of stay was similar between END-ABL and EPI-ABL (5 *versus* 4 days, respectively, p = 0.139), as was the complication rate (6.5% *versus* 12.9%, respectively, p = 0.390), although driven by different causes (Table).

Baseline characteristics after matching

	END-ABL (n = 31)	EPI-ABL (n = 31)	P-value
Male sex - no. (%)	27 (87.1)	28 (90.3)	1.000
Age - mean ± SD	55 ± 16	57 ± 16	0.544
Beta-blocker - no. (%)	30 (96.8)	27 (87.1)	0.354
Amiodarone - no. (%)	25 (80.6%)	23 (74.2)	1.000
Ceher AAD - no. (%)	7 (22.6)	9 (29.0)	0.762
TV-ICD - no. (%)	29 (93.5)	30 (96.8)	1.000
S-ICD - no. (%)	2 (6.5)	1 (3.2)	1.000
LVEF (%)- mean ± SD	37 ± 13	38 ±13	0.854
Non ischemic etiology - no. (%)	25 (80.6)	25 (80.6)	1.000
PRE.ABL - no. (%)	18 (58.1)	25 (80.6)	0.097
Complications - no. (%)	2 (6.5)	4 (12.9)	0.390
Pericardial effusion - no. (%)	0 (0)	2 (6.5)	0.390
Right ventricle puncture - no. (%)	0 (0)	2 (6.5)	
Vascular complication - no. 1(%)	1 (3.2)	0 (0)	
Complete heart block - no. (%)	1 (3.2)	0 (0)	

AAD = antiarrhythmic drug; END-ABL = endocardial ablation; EPI-ABL = epicardial ablation; LVEF = left ventricle ejection fraction; S-ICD = subcutaneous implantable cardioverter-defibrillator; TV-ICD = transversus implantable cardioverter-defibrillator.



Conclusions: VT storm at presentation and previous catheter ablation were independent predictors of VT recurrence. In patients with a previous failed endocardial catheter ablation, epicardial ablation seems to provide greater VT-free survival than repeat endocardial ablation. Both strategies seem equally safe.

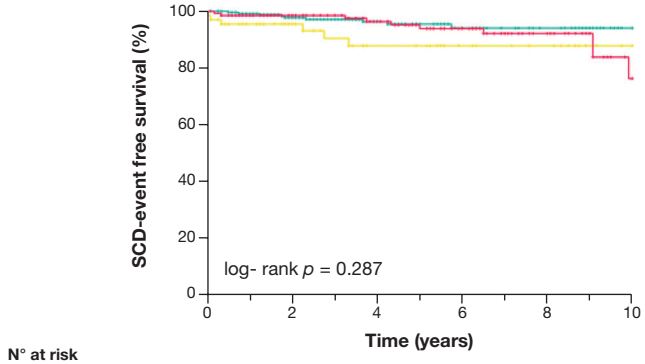
CO 79. DELAYED ENHANCEMENT OUTPERFORMS CURRENT CRITERIA FOR ICD IMPLANTATION IN HYPERTROPHIC CARDIOMYOPATHY

Pedro Freitas[1], António Miguel Ferreira[1], Edmundo Arteaga-Fernández[2], Daniel Nascimento Matos[1], JOÃO ABECASIS[1], Carla Saraiva[1], Hugo Marques[3], Nuno Cardim[3], Murillo de Oliveira Antunes[2], Carlos Eduardo Rochitte[2]

[1]Centro Hospitalar de Lisboa Ocidental, EPE / Hospital de Santa Cruz. [2]Instituto do Coração, São Paulo. [3]Hospital da Luz Lisboa.

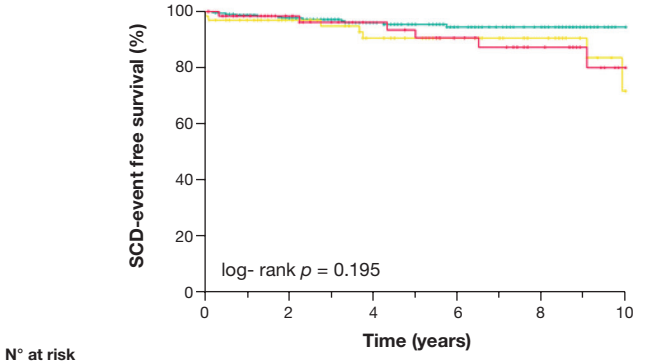
Introduction: Identifying the patients with Hypertrophic Cardiomyopathy (HCM) in whom the risk of sudden cardiac death (SCD) justifies the implantation of a cardioverter-defibrillator (ICD) in primary prevention remains challenging. Different risk stratification tools and criteria are applied by the European and American guidelines in this setting. We sought to assess the role of late-gadolinium enhancement (LGE) in improving these risk stratification strategies.
Methods: We conducted an international multicentric retrospective analysis of HCM patients undergoing cardiac magnetic resonance for diagnostic confirmation and/or risk stratification. Eligibility for ICD was assessed according to the HCM Risk-SCD score and the American College of Cardiology Foundation/American Heart Association (ACCF/AHA) algorithm. The amount of LGE was quantified (LGE%) and categorized into: ≤ 10%; 10.1-19.9%; ≥ 20% of total myocardial mass. The primary endpoint was a composite of SCD, aborted SCD, sustained ventricular tachycardia (VT), or appropriate ICD discharge.
Results: A total of 493 patients were available for analysis (58% male, median age 46 years). LGE was present in 82% of patients, with a median LGE% of 2.9% (IQR 0.4-8.4%). The concordance between risk assessment by the HCM Risk-SCD, ACCF/AHA and LGE was relatively poor (weighted & Kappa; values 0.17 to 0.51). During a median follow-up of 3.4 years (IQR 1.5-6.8 years), 25 patients experienced an event (14 SCDs, 2 aborted SCDs, 6 sustained VTs, and 3 appropriate ICD discharges). The amount of LGE was

ACCF/AHA



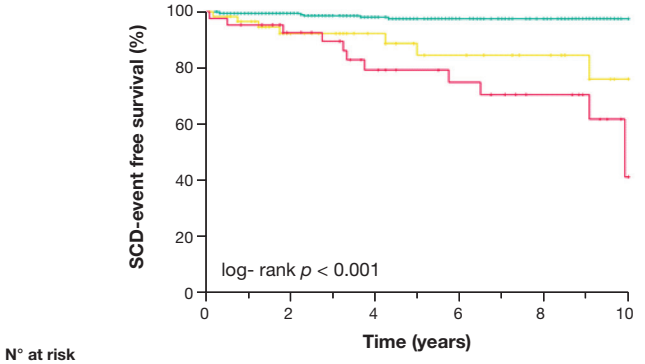
N° at risk						
ICD not recommended	281	176	108	64	45	11
ICD can be useful	68	41	28	21	15	2
ICD reasonable	144	104	82	59	38	1

HCM Riks-SCD



N° at risk						
Low risk	362	226	144	88	60	12
Intermediate risk	66	50	39	27	20	6
High risk	65	45	35	29	18	5

LGE



N° at risk						
LGE ≤ 10%	387	254	170	108	72	17
LEG 10.1 - 19.9%	63	35	26	19	15	4
LGE ≥ 20%	43	32	22	17	11	2

the only independent predictor of outcome (adjusted HR: 1.09 for each 1% of LGE; 95%CI: 1.06-1.13; p < 0.001) even after adjustment for the HCM Risk-SCD and ACCF/AHA criteria. The amount of LGE showed greater discriminative power (C-statistic 0.85; 95%CI: 0.78-0.92) than the ACCF/AHA (C-statistic 0.60; 95%CI: 0.49-0.71; p for comparison < 0.001) and the HCM Risk-SCD (C-statistic 0.69; 95%CI: 0.60-0.78; p for comparison = 0.006). LGE was able to significantly improve the discriminative power of the ACCF/AHA and HCM Risk-SCD criteria, with net reclassification improvements of 0.39 and 0.44, respectively. Kaplan-Meier survival curves support these findings (Fig.).
Conclusions: The amount of myocardial late gadolinium enhancement seems to outperform the guideline-recommended HCM Risk-SCD score and ACCF/AHA algorithm in the identification of HCM patients at increased risk of sudden cardiac death.

CO 80. KASH SCORE PREDICTS LONG TERM MORTALITY AFTER ACUTE MYOCARDIAL INFARCTION

Joel Ponte Monteiro[1], João Adriano Sousa[2], Flávio Mendonça[2], Micaela Neto[2], Ricardo Rodrigues[2], Marco Gomes Serrão[2], Bruno Silva[2], Ana Paula Faria[2], Eva Henriques[2], Drumond Freitas[2], Maria Isabel Mendonça[2]

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Introduction: KAsH is a simple risk score, composed of 4 clinical variables drawn at the first medical contact, tailored to predict in-hospital mortality in patients with acute myocardial infarction (MI). Despite its simplicity, KAsH performed better than other more complex and well-established risk scores, like GRACE, at predicting hospital mortality. KAsH's ability to predict long-term mortality is, however, unknown.
Methods: Prospective registry evaluating 1241 consecutively admitted patients with MI, between October 2009 and September 2016. KAsH score was calculated at hospital admission using the following formula: KAsH = (Killip Kimbal × Age × Heart Rate) / Systolic Blood Pressure Patients with missing data on any of the variables composing the score were excluded (n = 51). KAsH was categorized into 4 sub-groups using the recommended cut-offs (KAsH 1 - < 40; KAsH 2 - 40-90; KAsH 3 - 90-190; KAsH 4 - > 190). The score's capacity to predict mortality at 1 year of follow up was analyzed using ROC curves and their respective area under the curve (AUC). KAsH was compared with GRACE and ProACS risk scores using the DeLong test.
Results: KAsH predicts all-cause mortality at 1 year follow up after MI (OR: 1.021, IC: 1.018-1.025, pv < 0.001). Multivariate analysis displayed that KAsH retains its predictive power after adjusting for the following variables: age, diabetes, chronic kidney disease, previous stroke or MI, heart failure, cardiogenic shock or bleeding during admission and not submitted to invasive coronary angiography (OR: 1.011, IC: 1.007-1.014, p < 0.001). KAsH displayed excellent predictive performance of mortality at 1 year follow up after MI (AUC: 0.832, IC: 0.803-0.861). After categorization into 4 sub-groups, KAsH retains a very good predictive power (AUC: 0.800, IC: 0.776-0.822). Compared with other scores, as a continuous score KAsH performed better than both the GRACE and ProACS scores (AUC: KAsH 0.832, GRACE 0.799, ProACS 0.796, p = 0.03). After categorization, KAsH was non-inferior to both risk scores (AUC: KAsH_Cat 0.800, p = ns).
Conclusions: KAsH, a simple 4 variable risk score, is a robust predictor of all-cause mortality at 1 year follow up of patients with MI. Even after categorization into 4 sub-groups, KAsH displayed a similar predictive power as a more complex and well-established risk score.

CO 81. ST ELEVATION MYOCARDIAL INFARCTION NETWORK - PORTRAIT OF A COUNTRY

João Guedes[1], Pedro Azevedo[2], João Bispo[2], Teresa Mota[2], Raquel Fernandes[2], Nuno Marques[2], Walter Santos[1], Jorge Mimoso[1], Ilídio de Jesus[2]

[1]Centro Hospitalar do Algarve, EPE / Hospital de Faro. [2]Centro Hospitalar e Universitário do Algarve.

Introduction: Primary angioplasty (PA) is a cornerstone in the ST elevation myocardial infarction (STEMI) treatment. Time is myocardium

and STEMI network was designed to reduce time lost and offer PA as early as possible
Objectives: To characterize STEMI network in a country and its regions and identify independent predictors (IP) to increase or decrease the times symptoms-1st ECG (S-ECG), 1st ECG - balloon (ECG-B), symptoms-balloon (S-B) and door-to-balloon.
Methods: Retrospetive and multicenter study, based on a national register from 30/10/2010 to 09/19/2017. All patients with revascularized STEMI within the first 12 h of pain were included. 4 groups were established: North (I); Center (II); South (III); Algarve and Islands (IV). Univariate and multivariate analysis was performed of the clinical history, times until PA and hospitalization data.
Results: It was obtained 4683 patients, 1401 of I (29.9%), 971 of II (20.7%), 1033 of III (22.1%) and 1278 of IV (27.3%). The mean age was 62 years and 77% were men. Admission by STEMI network was performed in 36.2% of cases in country, 38.0% in I, 20.1% in II, 23.4% in III and 56.3% in IV. Direct admission in cath lab was 41.3%, 48.6% in I, 30.1% in II, 12.6% in III and 64.8% in the IV. S-ECG time was 158 minutes (min) in country, 155 min in I, 187 min in II, 161 min in III and 138 min in IV. IP for increase S-ECG time were transport through own or ambulance without doctor, females (FS), increased age (IA) and belong to group II ($p < 0.01$). The admission by STEMI network was IP for decrease S-ECG time ($p < 0.01$). ECG-B time was 121 min, 124 min in I, 134 min in II, 116 min in III and 111 min in IV. IP for increase ECG-B time were transfer from another hospital, admission in coronary care unit (CCU) or emergency service and IA ($p < 0.01$). Belonging to group IV was IP for decrease ECG-B time ($p < 0.01$). S-B time was of 279 min, 279 min in I, 320 min in II, 277 min in III and 249 min in IV. IP for increase S-B time were transport through own or ambulance without doctor, transfer from another hospital, FS, IA, belonging to group II ($p < 0.01$) and admission in CCU. Direct admission in cath lab was IP for decrease S-B time. P-B time was 98 min, 103 min in I, 123 min in II, 119 min in III and 54 min in IV. IP for increase S-B time were transfer from another hospital, admission in the emergency service, FS and IA ($p < 0.01$). Medical transport, admission by STEMI network and belong to groups I and IV were IP for decrease P-B time ($p < 0.01$).
Conclusions: STEMI network admission and admission in cath lab were IP to decrease times until PA. By contrast, transport by other means, admission at other locations, FS and IA were IP to its increase. Northern and Algarve and Islands regions had a STEMI network more effectively than the rest of the country being IP in the decrease P-B (North and Algarve and islands) and ECG-B (Algarve and islands) times. Central region is one that requires greater intervention and restructuring because it is where the S-ECG and S-B times were significantly higher.

CO 82. THE PARADOX OF MYOCARDIAL INJURY AND HIGH-SENSITIVE TROPONIN ASSAYS: WORST PROGNOSIS AND BURDEN THAN INFARCTION?

João Adriano Sousa[1], Joel Ponte Monteiro[2], Micaela Neto[1], Flávio Mendonça[1], Marina Santos[2], Ricardo Rodrigues[1], Rita Ventura[2], José Alves[2], Graça Andrade[2], Sonia Freitas[2], Andreia Pereira[1], Décio Pereira[2], António Drumond Freitas[2]

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Introduction: Myocardial injury (Mi) as depicted in recent guidelines (2018), remains the elevation of troponin above the P99th, in the absence of acute myocardial ischemia. Often a common scenario in emergency departments (ED), its prevalence, risk profile and prognosis remain largely unexploited in the literature.
Methods: Prospective registry of 250 patients admitted consecutively through the emergency department from the 1st of January 2018 onward, with a higher than P99th high-sensitive troponin assay. The kit used was Roche's Elecsys TroponinT hsSTAT, and the P99th appointed by the manufacturer was 14 ng/L. All patients with chronic kidney disease ClCr < 15ml/min, were excluded from the analysis. In-hospital and total mortality was evaluated at 3 time cutpoints (30, 180 and 335 days).
Results: Myocardial injury (Mi) had a much higher occurence than myocardial infarction, MI (ratio 100:6.4). 94% of patients were classified has having Mi (n = 236, 49.2% male, mean age of 75.83 ± 3.3 years), 5.2% and 0.8% were classified has having type 1 and type 2 MI, respectively. Heart failure and chronic kidney disease were found in 34.7% and 28.4% of pts, respectively. hsTnT assays were requested in the ED because of dyspnea (49.4%), fatigue/prostration (14.3%), nausea or vomiting (12.4%), and chest pain (11.9%). 30% of Mi patients had a normal ECG. Cardiology intervention was requested in 32.2% of these patients, despite only 6.4% met criteria for coronary pathway. Among patients with «troponinitis», the most common final diagnosis was respiratory infection (34.9%) and acute heart failure (32.8%). In-hospital mortality was 15.7%, 5% of which cardiovascular. Follow-up mortality was 5.6% (30 days), 25.6% (180 days) and 31.3% (335 days). In a subanalysis, a weak correlation between hsTnT levels and mortality was found, unlike traditionally known in MI patients. CKMB/CK ratio was significantly different in Mi and MI (0.07 *versus* 0.12, $p < 0.05$).
Conclusions: In our population, Mi was an important burden to the patient and the cardiologist, presenting a worst prognosis than MI. Our data may challenge current literature regarding the use of hsTnT assays instead of multiple cardiac biomarkers. To our knowledge, this is one of the few studies casting some light over the prognostic impact of myocardial injury and the current use of hsTnT assays in ED on a national level. Data may reflect a routine use of hsTnT assays in ED.

Domingo, 28 Abril de 2019 | 17H00-18H00

NEPTUNO II | COMUNICAÇÃO ORAL - PRÉMIO JOVEM INVESTIGADOR (INVESTIGAÇÃO BÁSICA)

CO 83. HYPERTROPHIC CARDIOMYOPATHY: CLINICAL PATHOGENICITY OF TWO NOVEL MUTATIONS IN ALPHA-TROPOMYOSIN GENE

Nelson Cunha[1], Tiago Rodrigues[1], Pedro Silvério António[1], Joana Rigueira[1], Inês Aguiar-Ricardo[1], Rafael Santos[1], Mónica Mendes Pedro[1], Fátima Veiga[1], Fausto J. Pinto[1], Hugo Madeira[2], Dulce Brito[1]

[1]Serviço de Cardiologia, Departamento Coração e Vasos, CHULN, CCUL, Faculdade de Medicina, Universidade de Lisboa, Lisboa. [2]Centro Cardiovascular, Universidade de Lisboa, Lisboa.

Introduction: Mutations (mut) in the α-tropomyosin 1 gene (TPM1) are a rare cause (< 1%) of hypertrophic cardiomyopathy (HCM) with only a few clearly defined as pathogenic.
Objectives: To describe the clinical profile of 7 unrelated families (F) with HCM associated with 2 different variants in TPM1 gene, pathogenic or very likely to be pathogenic (P/LP), none of them previously reported.
Methods: From a cohort of 167 unrelated probands with HCM genetically screened, in 7 (4%) a P/LP variant was identified in TPM1 gene: p.Arg21Leu (c.62G > T, g.63335090G > T) in 5, and p.Met281Val (c.841A > G, g.63356331A > G) in 2. Samples (peripheral blood) were studied by a massive parallel sequencing method using a library that included > 100 genes related to cardiomyopathies. In total, 28 individuals —10/2F (p.Met281Val), 18/5F (p.Arg21Leu)— were genetically and clinically characterized at diagnosis and during follow up (Fup).
Results: 19 (67.9%) patients (pts) had a positive genotype (G+): 15 G+ aged 56.3 ± 16.9 (26-77) years (y), 53% men, met HCM phenotype (Ph+) - left ventricular hypertrophy (LVH) on echocardiography (echo) ; 4 pts, 48 ± 6.8 y, 75% women, were only mutation carriers (G+/Ph-) The global penetrance (P) for both mutations was similar: p.Arg21Leu - 14G+/11Ph+, P: 78.6%; p.Met281Val-5G+/4Ph+, P: 80%. At the time of diagnosis (echo), G+/Ph+ pts were 44±19.5 (6-73) y-old. LVH was septal in 11, apical in 3, and concentric in 1; septal thickness was 16.3 ± 5.4 mm and maximal wall thickness 18.2 ± 6 (13-33.5) mm. Left ventricular ejection fraction (LVEF) was preserved, and 3 pts had outflow obstruction at rest. Familial history of sudden death (SD) existed in 2 F. During Fup - 12.3 (1-44)y - 40% (6/15) had HCM-related hospitalizations due to symptoms (heart failure in 5), 2 pts developed atrial fibrillation, 2 needed a pacemaker, and 1 had surgical septal myectomy. LVH and LVEF didn't change significantly during Fup. Regular ambulatory ECG monitoring registered episodes of VT in 2 pts (asymptomatic). Only 1 death occurred (refractory acute heart failure).

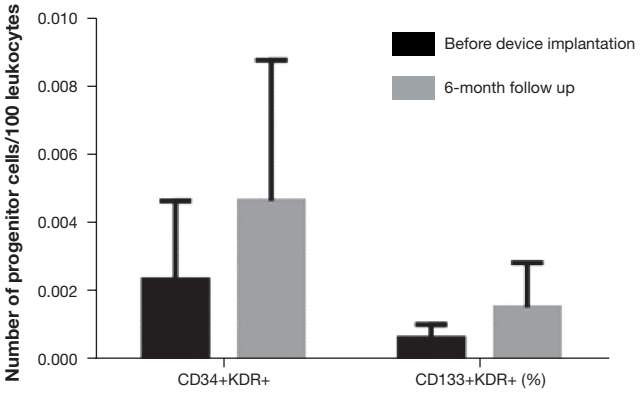
Conclusions: The two variants in TPM1 gene described herein have a penetrance ~ 80%, and overall associate with relatively mild hypertrophy, late-onset of disease, and an indolent course, though seeming to be associated with a high risk of heart failure. Typical and atypical patterns of LVH are expected. The observed data favour the indication for both mutations to be used in familial screening, with predictive value.

CO 84. INCREASE IN CIRCULATING LEVELS OF ENDOTHELIAL PROGENITOR CELLS AFTER CARDIAC RESYNCHRONIZATION THERAPY: WHAT IMPLICATIONS?

James Milner[1], Gonçalo Cristóvão[2], Célia Domingues[1], Sofia Martinho[1], Cátia Ferreira[1], Natália António[1], Miguel Ventura[1], João Cristóvão[1], Luís Elvas[1], Artur Paiva[2], Lino Gonçalves[1]

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

Introduction: Endothelial progenitor cells (EPCs) are multipotent adult stem cells that circulate in the peripheral blood, playing an important role in postnatal neovascularization and repair of ischemic cardiac injury. Despite their established value as predictor of outcomes in coronary artery disease, little is known about the role of EPCs in patients with chronic heart failure, and whether their circulating levels evolve after response to cardiac resynchronization therapy (CRT).
Objectives: To evaluate the influence of CRT on circulating EPC levels in patients with advanced heart failure (HF) submitted to CRT and to verify if EPCs levels have any value as a prognosticator in these patients.
Methods: Prospective, single-center study of 50 patients with advanced HF submitted to cardiac resynchronization therapy (CRT), and followed up for 5.4 ± 2.3 years. Two populations of circulating EPCs were quantified by flow cytometry: $CD34^{+}KDR^{+}$ and $CD133^{+}KDR^{+}$ cells. Levels of circulating EPCs were measured at baseline and 6 months post-CRT. Response to CRT was defined as a reduction in left ventricular end-systolic volume of ≥ 15% at 6-months follow up.



Results: Mean age in this cohort was 62 ± 11, and 64% of patients were males. Patients had HF of non-ischemic etiology in 78%, and 72% received a CRT with defibrillator. Most patients were in NYHA functional classes III-IV prior to CRT (89%), and most were receiving disease-modifying HF drugs (88% receiving beta-blockers, 86% on ACE-inhibitors or ARBs and 61% on mineralocorticoid-receptor antagonists). During long-term follow-up, the readmission rate due to acute decompensated HF was 44%, and all-cause mortality was 36%. Echocardiographic response to CRT occurred in 46% and functional response to CRT was 60%. After CRT, we verified a significant increase in circulating EPC levels for both studied populations, with an increase from 0.0024 ± 0.0023 to 0.0047 ± 0.0041 cells/100 leukocytes for the $CD34^{+}KDR^{+}$ population and from 0.0007 ± 0.0004 to 0.0016 ± 0.0013 for the $CD133^{+}KDR^{+}$ cells (p = 0.01 and 0.007, respectively). Regarding, the potential value of circulating EPCs as predictor of outcomes, we did not verify neither an association between baseline EPCs levels and rate of rehospitalization for HF nor mortality rate. Time to the occurrence of first rehospitalization for HF was 43 ± 39 months for patients in which CD34+KDR+ cells increased after CRT and 63 ± 34 months for patients in which these EPCs did not increase with CRT, however this difference was not statistically significant (0.207).
Conclusions: Our results show that CRT directly or indirectly improves the endogenous pool of EPCs. However, baseline EPCs levels did not demonstrate any significant prognostic value in these patients. The importance of the increase in circulating EPCs associated with CRT and the mechanisms underlying this improvement needs further investigation.

CO 85. ACUTE AND CHRONIC EFFECTS OF HUMAN UROCORTIN-2 THERAPY ON INTRACELLULAR CALCIUM HOMEOSTASIS IN RIGHT HEART FAILURE INDUCED BY PULMONARY ARTERY HYPERTENSION

Rui Adão[1], Simon C. Kraler[2], Mahmoud Abdellatif[2], Senka Ljubojevic-Holzer[2], Adelino F. Leite-Moreira[1], Simon Sedej[2], Carmen Brás-Silva[1]

[1]Faculdade de Medicina da Universidade do Porto. [2]Department of Cardiology, Medical University of Graz, Austria.

Introduction: Disturbances in intracellular Ca2+ homeostasis contribute to the right ventricular dysfunction in pulmonary arterial hypertension. Human urocortin-2 (hUcn-2) therapy attenuates pulmonary arterial hypertension and right ventricular dysfunction in rats with monocrotaline-induced pulmonary arterial hypertension.
Objectives: Here we tested whether beneficial effects of hUcn-2 are associated with improved cellular Ca2+ handling in the pulmonary arterial hypertension-induced right ventricular failure.
Methods: Wistar rats were injected with monocrotaline (60 mg/kg) or saline (control) and after 14 days they were subjected to hUcn-2 treatment (5 µg/kg, bi-daily, i.p.) or vehicle for 10 days. After the treatment, intracellular Ca2+ transients were recorded in isolated right ventricle cardiomyocytes using confocal Ca2+ imaging (Fluo-4/AM, 1Hz). In acute experiments, cells were perfused for 15 min with hUcn-2 (100 nM) in the absence or presence of the PKA inhibitor H89 (2 µM) or CaMKII inhibitor KN93 (1 µM) and transients were acquired in 5 min intervals. Sarcoplasmatic reticulum Ca2+ load was assessed upon rapid caffeine surge (30 mM). In another set of experiments, right ventricle was dissected and immediately frozen in liquid nitrogen and stored at -80 Â °C until mechanical measurements on isolated skinned cardiomyocytes were performed.
Results: We found that acute administration of hUcn-2 transiently and incompletely improved intracellular Ca2+ mishandling in right ventricular myocytes from monocrotaline-treated rats via stimulating both protein kinase A and Ca2+/calmodulin-dependent kinase II. However, chronic treatment with hUcn-2 failed to rescue intracellular Ca2+ handling defects, but reduced the active tension development and myofilament sensitivity to Ca2+ in isolated skinned right ventricular myocytes from rats with monocrotaline-induced pulmonary arterial hypertension.
Conclusions: Our study suggests that hUcn-2 chronic therapy attenuates right ventricular systolic and diastolic dysfunction in monocrotaline-induced pulmonary arterial hypertension, at least in part, through improving cardiomyocyte-autonomous Ca2+ modulation.

CO 86. COMPENSATORY MECHANISMS OF GENE REGULATION IN RESPONSE TO CHRONIC STRESS

Isabel Durães Campos[1], Marta Laranjo[2], Sofia Neves[3], Fernanda Marques[3], Nuno Sousa[4], Cátia Costa Oliveira[1], Catarina Vieira[1], Vítor Hugo Pereira[1]

[1]Hospital de Braga. [2]Escola de Medicina - Universidade do Minho. [3]ICVS - Universidade do Minho. [4]Escola de Medicina; ICVS - Universidade do Minho.

Introduction: Cardiovascular diseases are the major cause of death worldwide. Classical risk factors such as diabetes *mellitus*, arterial hypertension and smoking are recognised for their role in these diseases. However, other risk factors are now being considered like psychological stress and depression. One of the mechanisms underlying this association may be the mal-adaptive response to stress that disrupts the hypothalamus-hypophysis-adrenal axis, the renin-angiotensin-aldosterone system and the sympathetic nervous system.

Objectives: To evaluate the impact of chronic stress on the genetic expression of molecules involved in the adrenergic and catecholaminergic pathways in the myocardium.
Methods: Eighteen adult male rats were randomly distributed in two groups: a control group and a group submitted to chronic mild stress protocol (CMS). This protocol consists of a sequential and random application of various stress factors (food deprivation, water deprivation, damp bedding, sloped box, light-dark rhythm alteration and confinement to a restricted space), during 4 consecutive weeks. After this period, all the animals were sacrificed and the left ventricle apex was collected and dissected. The expression of NPY, TH, GRK2, GRK5, β1AR, β2AR, β3AR and α1AR (adrenergic pathway) and acetylcholinesterase and VIP and M2ACh muscarinic receptors (catecholaminergic pathway) was quantified using real time-PCR.
Results: GK2 had a median genetic expression superior in animals subjected to chronic mild stress protocol (Mdn = 0.040762 [0.036941-0.064620]) compared to the one found in the control group (Mdn = 0.011624 [0.001181-0.031060]) (U = 18.0; Z = -1.99; p = 0.05; r = 0.47). There were no significant differences found in the other proteins studied.
Conclusions: The genetic expression of GRK2in stressed animals is superior comparing to the control group, which represents an attempt to desensitize adrenergic receptors. This may imply a compensatory mechanism in response to an excessive catecholaminergic stimulus triggered by chronic stress.

CO 87. CIRCULATING EPC LEVELS IN ISCHEMIC AND NON-ISCHEMIC HEART FAILURE: WHY BENEFIT FROM CRT DIFFERS

James Milner[1], Natália António[1], Gonçalo Cristóvão[2], Patrícia Alves[1], Vera Marinho[1], Célia Domingues[1], Miguel Ventura[1], João Cristóvão[1], Luís Elvas[1], Artur Paiva[1], Lino Gonçalves[1]

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

Introduction: Endothelial progenitor cells (EPCs) are multipotent adult stem cells that circulate in the peripheral blood, playing an important role in postnatal neovascularization and repair of ischemic cardiac injury. However, levels of circulating EPCs are reduced in coronary artery disease (CAD) and correlate inversely with the severity of CAD. As such, EPC levels would be expected to be reduced in ischemic cardiomyopathy (ICM), yet little is known about EPCs in patients with chronic heart failure (HF). We sought to evaluate the relationship between the underlying HF etiology and circulating EPC levels.
Methods: Prospective, single-center study of 50 patients with advanced HF submitted to cardiac resynchronization therapy (CRT), including 11 patients with ischemic cardiomyopathy (ICM) and 39 with non-ischemic dilated cardiomyopathy (DCM). Two populations of circulating EPCs were evaluated by flow cytometry previously to CRT implantation: CD34+KDR+ and CD133+KDR+ cells. Response to CRT was defined as a reduction in left ventricular end-systolic volume of ≥ 15% at 6-months follow up. The mean follow-up was 5.4 ± 2.3 years.
Results: Compared with patients with DCM, patients with ICM were more frequently male (100 *versus* 54%, p = 0.005) and exhibited more cardiovascular risk factors. There were no significant differences in age, QRS duration, left ventricular ejection fraction or volumes between the 2 groups. Regarding remodeling response to CRT, patients with ICM tended to present a lower proportion of responders than patients with DCM (36.4% *versus* 64.1%, p = 0.098, respectively). During follow-up, there were no significant differences in the mortality rate or heart transplantation rate between groups (36.4% in ICM *versus* 35.9% in DCM, p = 0.977 and 9.1% *versus* 2.6%, p = 0.329, respectively). However, patients with ICM tended to be more often hospitalized due to HF than DCM patients (mean number of hospitalizations: 1.8 ± 2.0 *versus* 0.8 ± 1.3, p = 0.052, respectively, and hospitalization rate: 63.6% *versus* 38.5%, p = 0.137, respectively). Patients with ICM showed significantly lower levels of circulating EPCs when compared to their counterparts, which was observed for both the CD34 + KDR+ (32.7 ± 31.6 *versus* 9.9 ± 6.8 cells/1,000,000 leukocytes, p < 0.001) and the CD133+KDR+ (11.4 ± 9.5 *versus* 4.3 ± 4.7 cells/1,000,000 leukocytes, p = 0.007).
Conclusions: This study shows that in chronic HF, patients with an ischemic etiology exhibit significantly lower levels of circulating EPCs than their non-ischemic counterparts, reflecting a poorer endogenous regenerative capacity. This EPC pauperization may hinder the left ventricular reverse remodeling process, necessary for response to CRT, and may justify why ICM patients typically benefit less from CRT.

Domingo, 28 Abril de 2019 | 17H00-18H00

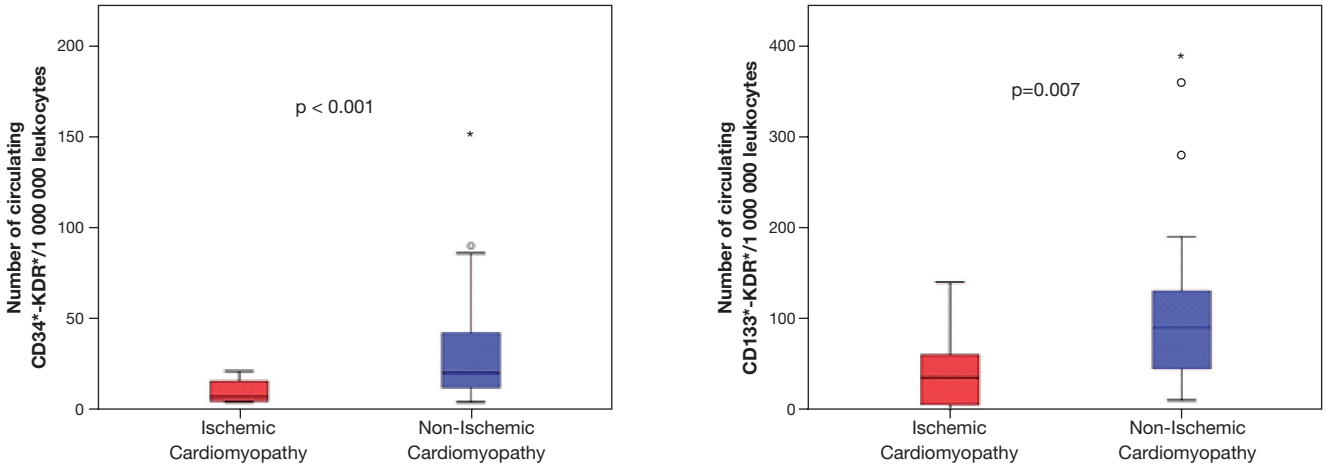
NEPTUNO I | COMUNICAÇÃO ORAL - PRÉMIO MACHADO MACEDO

CO 88. COMPLETE SURGICAL REVASCULARIZATION: THE IMPACT OF THE DIFFERENT DEFINITIONS ON MORTALITY

Paulo Oliveira, Márcio Madeira, Sara Ranchordás, Catarina Brízido, Tiago Nolasco, João Roque, Sérgio Boshoff, Marta Marques, Luís Bruges, Manuel Almeida, Rui Campante Teles, José Calquinha, António Ventosa, Miguel Sousa-Uva, Miguel Abecasis, José Neves

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

Introduction: The concept of complete revascularization arises from the early stages on coronary artery bypass grafting (CABG). Despite the



CO 87 Figure

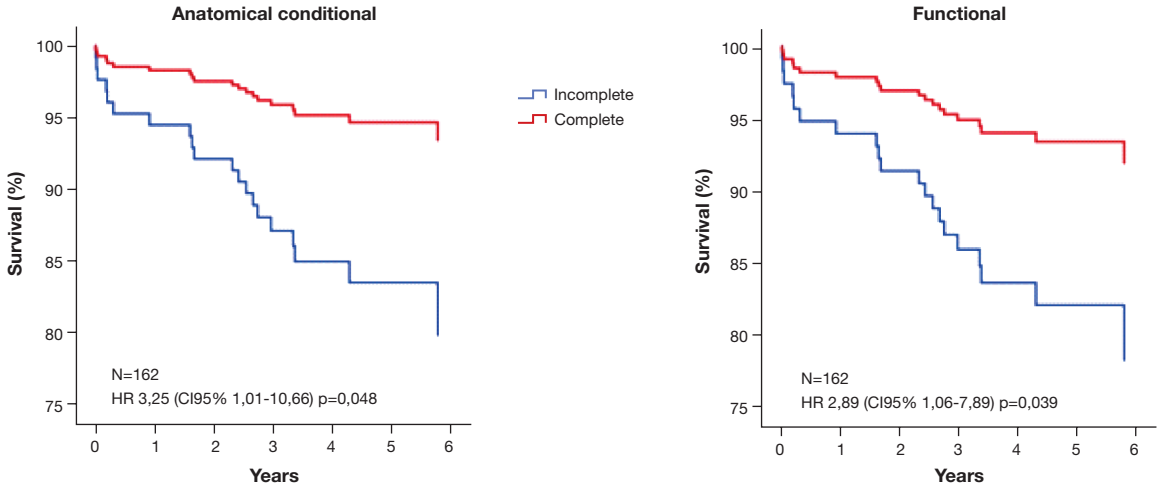


Figure 1. Multivariate analysis: functional and anatomical conditional complete revascularization definitions.

CO 88 Figure

established importance of complete revascularization, there is no agreement which of several definitions has most impact on mortality.
Objectives: To determine the relation between different definitions of complete surgical revascularization with late mortality.
Methods: Single center retrospective study of all consecutive patients submitted to isolated CABG with previous myocardial viability assessment (myocardial perfusion scintigraphy), since 2011 to 2016, excluding emergent procedures and previous cardiac surgery. The population of study was162 patients with 22.2% female gender and a mean age of 66 years. The follow-up was complete in 98.8%, median time of 4.1 (IQR 3.0-5.5) years. The primary end-point was mortality at follow-up. The completeness of revascularization was classified in all patients according to four different definitions (n = 162 for each definition): Numerical (the number of stenotic vessels must equal the number of distal anastomoses applied); Functional (all ischemic myocardial territories are reperfused; areas of old infarction with no viable myocardium are not required to be reperfused); Anatomical Conditional (all stenotic main-branch vessels are revascularized) and Anatomical Unconditional (all stenotic vessels are revascularized, irrespective of size and territory supplied). For each definition, statistical analysis was performed using the Kaplan-Meier method with log-rank test and Cox proportional analysis (euroscore II and revascularization definition).
Results: On univariate analysis, there was no significant statistical association between each definition of complete revascularization and follow-up mortality (n = 20): numerical (p = 0.694); anatomical unconditional (p = 0.294); but a trend was found on functional (p = 0.063) and anatomical conditional (p = 0.084). On multivariate analysis, incomplete functional revascularization increased the risk of follow-up mortality in 2.89 folds (CI95%: 1,06-7,89, p = 0,039) and anatomical conditional in 3.28 folds (CI95%: 1.01-10.66, p = 0,048) (Fig.). The other definitions were not statistically associated with late mortality.
Conclusions: According to this study, complete functional and anatomical conditional revascularization definitions are determinants of follow-up mortality in a multivariate model including euroscore II. The revascularization of all stenotic main-branch vessels (anatomical conditional) seems to have the highest impact.

CO 89. COMPLETE *VERSUS* INCOMPLETE REVASCULARIZATION: LONG-TERM SURVIVAL AFTER CABG

Rui J. Cerqueira[1], Francisca Saraiva[2], Raquel Moreira[2], Ana Filipa Ferreira[2], Mário J. Amorim[1], Paulo Pinho[1], André P. Lourenço[2], Adelino F. Leite-Moreira[2]

[1]Centro Hospitalar de S. João, EPE. [2]Faculdade de Medicina da Universidade do Porto.

Introduction: There is conflicting evidence regarding the outcomes of complete revascularization (CR) in coronary artery bypass grafting (CABG).
Objectives: To compare long-term survival and early outcomes of CABG surgery using CR *versus* incomplete revascularization (IR).
Methods: Retrospective single-center cohort study including consecutive patients who underwent 1st isolated CABG with at least 2-vessels disease, during a 10-year period. Emergent surgeries were excluded. An anatomical definition for completeness was used: CR was considered if all diseased territories (at least one branch with stenosis ≥ 50%) were revascularized with at least 1 graft (stent was also considered to right coronary artery hybrid procedures). Propensity scores (PS) were estimated through a non-parsimonious multivariate logistic regression model and included in multivariate regressions as a covariate along with CR. Cox and logistic regressions were used to estimate the effect of CR in long-term survival and early outcomes, respectively. Mean follow-up time was 7 years, maximum 13.
Results: CR was performed in 47% out of 3154 included patients. Mean patient's age was 64 ± 10 y. and 80% were male. Patients with CR were younger (63 ± 10 *versus* 65 ± 10, p < 0.001) and presenting less frequently with 3-vessels disease (65% *versus* 86%, p < 0.001), chronic kidney disease (55% *versus* 59%, p = 0.045) and peripheral and cerebral artery disease (13% *versus* 19%, p < 0.001 and 7% *versus* 11%, p < 0.001, respectively). Regarding surgical variables, bilateral internal mammary artery was more often used in CR patients (39% *versus* 28%, p < 0.001), but no difference was found regarding the use of cardiopulmonary bypass (57% *versus* 55%, p = 0.346). Kaplan-Meier curves showed a significant benefit for CR patients with long-term cumulative survival of 66% *versus* 55% at 13 years of follow-up (log-rank, p < 0.001). CR technique was also associated with better survival in PS adjusted cox regression (HR: 0.80, 95%CI: 0.68-0.95, p = 0.010). In-hospital death (1%), prolonged mechanical ventilation time (> 24 h, 6%), length of hospital-stay ≥ 7days (53%), need of inotropic support (≥ 2 amines, 16%) and post-operative atrial fibrillation (19%) were similar between the 2 groups.
Conclusions: In this long-term follow-up study, CR revealed to be a significant predictor of better prognosis considering all-causes of death, without impact in early postoperative results. Further randomized prospective studies are needed to provide recommendations on revascularization techniques.

CO 90. ACUTE KIDNEY INJURY AFTER CORONARY ARTERY BYPASS GRAFTING SURGERY: PREDICTORS AND SURVIVAL IMPACT

Raquel Moreira[1], Francisca Saraiva[1], Ana Filipa Ferreira[1], Rui J. Cerqueira[2], Mário J. Amorim[2], Paulo Pinho[2], André P. Lourenço[1], Adelino F. Leite-Moreira[1]

[1]Faculdade de Medicina da Universidade do Porto. [2]Centro Hospitalar de S. João, EPE.

Introduction: Cardiac surgery could induce acute kidney injury (AKI) and need for renal replacement therapy being the second most common cause of AKI in the intensive care unit.

Objectives: To determine AKI incidence after coronary artery bypass grafting (CABG) surgery, its predictors and its impact in immediate and long-term survival.
Methods: Retrospective single-center cohort study including all CABG surgeries performed in 2012 and 2013. Preoperative hemodialysis patients were excluded. AKI was defined as an increase of at least 0.3 mg/dL in creatinine within 48 h, or an increase to 1.5 times or more from baseline, within 7 days after CABG. Chi-square tests and independent t-tests were used to compare categorical and continuous data, respectively, between patients with and without AKI. A multivariate logistic regression model was used to identify independent risk factors of AKI. To determine the effect of AKI in long-term survival, Kaplan-Meier curves, log-rank test and multivariate Cox regression (maximum follow-up time: 6 years) were used.
Results: We included 809 patients, mean age 64 ± 10 years, 82% being male. AKI occurred in 88 patients (11%). These patients were older (67 ± 10 *versus* 64 ± 10 years, p = 0.005), presented more frequently diabetes (51% *versus* 38%, p = 0.021), NYHA functional class III-IV (13% *versus* 6%, p = 0.031) and had worse renal function pre-operatively, characterised by a lower creatinine clearance (84 ± 34 *versus* 94 ± 33 ml/min, p = 0.007) compared with patients without AKI. In multivariate analysis, the occurrence of recent acute myocardial infarction (OR: 1.61, 95%CI: 1.01-2.59, p = 0.048), obesity (OR: 1.70, 95%CI: 1.01-2.86, p = 0.044), male gender (OR: 2.60, 95%CI: 1.28-5.29, p = 0.008) and chronic kidney disease (CKD, CC < 85 ml/min, OR: 1.83, 95%CI: 1.04-3.20, p = 0.035) emerged as independent predictors of AKI. There were no significant differences in hospital mortality between groups (2.3% *versus* 0.7%, p = 0.133). Regarding long-term survival, patients with AKI did not show differences in cumulative survival compared to patients without AKI (87% *versus* 90%, log-rank test p = 0.194). AKI was not an independent predictor of mortality in multivariate Cox regression (HR: 1.08, 95%CI: 0.56-2.10, p = 0.820).
Conclusions: At our center AKI incidence after CABG surgery was 11%. Recent AMI, obesity, male gender and CKD were settled as AKI independent predictors. However, this immediate post-CABG outcome did not show association with long-term survival.

CO 91. RISK PREDICTION FOR TRANSFUSION OF ERYTHROCYTE CONCENTRATE DURING EXTRACORPOREAL CIRCULATION IN CORONARY SURGERY

Patrícia Paiva

Centro Hospitalar e Universitário de Coimbra / Hospitais da Universidade de Coimbra.

We have conducted a study of patients undergoing coronary artery bypass surgery (CABG) to identify preoperative risk factors and to develop and validate a risk prediction model for red blood cell (RBC) transfusion during extracorporeal circulation (ECC). This retrospective observational study includes consecutive patients who underwent on-pump isolated CABG, between January 2012 and December 2013. The risk model was developed and validated by logistic regression and bootstrap analysis. Discrimination and calibration were assessed using the area under the ROC curve (AUC) and the Hosmer-Lemeshow (H-L) test, respectively. Of the 530 patients included, RBC transfusion occurred in 91 (17.2%) during ECC. Of these, the majority was transfused with one (54.9%) or two (41.8%) packed RBC. The final model covariates (reported as odds ratios; 95% CIs) were age (1.07; 1.02-1.13), glomerular filtration rate (0.98; 0.96-1.00), body surface area (0.95; 0.92-0.98), peripheral vascular disease (3.03; 1.01-9.05), cerebrovascular disease (4.58; 1.29-16.18) and hematocrit (0.55; 0.48-0.63). The risk model developed has an excellent discriminatory power (AUC: 0,963). The results of the H-L test showed that the model predict accurately, both on average and across the ranges of patient deciles of risk. We have developed a risk prediction model for red blood cell transfusion during extracorporeal circulation which has performed adequately in terms of discrimination, calibration and stability over a wide spectrum of risk. Consequently, the risk model developed can be used as an instrument to provide accurate information about the risk RBC transfusion during ECC in our patient population. Additionally, could be used as a valuable adjunct for local improvement of clinical practice, particularly regarding treatment choice and resource allocation, informed consent and quality control.

CO 92. COULD PREOPERATIVE BETA-BLOCKER THERAPY DECREASE POST-CABG ATRIAL FIBRILLATION INCIDENCE?

Rui J. Cerqueira[1], Ana Filipa Ferreira[2], Francisca Saraiva[2], Raquel Moreira[2], Mário J. Amorim[1], Paulo Pinho[1], André Lourenço[1], Adelino Leite-Moreira[2]

[1]Centro Hospitalar de S. João, EPE. [2]Faculdade de Medicina da Universidade do Porto.

Introduction: Postoperative atrial fibrillation (PoAF) is the most common arrhythmia following cardiac surgery and could be associated to the patient's morbidity and mortality. Although beta-blocker therapy is recommended to prevent PoAF, the supporting evidence is poor.
Objectives: The aim of this study was to determine the effect of preoperative beta-blocker medication in PoAF incidence following coronary artery bypass grafting surgery (CABG), and its impact in long-term mortality.
Methods: Retrospective single-center study including consecutive CABG during a 5-year period. Patients with documented episodes of AF or pacing rhythm before cardiac surgery were excluded. Preoperative, surgical and postoperative data were collected through clinical files and informatic databases. Qui-square and independent t-tests were used to compare categorical and continuous data, respectively, between patients with and without PoAF. A multivariate logistic regression model was used to estimate the impact of pre-operative beta-blocker therapy in PoAF. Kaplan-Meier curves, log-rank test and multivariate Cox regression were used to determine the effect of beta-blocker treatment in long-term survival. The mean follow-up time was 8 years, maximum 13.
Results: We included 1487 patients, mean age of 63 ± 10 years, 79% being male. PoAF occurred in 255 patients (17%), 3 ± 4 days after CABG, the majority pharmacologically cardioverted with amiodarone (95%). These patients were older (67 ± 9 *versus* 62 ± 10 years, p < 0.001), more frequently hypertensive (75% *versus* 69%, p = 0.004) and had lower preoperative creatinine clearance (CC) values (73 ± 28 *versus* 81 ± 28 mL/min, p < 0.001) and higher CHA_2DS_2-VASc score (2.97 ± 1.68 *versus* 2.61 ± 1.56, p = 0.001) compared with patients without PoAF. PoAF was determined as an independent predictor of mortality in multivariate cox regression (HR: 1.455, 95%CI: 1.120-1.890, p = 0.005). In multivariate analysis, pre-operative beta-blocker therapy did not reveal a preventive effect in PoAF after CABG surgery (OR: 1.015, 95%CI: 0.627-1.642, p = 0.952). Both univariate and multivariate analysis showed an improvement in cumulative survival with beta-blocker medication (13-years survival of 65% *versus* 55%, log-rank, p = 0.005; HR: 0.689, 95%CI: 0.522-0.909, p = 0.008).
Conclusions: Although pre-operative beta-blocker therapy did not predict PoAF occurrence after CABG surgery in this retrospective cohort, it showed a significant prognosis benefit regarding long-term survival. Further prospective studies could better address the pathophysiology pathways underlying this positive impact.

Segunda-feira, 29 Abril de 2019 | 09H30-11H00

NEPTUNO I | COMUNICAÇÃO ORAL 06 - IMAGIOLOGIA CARDIOVASCULAR

CO 36. COMPUTED TOMOGRAPHY FRACTIONAL FLOW RESERVE: IMPACT OF A NEW WORKSTATION BASED TECHNIQUE IN THE DIAGNOSTIC WORKFLOW OF STABLE CORONARY ARTERY DISEASE

Pedro Ribeiro Queirós, Nuno Dias Ferreira, Ricardo Ladeiras-Lopes, Rita Faria, Cláudio Guerreiro, Marisa Passos Silva, Mónica Carvalho, Wilson Rua, Pedro Braga

Centro Hospitalar de Vila Nova de Gaia / Espinho.

Introduction: Computed tomography coronary angiography (CTCA) is frequently used in the early evaluation of patients with suspected coronary

artery disease (CAD), providing high diagnostic accuracy. The addition of functional assessment with fractional flow reserve derived from computed tomography (CT-FFR) has demonstrated incremental diagnostic value to CTCA alone in large-scale multicenter studies, thereby reducing the frequency of unnecessary invasive coronary angiography (ICA). CT-FFR is typically performed off-site using a super-computer, being associated with significant costs and a delay in the delivery of results. Recently, new methods were introduced, allowing independent on-site computation of FFR using regular workstations. Our aim was to determine the impact of the addition of CT-FFR to standard CTA in the management of patients with obstructive CAD, using an on-site software.
Methods: Patients referred to elective ICA having previously undergone CTCA for suspected stable CAD were retrospectively identified from September 2017 to November 2018. Patients with known CAD or Agatston score ≥ 1000 were excluded from analysis. Vessel-specific CT-FFR was computed using a workstation-based prototype software. Per-patient diagnostic accuracy of CT-FFR (positive if ≤ 0.8) for detection of hemodynamically significant CAD (defined in ICA as stenosis > 90%, FFR ≤ 0.8 or iFR ≤ 0.9) was determined.
Results: From the 69 identified patients, CT-FFR was technically feasible in 60 patients (87.0%), with reasonable or high confidence in 80% of cases. Mean age was 60.4 ± 11.4 with 78% of male individuals. Median time between CTCA and ICA was 43 days. Twenty-five patients (42%) had hemodynamically significant CAD. CT-FFR was positive in 35 patients (58%), showing a sensitivity and specificity of 76% (95%CI: 55-91%) and 54% (95%CI: 37-71%), respectively, for the diagnosis of significant CAD (AUC of 0.65, 95%CI 0.53-0.77). CT-FFR correctly classified 63% of patients and would avoid performing invasive coronary angiography in 19 patients (32%).
Conclusions: Workstation-based CT-FFR is a broadly feasible technique. Its addition to the diagnostic workflow of CAD, in patients whose CTCA results would require additional testing, can significantly improve the detection of hemodynamically significant CAD, without added radiation or relevant time delays.

CO 37. NEW PEGUERO-LO PRESTI CRITERIA FOR DIAGNOSIS OF LEFT VENTRICULAR HYPERTROPHY - A CARDIAC MAGNETIC RESONANCE VALIDATION STUDY

Cláudio Espada Guerreiro[1], Pedro Azevedo[2], Ana Raquel Barbosa[1], Ricardo Ladeiras-Lopes[1], Nuno Ferreira[1], Rita Faria[1], Bruno Melica[1], João Primo[1], Paulo Fonseca[1], Helena Gonçalves[1], Marco Oliveira[1], Pedro Braga[1]

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Introduction: The new Peguero-Lo Presti (PLP) ECG criteria for left ventricular hypertrophy (LVH) showed higher sensitivity and overall accuracy compared with the Cornell (CL) and Sokolow-Lyon (SL) voltage criteria, in hypertensive patients evaluated with echocardiography. The performance of this criteria has not been validated for LVH as defined by cardiac magnetic resonance (CMR), the gold standard method for left ventricular mass (LVM) and volumes evaluation.
Objectives: Evaluate and compare the diagnostic accuracy of PLP, CL and SL voltage criteria for LVH as defined by CMR.
Methods: Retrospective study of 175 patients (> 34 years-old) referred for CMR from 01/2015 to 12/2017, who had a concomitant electrocardiogram for review. Patients with complete left or right bundle branch block or ventricular paced rhythm were excluded. CMR was used to estimate the indexed LVM and septal hypertrophy. LVH group patients were defined according to the reference values for gender and age. A control group, adjusted by gender, was randomly selected from a population of 310 consecutive patients referred for CMR and without LVH. We applied the SL, CL voltage and PLP criteria to both groups and evaluated their diagnostic accuracy (AUC analysis). Diagnostic sensitivity and specificity were compared.
Results: 175 patients (mean age 64 years; 61% males) were divided into two groups (LVH n = 88; control n = 87). LVH group had lower prevalence of CAD (23.9% *versus* 40.2%, p = 0.024) and previous CABG (2.3% *versus* 12.6%, p = 0.010). Left atrial volume (91.1 ± 31.2 *versus* 73.6 ± 23.9 mL, p = 0.006) and LVMi (77.9 ± 23.8 *versus* 54.3 ± 11.2 g/m^2, p < 0.001) were higher in LVH group. Discrimination by AUC was highest for the PLP criteria (AUC 0.823, p < 0.001), followed by CL (AUC 0.808, p < 0.001) and SL (AUC 0.690, p < 0.001) voltage criteria. The PLP criteria outperformed CL voltage criteria, with higher sensitivity (50% [95%CI: 40-60%] *versus* 31% [95%CI: 20-33%], p = 0.006) and SL (vs 28% [95%CI: 20-37%], p = 0.003) for LVH diagnosis. The specificities of all the criteria were above 94%, without significant difference between them.
Conclusions: In a population with LVH defined by CMR, after adjustment for gender and age, the proposed criteria of PLP showed increased sensitivity for this diagnosis, when compared with the SL and CL voltage criteria. As such, they could become the preferred ECG diagnostic tool when evaluating patients at risk for LVH.

CO 38. RIGHT VENTRICULAR FUNCTION: IS LONGITUDINAL STRAIN BY SPECKLE-TRACKING AN OPTION?

André Azul Freitas, João Ferreira, Letícia Bento, Valdirene Gonçalves, Cátia Ferreira, James Milner, Vera Martinho, Patrícia Alves, Rui Baptista, Elisabete Jorge, Rui Martins, Lino Gonçalves

Centro Hospitalar e Universitário de Coimbra / Hospitais da Universidade de Coimbra.

Introduction: Estimation of right ventricular (RV) performance by echocardiography is challenging due to its anatomical and functional distinctiveness. RV longitudinal strain (RVLS) by speckle-tracking (STE) is an innovative tool and recent studies show that it can be used with prognostic significance, although it isn't yet standardized. In this study, we aimed to evaluate global (G) and free wall (FW) RVLS-STE and its correlation with common RV evaluation methods.
Methods: We conducted a prospective, observational study including 65 patients. G and FW RVLS-STE were correlated to tricuspid annular plane systolic excursion (TAPSE), Doppler tissue tricuspid lateral annular systolic velocity (S') and left ventricle ejection fraction (LVEF). Following current guidelines, a TAPSE higher than 17mm, a peak S' wave velocity higher than 9.5 cm/s and a RVLS-STE inferior to -20% was considered normal.
Results: Mean age was 66.34 ± 15.45 years with a male preponderance (61.5%). The comorbidities included 40% of patients with heart failure with reduced LVEF, 29.3% of moderate to severe valvular disease, 9.5% of patients with pulmonary hypertension and 13.8% without significant structural disease. FW RVLS-STE was similar among young (< 55 years) or older patients (-20.4% *versus* -18.3%, p = 0.4) or females *versus* males (-20.1% *versus* -17.9%, p = 0.2). Peak S' wave showed a better correlation with FW RVLS-STE (r^2 = 0.283, p < 0.001) than G RVLS-STE (r^2 = 0.152, p < 0.001). No correlations were found with TAPSE. A high absolute FW RVLS-STE (< -20%) was a good marker of a normal TAPSE and a normal peak S' wave velocity, with a negative predictive value of 78% and 96% respectively. The cut off values of FW RVLS-STE that best predicted a low TAPSE and low peak S` wave velocity were -14.8% (AUC 0.678 [95%CI: 0.53-0.83], p = 0.024) and -10.83% (AUC 0.861 [95%CI 0.70-1], p = 0.01), respectively. Comparing with a high peak S' wave velocity (> 11 cm/s), a borderline value (9.5 to 11 cm/s) was associated with a significant reduction of absolute FW RVLS-STE mean (-22.7% *versus* -16.6%, p = 0.002). LVEF was better correlated with G RVLS-STE (r^2 = 0.32, p < 0.001) than FW RVLS-STE (r^2 = 0.22, p < 0.001) or S' (r^2 = 0.13, p = 0.004).
Conclusions: FW RVLS-STE is better than G RVLS-STE as a RV evaluation method. RVLS-STE is correlated with peak S` wave velocity and seems to be an accurate marker of RV function particularly detecting early dysfunction. G RVLS-STE is the most closely associated with left ventricular systolic function.

CO 39. COMPUTED TOMOGRAPHY CORONARY ANGIOGRAPHY AS FIRST LINE INVESTIGATION OF STABLE CHEST PAIN: UK REALITY

Rui Azevedo Guerreiro[1], Carl Roobottom[2], Gareth Morgan-Hughes[2]

[1]Hospital do Espírito Santo, EPE, Évora. [2]University Hospitals Plymouth NHS Trust, Plymouth, United Kingdom.

Introduction: European Society of Cardiology (ESC) guidelines on the management of stable coronary artery disease (2013) suggest a stress

test, either treadmill exercise stress test or, preferably, stress imaging test for the diagnosis of stable coronary artery disease. Computed tomography coronary angiography (CTCA), according to ESC, is reserved as an alternative or after a non-conclusive stress imaging test in a very specific group of patients within the lower range of intermediate pre-test probability. On the other hand, NICE guidelines, from United Kingdom (UK), suggests that new onset stable chest pain patients, as well as those with non-cardiac chest pain and an abnormal resting ECG, may be offered CTCA, as a diagnostic test.

Objectives: Authors aim to characterise the current UK reality of investigation of stable chest pain with CTCA.

Methods: Single centre, prospective audit study, including 400 consecutive patients with stable chest pain, who were referred to CTCA. Demographic, CTCA and downstream testing data were collected. Statistical analysis was performed using STATA v14.

Results: 400 patients were included, with mean age of 61 ± 12.2 years, 202 (52.6%) men, with a mean BMI of 28.9 ± 6.4 kg/m^2. 387 (96.8%) CTCAs were diagnostic. Coronary artery disease (CAD) was diagnosed in 229 (59.2%) patients. The CAD-RADS distribution was the following: 0, 40.8%; 1, 24.3%; 2, 11.1%; 3, 6.2%; 4, 14.7%; 5, 2.8% (Fig.). The mean CAD-RADS was 1.4 ± 1.6. Non-obstructive (CAD-RADS 1-2) and obstructive CAD (CAD-RADS 3-5) were present in 137 (34.3%) and in 92 (23.8%) patients, respectively. In total, 67 (16.8%) patients underwent invasive coronary angiogram (ICA) after the CTCA.

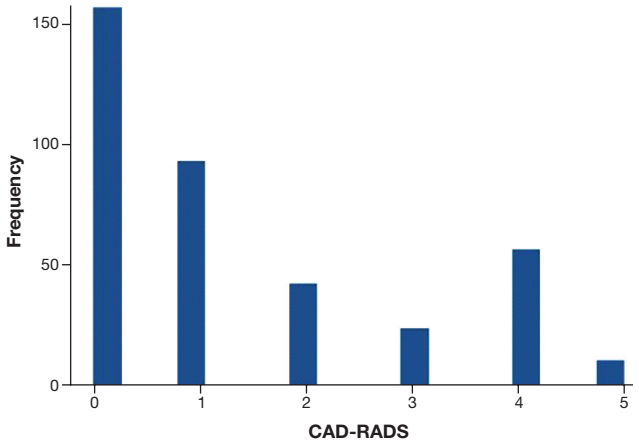

Figure 1. CAD-RADS distribution.

Conclusions: CTCA as first line investigation of stable chest pain is feasible with > 95% diagnostic scans. CTCA diagnosed obstructive CAD in 23.8% of our sample. CTCA has also allowed the diagnosis of non-obstructive CAD in 34.3% of our sample, promoting the prescription of effective secondary preventive therapies, which may not have been adequately prescribed if a stress test was performed as first line investigation.

CO 40. LEFT VENTRICULAR GLOBAL LONGITUDINAL STRAIN CAN PREDICT THE RISK OF VENTRICULAR ARRHYTHMIAS IN HYPERTROPHIC CARDIOMYOPATHY PATIENTS WITH PRESERVED LV FUNCTION?

Ana Marinho, Patrícia Alves, Célia Domingues, João Ferreira, James Milner, Natália António, Luís Elvas, Rui Martins, Francisco Gonçalves, Lino Gonçalves

Centro Hospitalar e Universitário de Coimbra / Hospitais da Universidade de Coimbra.

Introduction: Hypertrophic cardiomyopathy (HCM) is characterized by a heterogeneous clinical expression with increased risk of sudden cardiac death (SCD) from ventricular arrhythmias (VAs). Several studies have shown that patients with malignant arrhythmias have increased electrical dispersion and in homogeneity of intraventricular conduction. Strain by echocardiography is an excellent tool for assessing regional and global left ventricular (LV) function and mechanical dispersion reflects heterogeneous myocardial contraction. We aimed to explore the value of strain parameters in prediction of VAs in HCM with LV preserved systolic function.

Methods: Retrospective observational study including all patients with HCM and ICD implanted in setting of primary prevention in our centre. Patients with LVEF < 40% or coronary artery disease were excluded. LV GLS was defined as the average of peak longitudinal strains from a 16 LV segments model, obtained from three apical views. Time to peak strain was defined as the time from onset Q/R wave on ECG to peak negative longitudinal strain during the entire cardiac cycle. Mechanical dispersion was defined as the standard deviation of time to peak negative strain in 16 LV segments. Patients with VA (group1) and patients without VA (group2) were compared.

Results: The study population included 48 patients, 63.3% of male gender. A family history of HCM was present in 64 pts (43%). All patients were under anti arrhythmic therapy (BB in 95.6%, other anti-arrhythmic in 28.2%). VAs (sustained and non sustained) were documented in 27 (55%) patients. The study groups did not differ regarding to mean age (54 ± 12 *versus* 56 ± 12 years, p = 0.67), male gender (54% *versus* 56%, p = 0.87) and BB therapy (91% *versus* 96%, p = 0.07). Mean LVEF was 58% in group 1 and 61% in group 1, p = 0.56; a LVOT gradient > 30 mmHg was present in 52% of group 1 pts and 45% of group 2 pts, p = 0.06. Mean wall thickness was 22mm *versus* 18 mm, p = 0.03, respectively. GLS was significantly lower in group 1 (-13.9 ± 3.4 *versus* -16.1 ± 3.5, p = 0.02), mechanic dispersion was significantly higher in group 1 (81 ± 14 *versus* 60 ± 12ms, respectively, p = 0.01. In a multivariate logistic regression model mechanic dispersion was a strong predictor of VA 1.57 (OR: 1.09-2.28) p = 0.02.

Conclusions: Mechanical dispersion and GLS may help to identify HCM patients with high risk of VAs and SCD.

CO 41. CARDIORESPIRATORY ADAPTATIONS IN ELITE FEMININE CANOISTS

Joaquim Castanheira[1], Liliana Resende[1], Telmo Pereira[1], Alexandra André[1], Paula Martins[2]

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Introduction: Canoeing is one of the most physically demanding sports given that its training involves both high intensity isometric and isotonic components. Thus, the development of cardiovascular and respiratory morphological and/or functional adaptations are expected, and potentially inter-related.

Objectives: To evaluate and correlate heart adaptations, evaluated by echocardiography, and respiratory function in elite canoeists.

Methods: Cross-sectional study including 11 female elite athletes (official Portuguese Canoe Team), with age ranging from 18 to 30 years. Echocardiogram, respiratory function tests and echography evaluation of diaphragmatic mobility and thickness were performed to all athletes at the same day.

Results: Significant positive correlations were found between the tricuspid valve E velocity and both the tidal volume (r = 0.782, p = 0.004) and the forced vital capacity (r = 0.778, p = 0.005). Conversely, significant negative correlations were observed between tricuspid ring E' wave velocity and both peak expiratory flow (r = -0.632; p = 0.037) and peak expiratory flow at 75% of vital capacity (r = -0.614, p = 0.044). No statistically significant associations were found between diaphragmatic movements and respiratory function parameters, except for the correlation between the peak expiratory volume at 1 second and the diaphragmatic excursion during inspiration (r = 0.738; p = 0.009). Regarding the available reference values, there was also an increase in the thickness of the left ventricle walls as well as of the mobilized lung volumes.

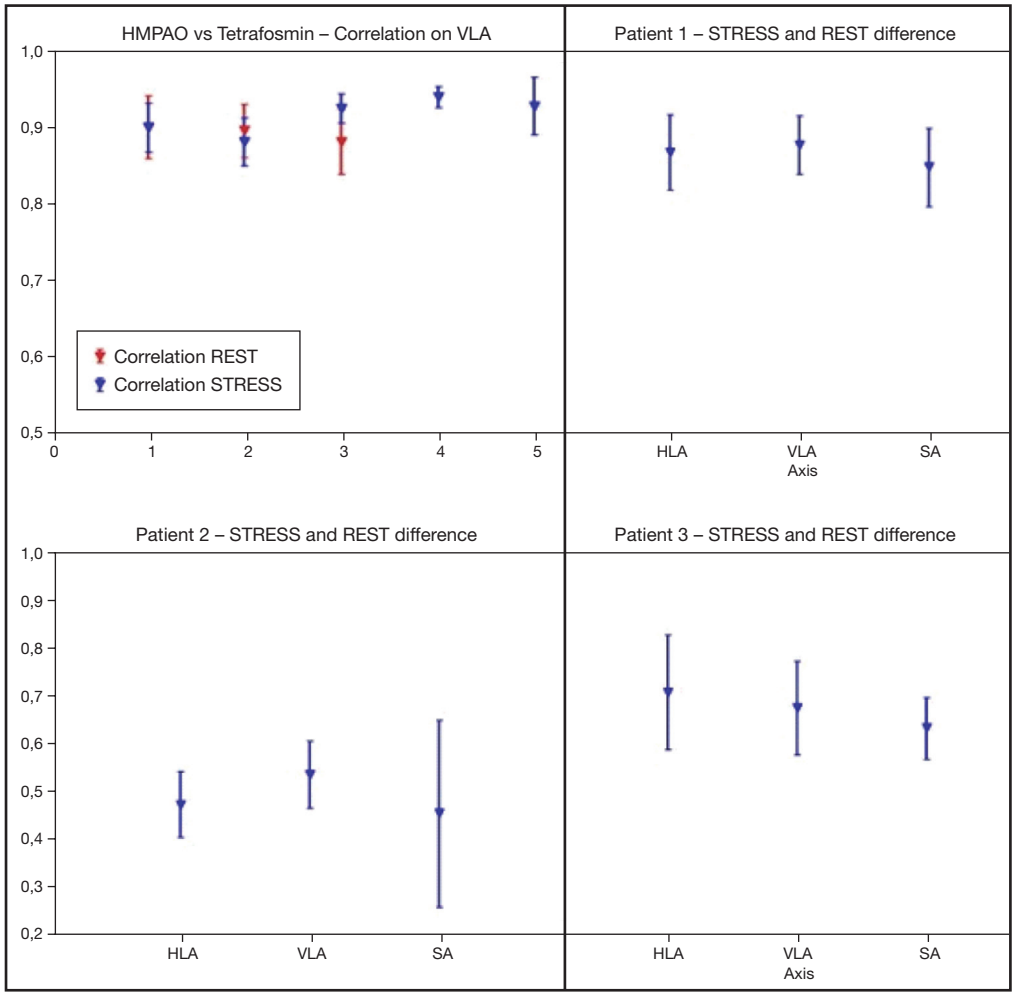
Conclusions: The intensive and prolonged training in elite female canoeist is associated with cardiac and respiratory adaptations. Also, respiratory dynamics appears to be closely linked to right ventricular diastolic filling.

CO 42. VALIDATION OF HMPAO-TC-99M AS A RADIOTRACER FOR MYOCARDIAL PERFUSION - PRELIMINARY RESULTS

Maria Teresa Faria[1], Maria do Carmo Vilas-Boas[2], Paulo Manuel Maia[2], Ana Oliveira[1], Ricardo Rego[1], Joel Sousa[1], Jorge Pereira[1], J.P.S. Cunha[2], Francisco Rocha Gonçalves[3], Elisabete Martins[3]

[1]Centro Hospitalar de S. João, EPE. [2]Institute for Systems Engineering and Computers - Technology and Science (INESC TEC), FEUP. [3]Faculdade de Medicina da Universidade do Porto.

Introduction: We have previously reported the possibility of imaging the heart with HMPAO-99mTc (HMPAO). Being a brain perfusion radiotracer, mapping of myocardial perfusion seemed also probable, permitting the use of a single radiotracer on patients with epilepsy with less radioactive exposure.
Objectives: To compare myocardial gated SPECT images made with both HMPAO and Tetrofosmin-Tc-99m (Tetrofosmin).
Methods: In three patients who had Tetrofosmin myocardial perfusion scintigraphy (MPS) as part of their clinical evaluation, we acquired myocardial SPECT images with HMPAO. Both studies were acquired in gated mode. We selected another two patients who had ictal brain perfusion SPECT and needed to perform a MPS as well (stress, only). In these cases, we acquired an ictal myocardial SPECT after the brain SPECT (HMPAO). Algorithms were developed in MATLAB R2016 to compare the Tetrofosmin and HMPAO images of each reconstructed plane (short axis [SA], vertical long axis [VLA], and horizontal long axis [HLA]). After applying a median filter, each slice pair was aligned and the area of interest was defined. A pixel-wise correlation was calculated for every slice, using Pearson's Correlation Coefficient. Reversibility of the defects was also evaluated (correlation of the rest-stress subtraction with each radiotracer), as were the polar maps. The study was approved by our Institution Ethics Committee. All patients gave their informed consent.
Results: In the five patients evaluated, we obtained high correlations for perfusion images (better in the VLA, [0.88-0.94, stress], [0.88-0.90, rest]). Reversibility correlations varied between 0.45 and 0.8 (3 axes). Gated images correlations between each slice of each gate were also better in VLA (mean values: 0.78-0.89 [stress], 0.78-0.84 [rest]). The polar maps correlations were 0.93-0.96 (stress), 0.93-0.95 (rest) and 0.6-0.9 (reversibility). Patient 2 had poorer correlations due to lung HMPAO uptake, interfering with image processing. That patient has smoking habits (a known cause of HMPAO lung uptake).
Conclusions: We obtained high correlations for cardiac studies between Tetrofosmin and HMPAO, especially in VLA. Myocardial SPECT with HMPAO may be a screening method for myocardial ischemia in non-smoking patients with epilepsy who already need a HMPAO brain perfusion SPECT. In a subset of these patients prone to have heart changes (e.g. those with rises in ictal Troponin I) it could serve as a gateway to MPS.



Segunda-feira, 29 Abril de 2019 | 09H30-11H00

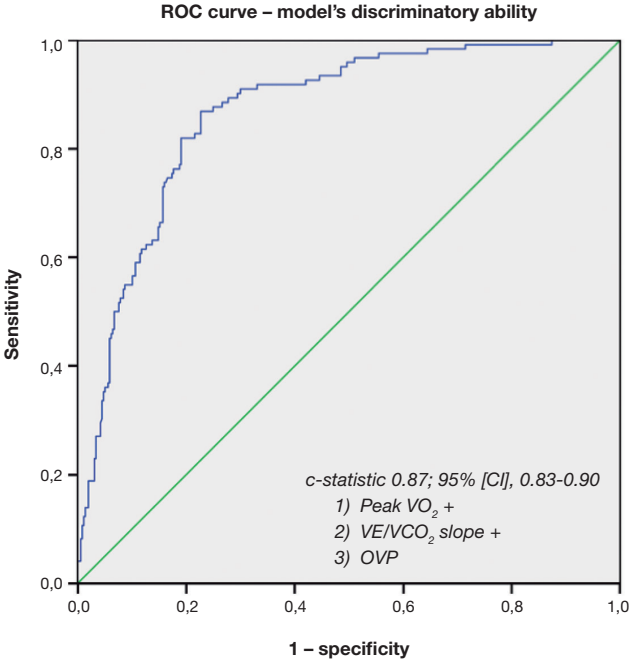
NEPTUNO II | COMUNICAÇÃO ORAL 07 - INSUFICIÊNCIA CARDÍACA

CO 43. WHICH RESULTS OF THE CARDIOPULMONARY EXERCISE TEST DESERVE GREATEST ATTENTION TO ESTABLISH THE PROGNOSIS IN HEART FAILURE?

Francisco Fernandes Gama, Pedro Freitas, António Ferreira, Anai Durazzo, Carlos Aguiar, António Tralhão, António Ventosa, Jorge Ferreira, Miguel Mendes

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

Introduction and objectives: Limitation of exercise tolerance is one of the cardinal manifestations of heart failure (HF). Cardiopulmonary exercise testing (CPET) provides a thorough assessment of exercise integrative physiology involving the pulmonary, muscular, and oxidative cellular systems. We aimed to identify which data collected during a CPET shows the best prognostic performance with respect to predicting mortality or the need for heart transplantation (HT).
Methods: Single-centre retrospective cohort study of consecutive HF patients performing a CPET for functional and prognostic HF evaluation from October 1996 till May 2018. Left ventricular ejection fraction was not an exclusion criterion. A Cox model was fit with time to death or heart transplantation (whichever recorded first within 5 years) as the dependent variable and CPET parameters as the independent variables. Both unadjusted and adjusted covariate Cox regressions were performed. ROC curve analysis was used to determine whether the significant variables, as a model, could reliably predict the study endpoint.



Results: The study population consisted of 513 patients, median age 58 (IQ: 16) years, and 74.9% male. The majority had reduced ejection fraction (75.4%), and the most common HF aetiology was ischemic heart disease (55.8%). During the 5-years follow up, 126 patients died and 60 underwent heart transplantation. In unadjusted Cox regression, nearly all CPET variables were significantly associated with the study endpoint. After covariate adjustment, with prior exclusion of redundant variables, three measures remained associated with the study endpoint: peak VO_2 consumption (hazard ratio [HR]: 0.85, 95% confidence interval [CI]: 0.81-0.90); VE/VCO_2 slope (HR: 1.02, 95%CI: 1.00-1.02); presence of oscillatory ventilatory pattern (HR: 3.73, 95%CI: 2.43-5.72). As a model, these 3 variables showed a strong discriminatory ability (c-statistic: 0.87, 95%CI: 0.83-0.90) (Fig.) for the study endpoint.
Conclusions: When using the CPET for prognostic stratification of HF patients, the presence of an oscillatory ventilatory pattern, the peak VO_2 and the VE/VCO_2 slope are the most important tools on which clinicians should focus.

CO 44. COMPARATIVE ANALYSIS OF MULTIPARAMETRIC SCORES IN HEART FAILURE: DOES THE TYPE OF FOLLOW-UP MATTER?

João R. Agostinho[1], Tiago Rodrigues[2], Rafael Santos[2], Joana Rigueria[2], Inês Aguiar-Ricardo[2], Afonso Nunes-Ferreira[2], Nelson Cunha[2], Sara Couto Pereira[2], Fátima Veiga[2], Mónica Mendes Pedro[2], Fausto J. Pinto[2], Dulce Brito[2]

[1]Centro Hospitalar de Lisboa Norte, EPE / Hospital de Santa Maria.
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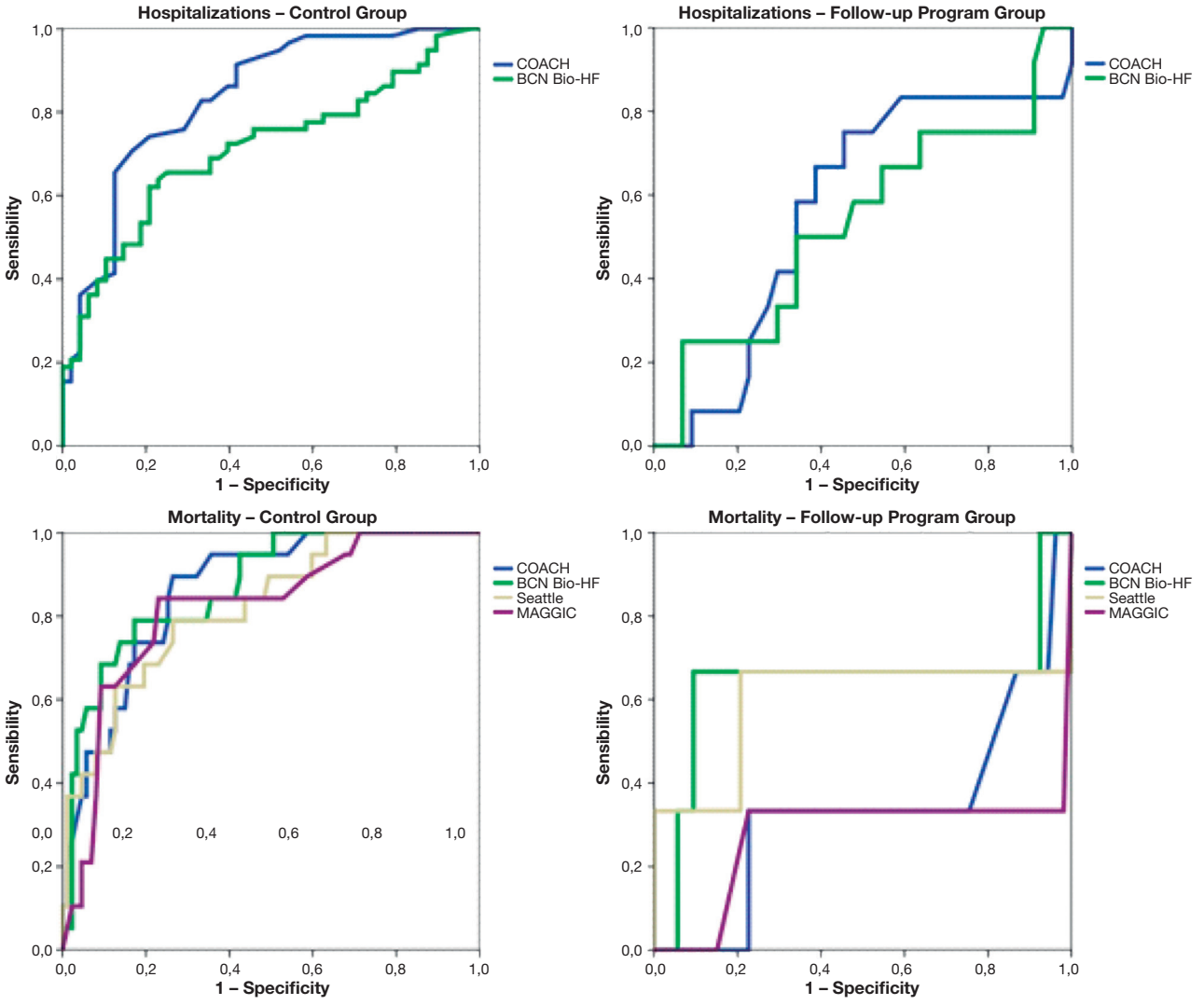
Introduction: Multiple prediction score models have been validated to predict major adverse events in patients with heart failure (HF); however, these scores do not include variables related to the type of follow-up.
Objectives: To evaluate the impact of a protocol-based follow-up program (PFP) of pts with chronic HF regarding scores accuracy for predicting 1-year hospitalizations and mortality.
Methods: Data from 2 HF populations were collected: one composed of pts included in a PFP after the index-hospitalization for HF; and a second one — the control population— composed of pts hospitalized prior to the beginning of the PFP. For each pt, the risk of hospitalization and mortality at 1-year was calculated using the COACH Risk Engine, BCN Bio-HF Calculator, MAGGIC Risk Calculator and Seattle Heart Failure Model. The accuracy of each score was established using the area below the ROC curve (AUC), calibration graphs and discordance (disc) calculation. AUC comparison was established by DeLong method.
Results: The PFP group included 56 pts, and the control group, 106 pts, with no significant differences between groups [median age: 67 *versus* 68.4 years; male sex: 58 *versus* 55%; median ejection fraction 28.2 *versus* 30.5%; functional class II: 60.7 *versus* 56.2%, I: 30.4 *versus* 31.9; p = ns). Hospitalization and mortality rates were significantly lower in the PFP group (21.4 *versus* 54.7, p < 0.001, 5.4 *versus* 17.9, p < 0.001, respectively). Hospitalization risk calculated by COACH and BCN Bio-HF was 25.5 and 7.45% (disc: -55 and -79%, respectively) in the PFP group, and 24.5 and 11.5% (disc: 19 and -65%) in the control group. Mortality risk calculated by COACH, Bio-HF BCN, MAGGIC and Seattle was 21.5, 8.35, 11.1 and 13.7% (disc: 298, 55, 106 and 153%) in the PSP group and 20, 13.1, 11.65 and 14.5% (disc: 12, -26, -35 and -19%) in the control group.When applied to the control group, COACH and BCN Bio-HF had, respectively, good (AUC: 0.835) and reasonable (AUC: 0.712) accuracy to predict hospitalization. There was a significant reduction of COACH accuracy (AUC: 0.572; p = 0.011) and a non-significant accuracy reduction of BCN Bio-HF (AUC: 0.536; p = 0.1) when applied to the PFP group. All scores showed good accuracy to predict 1-year mortality (AUC: 0.863, 0.87, 0.818, 0.82, respectively) when applied to the control group. However, when applied to the PFP group, a significant predictive accuracy reduction of COACH, BCN Bio-HF and MAGGIC (AUC: 0.366, 0.642 and 0.277, p < 0.001, 0.002 and < 0.001, respectively) was observed. Seattle had no significant reduction in its acuity (AUC: 0.597; p = 0.24).
Conclusions: The accuracy of scores to predict major events in pts with HF is, globally, significantly reduced when they are applied to pts under follow-up in PFP. This may be related to the magnitude of reduction in major events rate that these programs entail. In these pts, BCN Bio-HF Calculator maintained reasonable accuracy and should be regarded as the score of choice.



CO 44 Figure

CO 45. EXERCISE OSCILLATORY VENTILATION IMPROVES THE PERFORMANCE OF PROGNOSIS SCORES CURRENTLY USED FOR HEART FAILURE

Francisco Fernandes Gama, Pedro Freitas, Carlos Aguiar, António Ferreira, António Tralhão, Christopher Strong, António Ventosa, Jorge Ferreira, Miguel Mendes

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

Introduction and objectives: Several prognostic risk scores are available for heart failure with reduced ejection fraction (HFrEF), and are used, together with other criteria, to help decide the ideal timing for listing candidates for a heart transplant. The detection of an oscillatory ventilatory pattern (OVP) during cardiopulmonary exercise testing (CPET) has been associated with more advanced HF and a worse prognosis, but was not considered in the development of all the current risk scores. We evaluated whether OVP adds significant prognostic information to four contemporary HF scores.

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 obtained in each patient. Cox model was fit with time to death or

Table CO 45. Added prognostic value to HF scores

SCORE	HR	CI	AUC	Modified SCORE	Adjusted HR	CI	AUC	p for AUC comparison
SHFM	1.02	1.02-1.03	0.806	SHFM modified	1.02	1.01-1.03	0.822	0.373
				+OVP	4.54	2.49-8.28		
HFSS	1.05	1.03-1.07	0.626	HFSS modified	1.04	1.02-1.06	0.754	0.009
				+OVP	4.45	2.42-8.20		
MECKI	1.04	1.03-1.05	0.819	MECKI modified	1.04	1.03-1.05	0.836	0.363
				+OVP	3.01	1.56-5.81		
MAGGIC	1.05	1.03-1.07	0.670	MAGGIC modified	1.03	1.01-1.06	0.762	0.04
				+OVP	4.21	2.25-7.87		

urgent transplant (whichever came first within 2 years) as the dependent variable and OVP and respective HF score as the independent variables. We further assessed the added discriminative power by performing ROC curve comparisons.
Results: We studied 387 patients, median age 58 (IQR: 49; 65) years, and 77% were male. The most common HFrEF aetiology was ischemic heart disease (54%). Median peak oxygen consumption was 15,7 mL/kg/min (IQR: 12,8; 20,0). OVP was present in 150 (39%) 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: 0,625; 95%CI: 0,54-0,71) and MECKI score the strongest (c-statistic: 0.819; 95%CI: 0,76-0,88) discriminatory ability. The presence of OVP predicted the study endpoint independently of the HF prognosis score used (Table). Adding the occurrence of OVP to the HFSS and the MAGGIC scores significantly improved their prognostic performance (see Table).
Conclusions: An OVP is a common finding in HFrEF patients undergoing CPET, and adds prognostic information to contemporary HF prognosis scores. Systematic evaluation of this easily available criterion may assist the decision on the appropriate timing for heart transplantation listing.

CO 46. RELATIONSHIP BETWEEN ON-TREAMENT BLOOD PRESSURE AND OUTCOMES IN PATIENTS WITH HEART FAILURE

David Cabrita Roque[1], Miguel Santos[1], João Augusto[1], Daniel Faria[2], João Ferreira[2], Hilaryano Ferreira[1], Marco Beringuilho[2], Ana Oliveira Soares[1], Carlos Morais[1]

[1]Hospital Fernando Fonseca, EPE. [2]Hospital Prof. Doutor Fernando Fonseca.

Introduction: Blood pressure (BP) is a well known and studied cardiovascular (CV) risk factor. However when CV disease is established, the optimal level of BP is not well studied, and some works had shown that lower BP is related to increased mortality.
Objectives: Evalute in pts admitted for acute decompensated heart failure (ADHF), the relationship between BP at admission, during hospitalization and at hospital discharge with clinical outcomes.
Methods: Retrospective study of 258 consecutive pts admitted for ADHF, defined by the presence of ≥ 2 signs or symptoms of HF. Admission and discharge values of systolic blood pressure (SBP) were recorded, along with clinical, laboratory and therapeutic variables. We divided our population according to the 1st SBP registered at hospital admission and at discharge: group 1 < 130 mmHg (31.8% and 64.3%, respectively); group 2 130-160 mmHg (37.2% and 28.7%, respectively) and group 3 > 160 mmHg (31% and 3.9%, respectively). We also evaluated patients' medication before admission, during hospitalization and at discharge.
Results: 45.7% male, mean age of 74.6 ± 16.6 years. Emergent hospital admission was more frequent in admission group 3 (61.3% *versus* 28.1% in group 2 and 28.1% in group 1, p < 0.001). Admission group 3 also presented more frequently with acute pulmonary oedema (66.3% *versus* 17.7% in group 2 and 13.4% in group 1, p < 0.001). Chronic renal disease was less frequent in admission group 3 (20% *versus* 37.5% in group 2 and 31.7% in group 1, p = 0.040); previous acute coronary syndrome was more frequent in admission group 1 (45.1% *versus* 29.2% in group 2 and 25% in group 3, p = 0.015). Ejection fraction was significantly lower for patients in both admission and discharge group 3 (admission: mean 42% group 3 *versus* 58.8% group 1 *versus* 74.4% for group 2, p = 0.019; discharge: mean 26% group 3 *versus* 65.7% group 1 *versus* 47.2% group 2, p = 0.004). There were no significant differences in hospital mortality between admission SBP groups (7.3% group 1, 9.4% group 2, 7.5% group 3, p = 0.855). Interestingly, patients in admission group 3 had shorter lengths of stay (mean 9.4 *versus* 13.5 for group 2 and 14.2 days for group 3, p < 0.001). Of note, prior prescription of ACEIs/ARB and beta blockers was unrelated to admission SBP categories. There were no differences in readmission rates for ADHF at 1, 3, 6, 9 and 12 months after discharge, according to SBP categories. There was a trend for patients in groups 1 and 3 to have higher mortality rates after discharge (14.5% for group 1 and 10% for group 3 *versus* 5.4% for group 2, p = 0.128), suggesting a J-shaped curve for mortality according to SBP.
Conclusions: During hospitalization SBP does not seem to have an association with mortality rates; however, according to the SBP values at discharge, those patients with the highest and the lowest values are those with higher risk of mortality at 1y FUP, suggesting that in HF, SBP has a J curve and that the least possible BP may not be an adequate treatment target.

CO 47. SINGLE-CENTER SHORT-TERM INITIAL EXPERIENCE WITH MAGNETICALLY LEVITATED CARDIAC PUMPS IN ADVANCED HEART FAILURE

Christopher Strong, António Tralhão, Carlos Aguiar, Miguel Abecasis, Marta Marques, António Ventosa, Miguel Mendes, José Pedro Neves

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

Introduction: The prevalence of advanced heart failure (HF) is rising due to the growing number of patients with HF and their better treatment and survival. The short supply of donor hearts, however, has led to the development of mechanical circulatory support devices that can provide a solution for bridge or destination therapy.
Methods: Single-center retrospective study describing our initial experience with the HeartMate 3 (HM3) left ventricular assist device. Patients' clinical characteristics, pre-implantation workup studies, and outcome were collected.
Results: Three patients have received HM3 since March 2017 (Table), two of them as destination therapy (aged > 70 years old) and a younger patient as bridge to transplantation given a history of malignant gynecological cancer in remission and unsurety about tumor recurrence. All patients had severely depressed left ventricular ejection fraction (LVEF), two had borderline right ventricular function (1, 3) and none had more than mild aortic regurgitation. Patient 1 had G4 chronic kidney failure and Child-Pugh B congestive hepatopathy, the other patients had no significant non-cardiac organ dysfunction. During the peri-implantation period, all patients were bridged

Table CO 47

	Patient 1	Patient 2	Patient 3
Age (years old)	71	53	73
Gender	Male	Female	Male
HF etiology	Ischemic-chronic HF	Ischemic-recent myocardial infarction	Idiopathic-chronic HF
Intermacs profile	4	3	3
Pre-HM3 creatinine (mg/dL)	3.3	0.6	1.1
Biplane LVEF (%)	25	29	7
Pulmonary vascular resistance (Wood units)	4.2	3.3	1.3
Cardiac index (L/min/m2)	1.9	2.1	2.0
Lietz-Miller score	19 (very high risk)	15 (medium risk)	8 (low risk)
Intended goal of pump support	Destination therapy	Bridge transplantation	Destination therapy
Date of implantation	March/2017	May/2018	August/2018
Vital status	Dead	Alive	Alive

to HM3 implantation with intravenous inotropes. Patient 1 also needed right ventricular assist device implantation and tricuspid annuloplasty, besides the HM3. His post-operative period was complicated by significant blood dyscrasia with the need for multiple blood transfusions, vasopressor support and continuous renal replacement therapy, which ultimately lead to his death. The immediate post-operative period of patients 2 and 3 was uneventful. There was a longer time to resume ambulation in patient 3 due to a need for intensive physical therapy, given the significant muscle wasting before HM3 implantation. Until December 2018 patients 2 and 3 have resumed normal daily activities, with no bleeding, thromboembolic or infectious complications, and no significant aortic regurgitation or right ventricular failure in the follow-up echocardiograms thus far.
Conclusions: HM3 has become an important long-term alternative for the treatment of advanced HF, and has shown promising results for two of the patients who received the device. More severe heart failure with multi-organ dysfunction and a more complex surgery may have had an important impact in the post-operative period of patient 1.

CO 48. NT-PROBNP DELTA DURING AN ACUTE HEART FAILURE ADMISSION: A BETTER PREDICTOR OF 12-MONTH MORTALITY

Diana de Campos[1], Carolina Saleiro[1], Rogério Teixeira[1], João Lopes[2], Joana M. Ribeiro[2], Luís Puga[1], José Pedro Sousa[1], Ana Botelho[2], Carolina Lourenço[1], Lino Gonçalves[3]

[1]Centro Hospitalar e Universitário de Coimbra, EPE / Hospital Geral. [2]Centro Hospitalar e Universitário de Coimbra. [3]Centro Hospitalar e Universitário de Coimbra / Hospitais da Universidade de Coimbra.

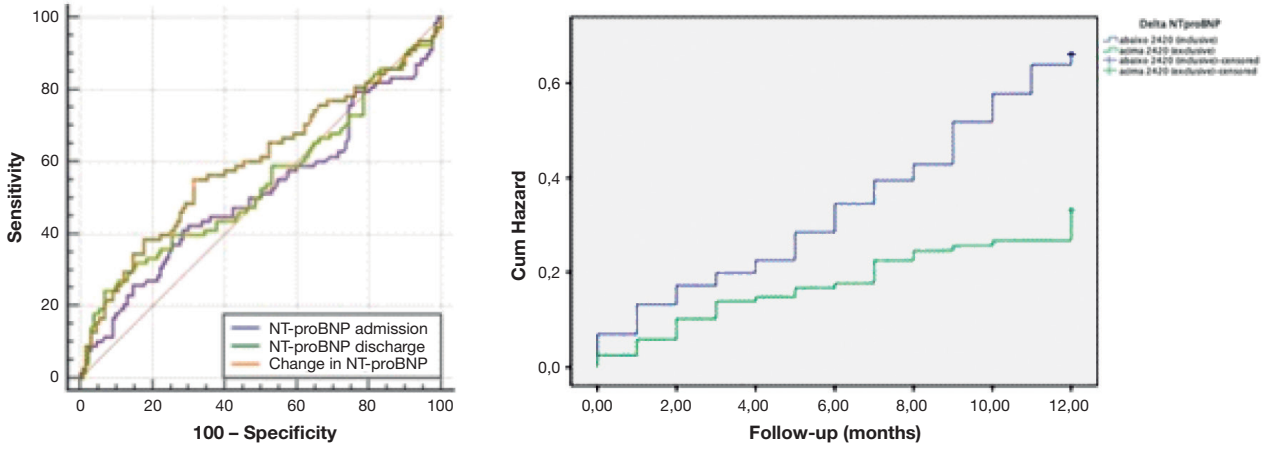
Introduction: It has been established that N-terminal pro hormone B-type natriuretic peptide (NT-proBNP) correlates with hemodynamics in patients with acute decompensated heart failure (ADHF). Moreover, the best cut-off of the delta NTproBNP during hospital stay to estimate prognosis still remains unknown.
Methods: A retrospective study was conducted focusing on consecutive patients who survived a hospitalization for ADHF in a single center coronary care intensive unit. All-cause mortality at 12 months was analyzed. Continuous variables were analyzed by Student *t*-test and categorical variables were compared via χ^2 test. Receiver operating characteristic (ROC) analysis comparison (Delong method) was used to assess the accuracy of the admission, discharge and delta (Δ) in NT-proBNP to estimate mortality. Patients were then stratified by the associated criterion calculated by ROC analysis. We subsequently performed a multivariate Cox regression model to test, among other variables, the verified cut points.
Results: A total of 213 patients were included (77.0% males and 70 ± 13 years old) with a left ventricle ejection fraction of 35.2 ± 13.4%. The 12-month mortality rate a was 36.6%. ROC curve analysis showed that Δ NT-proBNP had a better accuracy for 12-month mortality than single determination of NT-proBNP at admission (AUC Δ NT-proBNP 0.59 *versus* AUC NT-proBNP 0.51, pairwise comparison p = 0.0312). According to the criterion, 124 (58.2%) had a change in NTproBNP > 2420 pg/mL and 89 (41.8%) had a change in NT-proBNP ≤ 2420 pg/mL during hospital stay. Univariate analysis identified age, sodium, use of inotropes or levosimendan and change in NT-proBNP as predictors of the endpoint. In the multivariate Cox analysis model all the variables continued to significantly impact the 12-month prognosis of ADHF patients. A change in NT-proBNP ≤ 2420 pg/mL had an HR of 2.089 (95%CI: 1.318-3.309, p = 0.002) for 12-month mortality.
Conclusions: Among patients with recent ADHF, an in-hospital decrease in NTproBNP superior to 2420 pg/mL was associated with lower 12-month mortality.

CO 49. BAUN SCORE, A PREDICTIVE MODEL OF IN-HOSPITAL MORTALITY IN HEART FAILURE

João Miguel Santos, Inês Pires, Luísa Gonçalves, Hugo Antunes, Gil Pereira, Luís Abreu, Inês Almeida, Emanuel Correia, Costa Cabral

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

Introduction: Patients hospitalized due to heart failure (HF) compose a heterogeneous population whose prognosis and in-hospital mortality (IHM) are difficult to forecast. The purpose of this study was to create a simple model capable of accurately predicting IHM in these individuals.
Methods: A retrospective analysis of 1052 patients admitted to a Cardiology ward due to decompensated HF was performed. 141 patients were excluded due to data omission. The variables systolic blood pressure (SBP), urea, brain natriuretic peptide (BNP) and sodium at admission were selected for score inclusion. The Mann-Whitney U and T-test were used for mean comparison between groups. Subgroups were created for each variable. For each subgroup, an *odds ratio* (OR) for the risk of IHM was calculated, and a numerical value proportional to the OR was subsequently attributed. The reference values for BNP, urea and sodium in healthy individuals were classified with 0 points, as well as an SBP > 140 mmHg. A score (BAUN) was created, ranging from 0-28 points, corresponding to the sum of the classification attributed to each variable. A ROC curve analysis was then performed to evaluate the predictive value of the score for IHM.
Results: Mean patient age was 77 ± 10 years; 51% were men. Mean LVEF was 49% ± 16,4. A LVEF < 40% was present in 31% of patients. IHM was 6.5%. A



A B

Figure 1. A ROC curves analysis comparing prognostic ability of NT-proBNP at admission, discharge and delta NT-proBNP. **B** Hazard function of delta NT-proBNP for 12-month mortality.

CO 48 Figure

statistically significant association between IHM and the variables SBP and sodium was found on *t*-test ($p < 0.001$). The same was verified for BNP and urea in the Mann-Whitney U test ($p < 0.001$). Pearson correlation test did not reveal significant correlation between variables; thus, an independent variation between them was assumed. ROC curve analysis revealed an AUC of 0.752 ($p < 0.001$). The cut-off point with the most sensitivity (S) and specificity (E) obtained using the Youden index (IY = 0.3626) was 4 (≈ 92% e ≈ 45%). The analysis of mortality by score interval revealed an IHM of 1.3%, 7.5%, 17.6% e 35%, respectively, for the intervals < 5, 5-15, 16-22, > 22. A BAUN score > 22 predicts death in 1 out of 3 patients hospitalized due to HF. A score < 5 predicts a very low risk of IHM (≈ 1%).
Conclusions: The BAUN score is a good predictive model of IHM in patients hospitalized due to HF. It is also objective and easy to apply. Its use may help to identify patients with a very high risk of IHM in need of specialized care, and those patients with very low risk of death, who might be candidates for early discharge.

Segunda-feira, 29 Abril de 2019 | 11H30-13H00

NEPTUNO I | COMUNICAÇÃO ORAL 08 - DOENÇA VALVULAR

CO 50. CT ASSESSMENT OF SARCOPENIA IN PATIENTS UNDERGOING TRANS-CATHETER AORTIC VALVE IMPLANTATION

Gonçalo Lopes da Cunha, António Ferreira, Rui Campante Teles, João Brito, Pedro Araújo Gonçalves, Luís Raposo, Henrique Gabriel, Tiago Nolasco, Afonso Oliveira, João Abecassis, Carla Saraiva, Manuel Almeida, Miguel Mendes

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

Introduction: Frailty is one of the factors influencing treatment choice in patients with severe symptomatic aortic stenosis, but its assessment is often impractical and time-consuming. Cross-sectional area of the psoas muscle observed by CT scan is a marker of sarcopenia and correlates with prognosis in surgical procedures. The purpose of this study was to assess the demographics of sarcopenic patients undergoing trans-aortic valve implantation (TAVI) and its association with outcomes.
Methods: Single centre cohort study of 222 consecutive TAVI patients from July 2016 through August 2018 who underwent CT for procedure planning. Cross-sectional area of the psoas muscle was measured at the level of L3 vertebra and the mean of right and left muscle area, adjusted for body surface area, was used for comparison (PAi). Sarcopenia was defined as PAi inferior to the median.
Results: We analysed 222 patients (47% male, mean age 83 ± 6 years). PAi was 3.92 cm^2/m^2, interquartile range 1.5 cm^2/m^2, with a minimum of 1.6 cm^2/m^2 and maximum 14.2 cm^2/m^2. Sarcopenic patients were more often female, (75.5% *versus* 21.6%, $p < 0.001$), and had lower haemoglobin levels (12 ± 2.1 g/dL *versus* 12.7 ± 2.4 g/dL, $p < 0.001$). Intra-hospital death was observed in 6 patients (2.7%). During a median follow-up of 7.2 months, 23 (10.3%) patients died, 18 (8.1%) of them within the first year. In Cox regression, a lower PAi was significantly associated with an increased risk of death (HR: 1.57, 95%CI: 1.02-2.40, $p = 0.039$).
Conclusions: Lower PAi was associated with an increased risk of death. Female gender and lower haemoglobin levels were significantly more prevalent in patients with lower PAi. Sarcopenia, evaluated by PAi, may constitute a useful tool in the assessment of frailty and mortality risk in patients referred for TAVI.

CO 51. LONG-TERM OUTCOMES AFTER MITRACLIP IMPLANTATION

João Ferreira Reis, Luísa Moura Branco, Luís Almeida Morais, Rita Ilhão Moreira, Filipa Ferreira, Fernanda Gameiro, Pedro Rio, Ana Galrinho, António Fiarresga, Duarte Cacela, Rui Cruz Ferreira

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

Introduction: Mitraclip implantation (MI) is a well-established option for patients (P) with severe mitral regurgitation (MR) non-eligible to surgery. Its impact on long term prognosis is being addressed by several recent studies.
Objectives: To identify predictors of morbidity and mortality in P undergoing MI and evaluate if the COAPT, Everest and MITRA-FR exclusion criteria (EC) had any impact on the outcome of our population.
Methods: prospective study of P who underwent MI between 2013 and 2018 in one medical center. EC: COAPT: LVEF < 20%, LV end-diastolic diameter > 70 mm or pulmonary artery systolic pressure > 70 mmHg; Everest: LVEF < 25% or LV end-systolic diameter (LVESD) > 55 mm; MITRA-FR: LVEF < 15% or > 40% or primary MR. An univariate analysis was performed followed by a multivariate Cox analysis to evaluate overall mortality (M), overall mortality/ heart failure hospitalization (MH) and mortality in the first year post-MI (M1). Survival analysis using Kaplan-Meier plots. $p < 0.05$ were considered significant
Results: 40P, 60% male, mean age 66 ± 12 years (Y) and mean follow-up time of 18 ± 15 months. 67.5% presented with MR grade IV and 75% had functional MR. Successful implantation in 97.5%, with 55% presenting mild MR post-procedure. Overall mortality was 30% (12P), mostly due to cardiovascular causes, with 9P dying in the first year (30%). There was no difference between pts with functional and primary MR: M- 33% *versus* 20% ($p = 0.6$); MH- 53.3% *versus* 30% ($p = 0.5$). P who met the COAPT exclusion criteria (n = 22) presented an inferior 1Y survival (64.5% *versus* 86.7%, $p = 0.046$). The overall outcome was comparable between P who matched and didn't match Everest and MITRA-FR exclusion criteria. Basal BNP value ($p = 0.037$), mean pre-procedural MAGGIC score ($p = 0.040$) and EROA ($p = 0.039$) were associated to M1. Multivariate Cox analysis revealed that basal BNP was an independent predictor of M ($p = 0.017$), whereas a higher distance in the pre-procedural 6 minute walk test ($p = 0.008$) and the «reduction in the MR severity and PASP» ($p = 0.008$) presented a protective effect. LVESD > 55 mm was an independent predictor of MH ($p = 0.017$), but MR of grade 2 or less after procedure was protective ($p = 0.006$).
Conclusions: There was no M difference between P with functional and primary MR. P with COAPT exclusion criteria had worse 1Y survival. A higher distance in 6 MWT and a reduction in MR severity and PASP were protective. An LVESD > 55 mm had a worse prognosis. Careful P selection may be crucial to improve MI's results.

CO 52. PREDICTORS OF PERMANENT PACEMAKER IMPLANTATION AFTER TRANSCATHETER AORTIC VALVE IMPLANTATION WITH A SELF-EXPANDING VALVE

Tiago Mendonça, Lino Patrício, Inês Rodrigues, Tânia Branco Mano, Ana Abreu, Duarte Cacela, Ruben Ramos, Hagen Kahlbau, Isabel Fragata, António Gonçalves, Madalena Coutinho Cruz, Mário Oliveira, Rui Cruz Ferreira, José Fragata

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

Introduction and objectives: Transcatheter aortic valve implantation (TAVI) is an established treatment in patients with aortic stenosis with intermediate to high surgical risk. Despite the continuous developments of this procedure, high-grade conduction disturbance requiring permanent pacemaker (PPM) implantation is still a major complication of TAVI. Our aim was to determine the predictors of PPM implantation in patients submitted to TAVI with a self-expanding valve.
Methods: We retrospectively examined 292 patients who underwent TAVI with a self-expanding valve from 2009 to 2018 at our institution. All patients had pre-procedural clinical evaluation, cardiac computed tomographic angiography, transthoracic echocardiography and electrocardiography performed. Patients with previous PPM were excluded.

Results: 265 patients, 57% male, mean age 81.36 years, were analysed. Mean STS score and mean euroscore II were, respectively, 6.33% and 7.07%. Mean gradient was 52.78 mmHg and mean aortic valve area 0.67 cm^2. 47 patients (17%) required PPM implantation after TAVI. The most frequently used valve was Corevalve Evolut R (34.9%), followed by Corevalve (28.4%), Portico (19.4%), Corevalve Evolut Pro (8.3%), Lotus (5.9%) and Direct Flow (3.1%). New PPM implantation rate was higher with Lotus and Direct Flow (37.5% with both valves) and lower with Corevalve Evolut Pro (10.5%). Patients requiring PPM implantation had higher prevalence of diabetes *mellitus* (DM), chronic renal disease (CKD), atrial fibrillation (AF) and right bundle branch block (RBBB). Predictors of PPM implantation in logistic regression were the presence of RBBB (OR: 5.74, 95%IC: 1.92-17.15, p < 0.01), AF (OR: 2.14, 95%IC: 1.01-4.50, p = 0.04), diabetes *mellitus* (OR: 2.17, 95%IC: 1.02-4.58, p = 0.04) and balloon post-dilatation (OR: 2.77, 95%IC: 1.24-6.17, p = 0.01)
Conclusions: In patients submitted to TAVI with a self-expanding valve the presence of RBBB, AF, DM and balloon post-dilatation were predictors of PPM implantation.

CO 53. MID AND LONG-TERM SURVIVAL PREDICTIVE FACTORS AFTER TRANSCATHETER AORTIC VALVE IMPLANTATION

Tânia Branco Mano[1], Lino Patrício[1], Inês Rodrigues[1], Tiago Mendonça[1], Ana Abreu[2], Duarte Cacela[1], Rúben Ramos[1], Hagen Kahlbau[1], Isabel Fragata[1], Rui Cruz Ferreira[1], José Fragata[1]

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Introduction: Transcatheter aortic valve implantation (TAVI) has expanded exponentially becoming a therapeutic option for intermediate and high-risk aortic stenosis patients. However, inoperable and high risk patients are still challenging regarding evaluation of TAVI prognostic impact.
Objetives: Investigate the predictive factors for survival and survival free of events after TAVI.
Methods: Retrospective analysis of consecutive patients (pts) with severe aortic stenosis who underwent TAVI between December 2009 and June 2018 in a single center. Survival and survival free of events at 1month, 1 year after TAVI or last follow-up (FU) were analyzed.
Results: 298 pts: mean age 82 ± 6 years, 43% male, mean euroscoreII 7.4 ± 7 and STSscore 6.6 ± 4.8, 73% in III-IV New York Heart Association Class, 22% with left ventricular ejection fraction (LVEF) < 50%. Survival rate during the FU (mean 2.1 ± 1.7years) were 93.6%, 83.9%, 73% and 67.6%, respectively at 1 month, 1,2 and 3 years (Fig. A). In univariate analysis, atrial fibrillation (AF) (OR: 1.866; p = 0.003), pulmonary systolic arterial pressure (PSAP) (HZ: 1.028; p = 0.007), right ventricular dysfunction (OR: 2.655; p = 0.012), anemia (HZ: 1.706; p = 0.016), coronary percutaneous intervention (CPI) (OR: 1.696; p = 0.017), peripheral vascular disease (OR: 1.731; p = 0.018), acute kidney injury (OR: 7.792; p = 0.02), hypoalbuminemia (HZ: 0.890; p = 0.029), pulmonary disease (OR: 1.635; p = 0.030) and higher brain natriuretic peptic (BNP) (HZ: 1.001; p = 0.039) were predictors of non-survival. In multivariate analysis the predictors were AF (OR: 2.285; p = 0.005), CPI (OR: 2.308; p = 0.006) and lower glomerular filtration rate (GFR) (HZ: 0.914; p = 0.008). In ROC curve analysis, PSAP (AUC: 0.732; p < 0.0001), BNP (AUC: 0.680; p = 0.008), hemoglobin (AUC: 0.649; p < 0.0001), euroscore II (AUC: 0.615; p = 0.002), STS score (AUC: 0.590; p = 0.015) and hospitalization length (AUC: 0.582; p = 0.026) had the strongest impact. The survival free-event rate were 81.4%, 66% and 58.9% at 1, 2 and 3 years (Fig. 1B). In univariate analysis the predictors of events were at 1year and last FU: hospitalization length (p < 0.0001; p = 0.001), LVEF < 40% (p = 0.001; p = 0.021), anemia (p = 0.009; p = 0.005), euroscore II (p = 0.023; p = 0.005), STS score (p = 0.013; p = 0.045), lower GFR (p = 0.029; p = 0.027) and RV dysfunction (p = 0.048; p = 0.001). In multivariate analysis the predictors of non-survival free events were LVEF < 50% (1 year, OR: 2.865, p = 0.006; FU: 2.493, p = 0.014) and hospitalization length (1 year, HZ: 1.019, p = 0.014; FU: 1.104, p = 0.027). In ROC curve analysis, hemoglobin level (AUC: 0.917; p = 0.015) and GFR (AUC: 0.875; p = 0.29) had the strongest impact on events.
Conclusions: Favorable long-term outcome after TAVI was demonstrated. Several factors can negatively influence prognosis, mainly atrial fibrillation, coronary artery disease and renal failure.

CO 54. TAVI: CLINICAL PREDICTORS OF MORTALITY AND IMPACT OF COMPLICATIONS

Nelson Cunha, Cláudia Jorge, Eduardo Infante Oliveira, Pedro Carrilho Ferreira, Miguel Nobre-Menezes, Joana Rigueira, Inês Aguiar-Ricardo, Tiago Rodrigues, Rafael Santos, Alexandra Lopes, Fausto J. Pinto, Pedro Canas da Silva

Serviço de Cardiologia, Departamento Coração e Vasos, CHULN, CCUL, Faculdade de Medicina, Universidade de Lisboa, Lisboa.

Introduction: The transcatheter aortic valve implantation (TAVI) is a procedure established in the severe aortic stenosis in patients (pts) of moderate / high surgical risk.
Objectives: Determine rates of complications and mortality and to identify predictors of mortality.
Methods: Retrospective unicentric study of consecutive pts submitted to TAVI from September 2012 to October 2018. Analyzed demographic, clinical and procedural characteristics. Mortality rate (MR) and the occurrence of early complications (EC) at 30 days and late (LC) (30th day-1st year) were

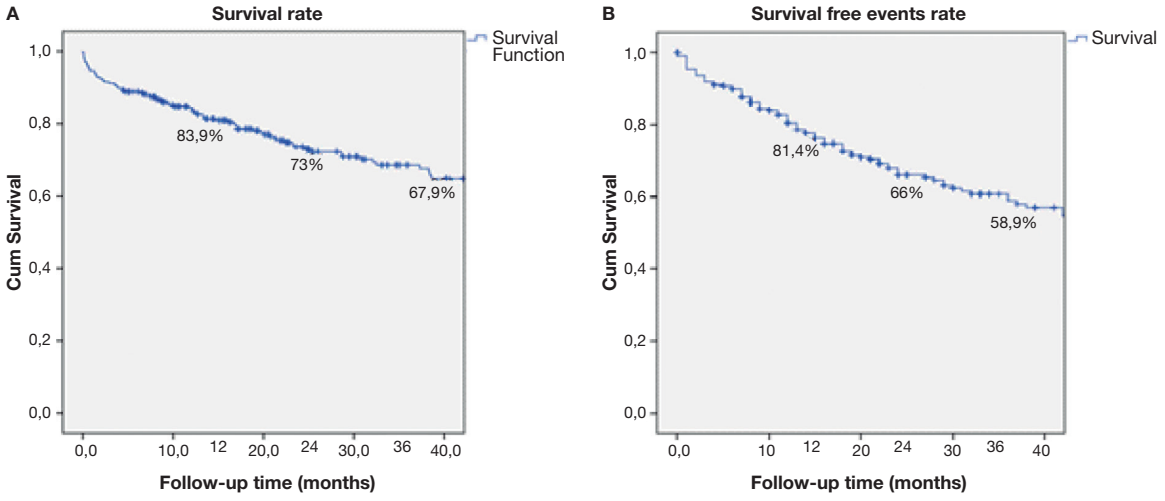
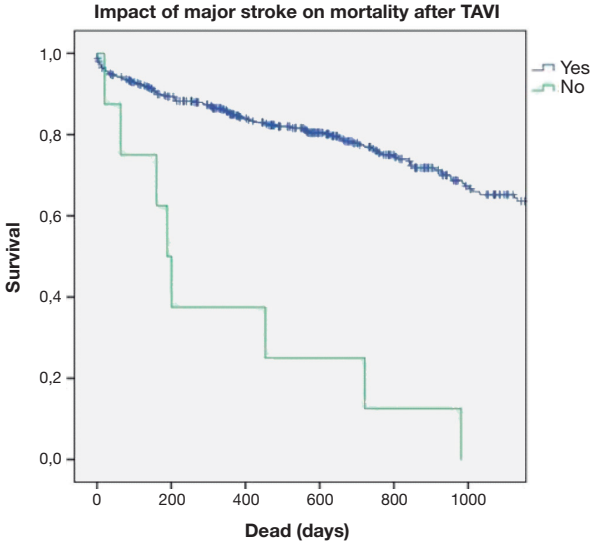


Figure 1. Kaplan-Meier curves for survival rate during the follow-up (a) and survival free events rate (b).

CO 53 Figure

evaluated. We used the chi-square and T-student tests and for determination of predictors, Cox regression analysis was performed.
Results: Included 440 pts (55% women, 81 ± 7.1 years), with euroscore II average of 4.33 ± 3.8% and STS 6.38 ± 5.34%. 35.2% pts had coronary heart disease, diabetes 29%, chronic kidney disease (CKD) 27.9%, peripheral arterial disease (PAD) 13.1% and a history of stroke/TIA 8.7%. MR < 30 days was 4.4% (n = 19, 5 intra-procedure deaths); > 30 days and 1 year 10% (n = 44); > 1 year of 29% (n = 129, 9.1% for cardiovascular cause) during a mean follow-up of 660 ± 692 days. The baseline parameters associated with a higher MR were the presence of PAD (χ^2 = 6.7, p = 0.012), CKD (χ^2 = 10.7, p = 0.001), creatinine (Cr) (1.43 *versus* 1.25, p = 0.039), NT-proBNP (8150 *versus* 4384, p = 0.006), quantification of valvular calcium by angio-CT (p < 0.05), 3mensio (1159 *versus* 963, p = 0.017) and euroscore II and STS (5.16% *versus* 4.26%, p = 0.023, and 7.27 *versus* 5.99%, p = 0.025, respectively). The only independent predictor of mortality was NT-proBNP (p = 0.007, HR: 1.15, 95%CI: 1.038-1.272), losing statistical significance when adjusted for age, gender, Cr and body mass index (BMI). The most frequent EC were bradydhythmia with implantation of definitive pacing (18.9%, n = 83); stroke/TIA (3.6%, n = 16, major stroke at 8 pts); hemorrhage (18.7%, n = 82, major in 25 pts) and vascular complications (17.5%, n = 77, major in 22 pts). Mortality was associated with acute kidney injury AKIN = 2 (χ^2 = 14.7, p = 0.001) or RIFLE = 2 (χ^2 = 10.3, p = 0.016), major hemorrhage (χ^2 = 5.5, p = 0.019), total stroke (χ^2 = 8.9, p = 0.003) and major stroke (χ^2 = 19.6, p < 0.001). The LC associated with mortality were = moderate mitral regurgitantion (χ^2 = 5.4, p = 0.016), hospital readmission (χ^2 = 4.4, p = 0.036), and stroke (χ^2 = 22.9; p < 0.001), with major stroke (p < 0.001) being the only independent predictor of mortality.



Conclusions: MR in this sample resembled those described in the literature, with PAD, CKD, Cr, NT-proBNP and qVCa associated with higher MR. NT-proBNP was the only predictor of mortality, suggesting a possible benefit in the compensation of heart failure pre-procedure. The rate of complications was lower than that described in the literature, with major stroke the only single independent predictor of mortality, suggesting a need to adopt preventive measures in selected cases with possible impact on survival.

CO 55. IMPACT OF PERCUTANEOUS MITRAL REPAIR WITH MITRACLIP ON THE NATURAL HISTORY OF SEVERE MITRAL REGURGITATION

Joana Rigueira[1], Eduardo Infante-Oliveira[2], Pedro Carrilho-Ferreira[2], Inês Aguiar-Ricardo[2], Ana Rita G. Francisco[2], Miguel Nobre-Menezes[2], Rafael Santos[2], Afonso Nunes-Ferreira[2], João Agostinho[2], Tiago Rodrigues[2], Fausto J. Pinto[2], Pedro Canas da Silva[2]

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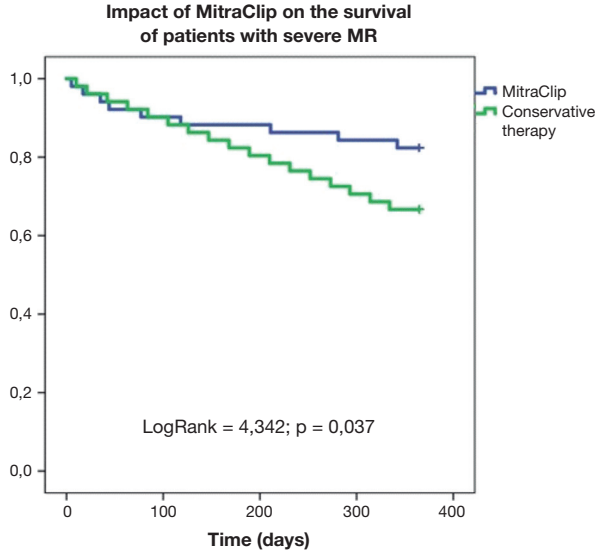
Introduction: Severe mitral regurgitation (MR) under conservative management is associated with high morbidity and mortality. Percutaneous mitral valve repair, with MitraClip System is a complement to medical therapy in patients with surgical contraindication. Recent studies question the impact of this system on mortality.
Objectives: To evaluate the prognostic impact of mitral valve repair with MitraClip in the natural history of severe MR.
Methods: Prospective, single-center registry of consecutive patients (pts) undergoing percutaneous MR repair with MitraClip system from 2013 to 2018. Demographic, clinical and echocardiographic data were analyzed. Anticipated 1-year mortality was estimated based on the Seattle Heart Failure Model score (Seattle HF score). Kaplan-Meier curves were analyzed for comparison of predicted mortality (by Seattle HF score) and our sample mortality.
Results: 51 procedures (mean age 71.8 ± 13.5 years, 30 males) were performed in pts with symptomatic MR, grade III or IV. 14 pts (27.5%) had primary MR and 37 (72.5%) had secondary MR. The mean left ventricular ejection fraction was 39.0 ± 14.1%. The success rate per patient was 92.0% and the complication rate was 7.7% (n = 4; 2 procedure failures,1 pericardial effusion and 1 vascular complication). During a mean follow-up of 615 ± 613 days, there were 14 hospitalizations due to cardiac cause (27.5%) and 17 deaths (33.3%), 9 of which occurred in the first year (17.6%). According to the Seattle HF score the predicted mean mortality at the end of one year for the sample studied under conservative therapy was 33.1% ± 16.7%, corresponding to 17 deaths. Based on predicted mortality, there was a statistically significant reduction of 8 deaths (log-rank = 4.342, p = 0.037, relative risk reduction of 44.0%).



Conclusions: the percutaneous MR treatment was a safe and effective procedure, with an additional impact on the vital prognosis of pts with severe MR, presenting a relative reduction of mortality risk of more than 40% at 1 year. This reduced real-world experience, with a majority of patients with functional MR, suggests a reduction in mortality that will be in line with the COAPT Trial results.

CO 56. ENDOCARDITIS LESIONS FOUND DURING SURGERY: A PROSPECTIVE REGISTRY

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

Introduction: Infective endocarditis is a rare but potentially fatal disease. Many factors may contribute to the increased mortality of this disease. Furthermore, pathologic lesions found during surgery are diverse, and its accurate prospective registry may help identify the best treatment methods.

Objectives: Prospective register in a standardized coding form pathologic lesions found during endocarditis surgery. Evaluate predictors for early (< 30days) and late (> 30 days) mortality and embolic events.
Methods: Analysis of all patients with endocarditis lesions (active or remote) at the time of surgery. A total of 100 consecutive cases were included between june 2014 and august 2018. Pathological lesions were coded prospectively using a coding form suggested by Pettersson et al where all endocarditis lesions are recorded according to type, location and size. Other data, such as medical history and diagnostic studies, was collected retrospectively.
Results: Mean age of patients was 59 years, 72% were male, 54% were in class NHYA III-IV heart failure pre-operatively. Endocarditis was prosthetic in 23% and active in 75% of cases. Embolic events were described in 41%- most frequently to the brain (22%). Pre-operative blood cultures were positive in 70% - staphylococci were the most frequent (33%). In echocardiogram, vegetations were seen in 77%, invasion in 24%, and valve integrity anomalies in 31% of patients. A summary of lesions found classified according to the coding form by Petterson et al. is presented in tables 1 and 2.Valve culture was negative in 73 cases. Staphylococci were the most frequently identified (14%). Early mortality was 9%. Mean euroscore II was 9.4%. Cumulative survival at 4 years is 59.9%.Echocardiogram identifies vegetations, invasion and valve integrity anomalies accurately. No relation between microorganisms isolated and type of lesions was found. In univariate analysis, high blood pressure (p = 0.005), chronic kidney disease (p = 0.005) and creatinine level (p = 0.022), age (p = 0.011), NHYA III-IV heart failure (p = 0.003), euroscore II (p < 0.001), valve integrity anomalies (surgery) (p = 0.016), prosthetic endocarditis (p < 0.001) and redo operation (p = 0.001) were significant predictors of early mortality. During follow up, prosthetic endocarditis (OR: 3.276 [1.461-7.347]) and euroscore II (OR: 1.07 [1.043-1.098]) were significant predictors of mortality. Reduced mobility (p = 0.001), intravenous drug abuse (p = 0.007), vegetations (echocardiogram) (p = 0.009) and aortic valve vegetations (surgery) (p = 0.026) were significant predictors of embolic events.
Conclusions: Prosthetic endocarditis and euroscore II are predictors of early and late mortality. Reduced mobility, vegetations and intravenous drug abuse increase risk of embolic events.Systematic coding of lesions is needed to allow harmonisation across centres paving the way for larger study populations.

Table 1. Main lesions found during surgery

Valve		Lesions	
		Vegetations (n = 100)	Valve integrity anomalies (n = 100)
Aortic valve (cusps)	Right coronary	25	18
	Left coronary	26	17
	Non coronary	28	19
	Total	45	38
Mitral valve	Anterior leaflet	17	15
	Posterior leaflet	15	15
	Anterior chords	3	8
	Posterior chords	3	7
	Total	30	32
Tricuspid valve (leaflets)	Anterior	3	4
	Posterior	4	3
	Septal	4	3
	Total	8	8
Pulmonary valve	*Total*	1	1
Total		70	71

Table 2. Invasion lesions

		Aortic valve (n = 100)	Mitral valve (n = 100)	Total (n = 100)
Stage of invasion	Cellulitis	0	6	6
	Abscess	11	6	17
	Abscess cavity	7	1	8
	Pseudoaneurysm	7	2	9
Invasive cavity depth	Superficial (<1 cm)	10	8	18
	Deep/involving AV sulcus	13	1	14
Fistulae		5	2	7
Circumferential extent of invasion	<1/3	12	9	21
	1/3-1/2	12	4	16
	Full	1	2	3
AV destruction				4
Intervalvular fibrosa destruction				9

Segunda-feira, 29 Abril de 2019 | 11H30-13H00

NEPTUNO II | COMUNICAÇÃO ORAL 09 - DOENÇA CORONÁRIA

CO 57. DOOR-TO-BALLOON TIME AND MORTALITY OF A PCI CENTRE: HOW CRUCIAL CAN 30 MINUTES BE FOR OUR STEMI PATIENTS?

Isabel Durães Campos, Cátia Costa Oliveira, Carlos Galvão Braga, Carla Marques Pires, Paulo Medeiros, Ana Sofia Ferreira, Catarina Vieira, João Costa, Rui Flores, Jorge Marques

Hospital de Braga.

Introduction: STEMI time delays have been presented as an indicator of quality of care. Considering the system delay, the guidelines of European Society of Cardiology (ESC) and American Heart Association (AHA) for the management of STEMI patients (pts) diverge regarding the maximum time from STEMI diagnosis to wire crossing in pts presenting at primary PCI (pPCI) hospitals (≤ 60 min *versus* ≤ 90 min, respectively).
Objectives: To compare the prognosis between pts presenting at pPCI hospital with maximum time from STEMI diagnosis to wire crossing of ≤ 60 min and patients with times between 61 and 90min.
Methods: The records of 1679 STEMI pts admitted consecutively in our coronary care unit during six years were analysed retrospectively. Of this pts, 341 (20%) were admitted directly in a PCI centre and 1338 (80%) were rescued by an emergency medical system or presented to a non-PCI centre. Pts that presented at PCI centre were divided into two groups: group 1 - STEMI pts with maximum time from STEMI diagnosis to wire crossing of ≤ 60 min (n = 202, 69%); group 2 - STEMI pts with times 61-90 min (n = 91, 31%). Pts with time from STEMI diagnosis to wire crossing > 90 min were excluded. Primary endpoints were the occurrence of death at 6 months and 1 year; follow-up was completed in 98% of pts.
Results: Group 2 pts were older (60 ± 14 *versus* 67 ± 143, p < 0.001), with higher proportion of women (14.9% *versus* 25.3%, p = 0.026), hypertension (45.5% *versus* 61.5%, p = 0.035), diabetes (17.1% *versus* 24.4%, p = 0.005) and presented more frequently Killip 4 at admission (2.1% *versus* 12.5%, p = 0.003). Group 1 pts had higher proportion of smokers (62.2% *versus* 49.4%, p = 0.03). Patient delay was statistically higher in group 2 (Mdn [h] 3.8 ± 3.5 *versus* 5 ± 2, p < 0.001), as was the system delay (Mdn [min] 45 ± 9 *versus* 74 ± 8, p < 0.001). In-hospital mortality (3.8% *versus* 5.1%, p = 0.42) wasn't different between groups, but at 1-month (3.8% *versus* 10.3%, p = 0.05), 6-months (4.4% *versus* 12.8%, p = 0.02) and 1-year mortality (5% *versus* 15.4%, p = 0.008) was higher in group 2. In multivariate analysis and after adjusting for different baseline characteristics, pts who complied with the recommended times according to the 2017 ESC guidelines had lower risk mortality at 1 year compared to group 2 (HR: 0.42, 95%CI: 0.23-0.74, p = 0.006).

Conclusions: In patients presenting at this PCI centre, complying with the 2017 ESC STEMI guidelines in order to reduce the system delay to ≤ 60min was crucial, since pts who were reperfused within this recommended time had lower mortality rates.

CO 58. A NEW PREDICTIVE SCORE FOR MORTALITY AND CARDIOGENIC SHOCK IN PATIENTS WITH ST ELEVATION MYOCARDIAL INFARCTION

Bruno Cordeiro Piçarra[1], João Pais[1], Ana Rita Santos[1], Mafalda Carrington[2], Diogo Brás[1], Kisa Congo[1], José Aguiar[1], em nome dos investigadores do Registo Nacional de Síndromes Coronárias Agudas[3]

[1]Hospital do Espírito Santo, EPE, Évora. [2]Centro Hospitalar de Lisboa Central, EPE / Hospital Santo António dos Capuchos. [3]CNCDC - Centro Nacional de Coleção de Dados em Cardiologia.

Introduction: Acute myocardial infarction with ST elevation (STEMI) presents a high rate of potentially fatal complications and in-hospital mortality.
Objectives: To test the predictive capacity for cardiogenic shock (CS) and in-hospital mortality (MIH) of a new risk score in patients (Pts) with STEMI.
Methods: Evaluates 5765 Pts with STEMI without CS at admission. The new score, was derived by previous studies in this population, and was calculated according to the following criteria: age ≥ 65 years (1 point), heart rate ≥ 100 bpm (2 points), systolic blood pressure < 100 mmHg (2 points), blood glucose at admission above 180 mg/dL (1 point) and creatinine on admission > 1.5 mg /dL (2 points). The population was divided into three subgroups: group A low score (0-2 points), group B intermediate score (3-5 points) and group C score (6-8 points). The endpoints defined were CS during hospitalization, in-hospital mortality and combined end-point of MIH and CS. The relationship between each of the possible scores (from 0 to 8) and the various end-points was determined, and the sensitivity and specificity of the score as a predictor of MIH and CS was defined as the area under the ROC curve (ASC).
Results: After the application of the score, 3 subgroups were obtained: group A with 4819 Pts (83.6%), group B with 884 Pts (15.3%) and group C 62 Pts (1.1%). Patients of group C had a higher MIH (Group C: 45.2% *versus* B: 11.4% *versus* A: 2.0%, p < 0.001), a higher CS (C: 29.5% *versus* B: 12.0% *versus* A: 2.3%, p < 0.001) and a higher combined end-point of MIH and CC (C: 53.2% *versus* B: 17.8% *versus* A: 3.4%, p < 0.001) during hospitalization. The proposed score revealed a high predictive capacity of MIH (ASC: 0.802, 95%CI: 0.775-0.830, p = 0,001), CS (ASC: 0.763, 95%CI 0.731-0.795, p = 0.001) and for the combined endpoint (MIH and CC) (ASC: 0.781, 95%CI 0.756-0.806, p = 0,001). The logistic regression models showed that Pts with a high score (group C) presented a 41-fold higher risk of MIH (OR: 41.3; p < 0.001) and 18-fold higher CS (OR: 18.0; p < 0.001) than patients with low score (group A). It was also found that the risk associated with an increase in one point score unit was 100% (OR: 2.0; p < 0.001) for MIH and 82% (OR: 1.82; p < 0.001) for CS.
Conclusions: This new score, with the use of practical and friendly variables, demonstrated a high predictive capacity of MIH and CS.

CO 59. CORONARY CT ANGIOGRAPHY IN ACUTE CHEST PAIN. NON-CORONARY ETIOLOGY AND RAPID DECISION TO DISCHARGE

Neusa Guiomar[1], Manuel Vaz-Silva[2], Bernardo Sousa-Pinto[3], Filipe Oliveira Cabral[4], Domingas Mbala[1], Madalena Teixeira[1], Nuno Ferreira[1], Wilson Ferreira[1], Mónica Carvalho[1], Rita Faria[1], Ricardo Ladeiras[1], Vasco Gama[1], Pedro Braga[1]

[1]Centro Hospitalar de Vila Nova de Gaia / Espinho. [2]Centro Hospitalar de S. João, EPE. [3]Faculdade de Medicina da Universidade do Porto. [4]USF Marco.

Introduction: We determine the diagnostic value of coronary CT angiography (CTA) in patients with acute chest pain (ACP) and its utility in early discharge from emergency department (ED).
Methods: N = 90 patients (PTs) presenting to the ED (february 2014 and march 2018) with ACP, but without clinical or ECG profile for immediate catheter angiography, underwent coronary CTA.
Results: NON-coronary pain (normal ECG and troponin level and no unstable angina-UA) (n = 50; 55.6%; age 52.4 ± 10.6 years; 60% male), acute coronary syndrome (UA and NSTEMI) (n = 16; 17.8%; age 54.3 ± 12.0 years; 43,8% male) and myocardial injury (MI) (defined as individuals with an initial value greater than the 99th percentile URL, and serial changes < 20% from basal value) (n = 20; 22.2%; age 52.7 ± 14.9; 60% male) groups were formed. In NON-coronary pain group [low and intermediate -risk PTs (100% by TIMI score, 98.0% by Grace score, and 100% by HEART score), no coronary stenosis (CS) or stenosis < 50% (all vessels) was present in 80% of PTs, CS > 50% and < 70% in 6% and CS > 70% in 6% of PTs; in ACS group (low and intermediate-risk patients [93.8% by TIMI score, 93.8% by Grace score, and 87.5% by HEART score]), no CS or stenosis < 50% was present in 31.3% of patients, CS > 50% and < 70% in 6% and CS > 70% in 31.3% of patients; in MI group (low and intermediate-risk PTs [100% by TIMI score, 95.0% by Grace score, and 45% by HEART score]), no CS or stenosis < 50% was present in 60% of PTs, CS > 50% and < 70% in none and CS > 70% in 20% of PTs. CTA has sensitivity of 0.55 (95%CI: 0.28-0.79), specificity of 0.89 (95% CI 0.77-0.95) and a negative predictive value (NPV) of 89%, based on the absence of > 50% stenosis. The sensitivity, specificity and NPV for identifying CS < 70% were respectively: 0.45 (95%CI: 0.21-0.72); 0.94 (95%CI: 0.83-0.98), 88%. Follow-up at 6 months revealed no *major* adverse cardiovascular events in all patients of NON-coronary pain group (n = 50) and 86% of those patients had been discharged in the first 12 h; in MI group, one patient had thoracic pain recurrence.
Conclusions: In patients with ACP, CTA has an increased value in detecting non-significant coronary stenosis (< 50% stenosis): in 80% of patients of NON-coronary pain patients, and in 60% of MI patients. In NON-coronary pain group 86% of patients was discharged form ED in less of 12 h *versus* only 50% in MI group. Thus, coronary CT could have an important role in the decision of early hospital discharge.

CO 60. OCCLUDED NON-CULPRIT ARTERY AND REVASCULARIZATION IN ACS PATIENTS

José Guimarães[1], F.M. Gonçalves[1], S. Borges[1], M. Moz[1], J. Trigo[1], P.S. Mateus[1], J.I. Moreira[2]

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Introduction: In ACS patients, the presence of a concurrent occlusion in a non-culprit artery has prognostic impact; however there is doubt regarding the best revascularization strategy in these patients.
Objectives: To characterize ACS patients with non-culprit occluded vessels (NCO) regarding its prognosis and the revascularization strategy impact.
Methods: Retrospective study of patients with ACS periodically included in our center registry between October/2012 and November/2017. Patients with previous coronary artery bypass surgery (CABG) or who did not undergo coronariography were excluded. The primary endpoint was a composite of infarction, stroke, unplanned revascularization, heart failure and cardiovascular (CV) death (MACCE) in the follow-up.
Results: We included 560 patients (66 ± 13 years, 76% male, 47% STEMI) and 52 (9.3%) had NCO (Right coronary artery 51%; Circumflex 41%; Left anterior 8%). These patients had more CV risk factors (HTA: 80% *versus* 62%, p = .009; dyslipidemia: (70% *versus* 53%, p = .02) and comorbidities, namely: Cerebrovascular disease (17% *versus* 7%, p = .006); Peripheral arterial disease (7.7% *versus* 2.6%, p = .04); Chronic kidney disease (CKD) (9.8% *versus* 1.2%, p < .001) and COPD (13.5% *versus* 3.8%, p = .002). They presented less frequently with STEMI (33% *versus* 49%, p = .027) and there were no differences regarding GRACE score (p = .399). During hospitalization they had more heart failure (KK ≥ II: 31% *versus* 19%, p = .042) but there were no differences in ejection fraction (EF < 40%: 19% *versus* 21%, p = .817). Fifteen (29%) NCO patients were treated with CABG with no differences in CABG rate when comparing with no-NCO patients with 3 vessel disease (p = .537). During a median follow-up of 43 months (IQR: 25-60), 69 (12.8%) patients died (7.1% from CV causes), 30 (5.6%) had unplanned revascularization (53% after

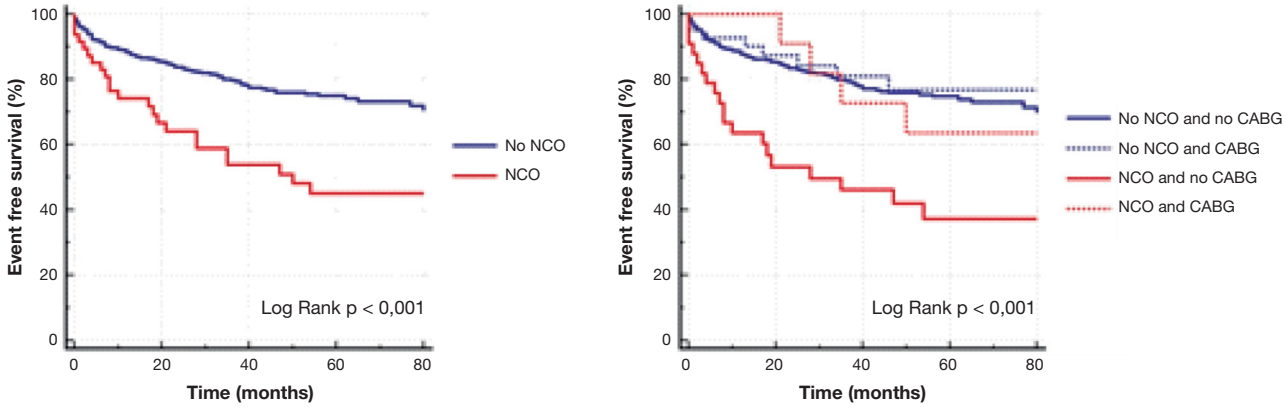


Figure 1. Kaplan-Meier curves for MACCE

CO 60 Figure

infarction) and 133 (24.8%) had MACE. NCO patients had a higher incidence of MACCE (non-adjusted HR: 2.50, 95%CI: 1.60-3.90, p < .001), however when stratifying by CABG treatment only patients with NCO and no CABG showed a worse prognosis (Fig.). In multivariate analysis, after adjusting for age, hypertension, dyslipidemia, COPD, CKD and ejection fraction NCO was an independent predictor of MACE only in patients with no CABG (NCO and no CABG: HR: 5.13, 95%CI: 1.47-17.95, p = .01; NCO and CABG: HR: 1.46, 95%CI: 0.38-5.6, p = .0.58).

Conclusions: NCO patients had more comorbidities and a worse long term prognosis. However, CABG showed a protective effect, suggesting a beneficial prognostic impact of this treatment strategy in these patients.

CO 61. ACUTE CORONARY SYNDROMES IN THE YOUNG: USING MACHINE-LEARNING AND ARTIFICIAL INTELLIGENCE TO BAN BARE METAL STENTS

João André Ferreira[1], James Milner[1], José Almeida[1], Sofia Martinho[1], Sílvia Monteiro[1], Pedro Monteiro[1], M. He[2], C. Simpson[2], M. Zaslavskiy[2], F. Balazard[2], L. Li[3], A. Rousset[3], S. Schopf[3], D. Dellamonica[3], Lino Gonçalves[1]

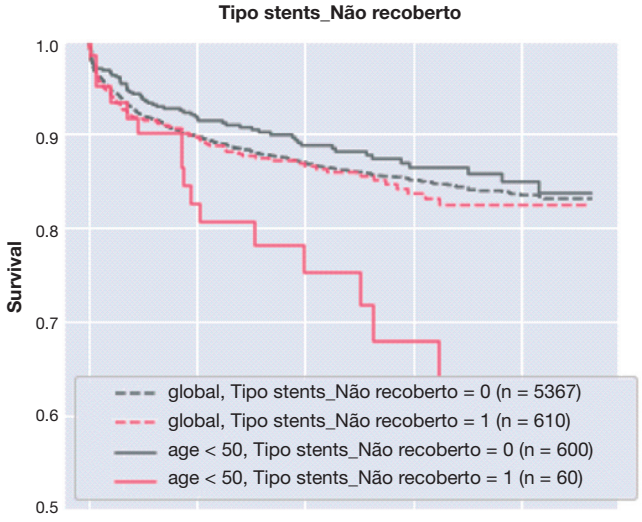
[1]Centro Hospitalar e Universitário de Coimbra / Hospitais da Universidade de Coimbra. [2]OWKIN France. [3]Amgen Europe.

Introduction: Acute coronary syndromes (ACS) remain an important cause of morbidity and mortality in all age groups. However, less is known about the impact of ACS in younger patients. New risk prediction tools are important to better identify and risk stratify high risk patients within this important ACS subpopulation.

Objectives: The aim of this study was to identify the best predictors of a new ACS, in a single-center database of ACS, resorting to machine learning and artificial intelligence, and to compare the relevance of the type of stent used (bare metal stent [BMS] *versus* drug eluting stent [DES]) for risk discrimination in a general ACS population *versus* a subpopulation of young (< 50 years) patients.

Methods: In a single center, 5977 patients admitted due to ACS between 2004 and 2017 and alive at discharge were studied. In the subpopulation of younger patients (n = 660), each covariate present in the database was analyzed separately with a Cox proportional hazard model with three terms - subpopulation belonging indicator, covariate, interaction term. The p-value of the interaction term was used to rank variables. The more significant the interaction term, the stronger the change in relationship between patients in the subpopulation and the risk of a new ACS, compared to the one in the general population.

Results: During long term follow-up, 13% of patients (n = 771) experienced a second event. Kaplan-Meier curve represents how ACS free-survival depends on the type of stent and group of interest. The solid lines represent Kaplan-Meier curves for younger patients, and the dotted lines in the general population. Pink or grey colour of the curves represent the stratification level of the covariate.



Conclusions: In our model, the type of stent was found to be a better discriminator of risk of further ACS in younger patients than in the general ACS population. Strikingly, younger patients treated with bare-metal stents had a higher rate of readmission for ACS. This finding reinforces the importance of systematically using DES in young ACS patients, making sure that they are closely followed and submitted to optimal risk factor management, in order to improve their post-ACS prognosis.

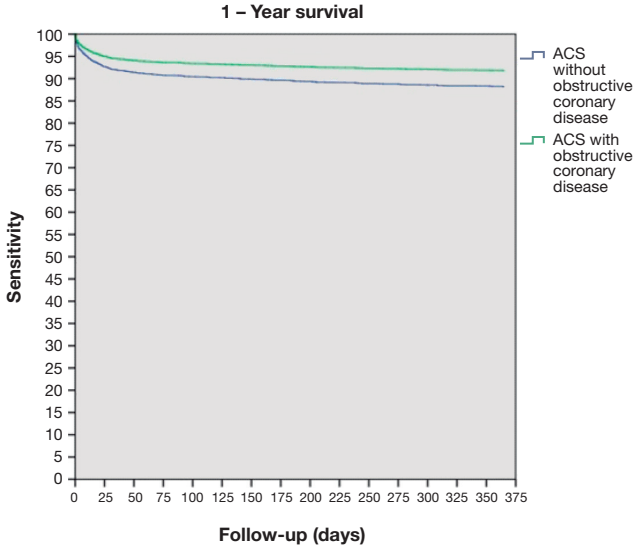
CO 62. CHARACTERISTICS AND 1-YEAR PROGNOSIS OF NON-OBSTRUCTIVE ACUTE CORONARY SYNDROME

José Miguel Viegas, António Valentim Gonçalves, Ana Teresa Timóteo, Duarte Cacela, Ramiro Carvalho, António Fiarresga, Lino Patrício, Luís Bernardes, Lidia De Sousa, Lurdes Ferreira, Tiago Pereira-da-Silva, Sílvia Aguiar Rosa, Inês Rodrigues, Tiago Mendonça, Rui Cruz Ferreira

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

Introduction: Among patients admitted at catheterization laboratory with suspicion of acute coronary syndrome (ACS) a minority have no obstructive

epicardial coronary disease (MINOCA). The characteristics and outcomes of this subgroup remains unclear.
Objectives: The aim of the present study is to characterize MINOCA patients and assess the 1-year prognosis regarding total mortality.
Methods: A standardized registry was prospectively performed for all ACS patients admitted from January 2006 to August 2017 in a single tertiary care centre. Patients were divided according to have at least one obstructive coronary artery (G1), defined by a stenosis above 50%, or not (G2) and baseline characteristics were compared between the two groups. All-cause mortality at 30 days and at 1 year were also compared using univariate Cox analysis.
Results: From 3765 ACS patients admitted during the study period, 461 (12.2%) were included in G2. G2 patients were older (62.6 ± 13.1 *versus* 66.2 ± 13.7; p < 0.001) and more frequently women (26.3% *versus* 44.2%; p < 0.001). Smoking was more frequent in G1 (40.0% *versus* 21.9%; p < 0.001) but the prevalence of hypertension was higher in G2 (55.2% *versus* 64.2%; p < 0.001). There were no differences regarding dyslipidaemia and diabetes. End-stage chronic kidney disease was higher in G2 (2.4% *versus* 4.1%; p = 0.025). Regarding the clinical evolution during hospitalization, G2 presented more frequently with Killip-Kimball class ≥ II (13.9% *versus* 19.3%; p = 0.001), but at release there was no difference in the proportion of patients with left ventricular ejection fraction ≤ 50% (34.8% *versus* 32.1%; p = 0.286). ACS with ST-segment elevation was more common in G1 (58.8% *versus* 52.1%; p = 0.006), but no differences were found regarding left and right bundle branch block patterns at presentation. In-hospital and 30-day mortality was not significantly different between groups (5.9% *versus* 7.4%; p = 0.205). However, at 1-year follow-up, G2 had a worse outcome regarding total mortality (HR: 1.473; 95%CI: 1.103-1.969; p = 0.008) (Fig.).



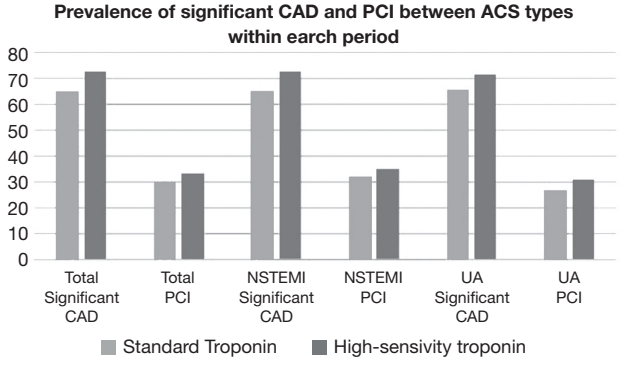
Conclusions: MINOCA patients seem not to be a low-risk group of ACS patients, since in this study they had a higher 1-year mortality than ACS patients with obstructive coronary disease. This higher mortality only became apparent after 30 days from the ACS. A systematic diagnostic work-up for further implementation of the most appropriate treatment should be crucial for getting better outcomes with this group of patients.

CO 63. UA AND NSTEMI IN THE ERA OF HIGH-SENSITIVITY TROPONIN: IMPACT ON PATIENT RISK PROFILE AND MANAGEMENT

Rita Santos[1], Luís Raposo[2], Sérgio Madeira[2], João Brito[2], Mariana Gonçalves[2], Catarina Brízido[2], Nélson Vale[2], Sílvio Leal[2], Pedro Sousa[2], Pedro Araújo Gonçalves[2], Henrique Mesquita Gabriel[2], Rui Campante Teles[2], Manuel Almeida[2], Miguel Mendes[2]

[1]Hospital Vila Franca de Xira. [2]Centro Hospitalar de Lisboa Ocidental, EPE / Hospital de Santa Cruz.

Introduction and objectives: High-sensitivity troponin assays (HST) entered the clinical arena to facilitate exclusion of ACS in the emergency department (ER) in patients presenting with chest pain. Due to its higher sensitivity there is the potential for an overestimation of the diagnosis of NSTEMI, and possibly ACS overall. We assessed the impact of HST in the classification of ACS (NSTEMI *versus* UA) and its ability to predict obstructive coronary disease (CAD), in a population of pts referred to coronary angiography (ICA).
Methods: Retrospective analysis of 1844 pts with suspected NSTEMI or UA referred for ICA from a single ER between Feb 2013 and Nov 2018. Standard Troponin-I was used until Feb 2016 and HST thereafter. The characteristics of UA and NSTEMI pts before and after the introduction of HST were compared. Multivariate binary logistic regression models were used to access the association of different troponin assays with CAD (> 50% for LM and > 70% for the remaining). Sensitivity, specificity, NPV and PPV for angiographic CAD were also determined.
Results: The relative proportion of patients with UA and NSTEMI was similar between study periods: 31% *versus* 29% and 69% *versus* 71%, respectively (p = 0.3). Clinical and angiographic characteristics did not differ in UA pts before and after the use of HST. NSTEMI patients in the HST era were less frequently women (39% *versus* 32%, p = 0.026), had higher creatinine (0.93 IQR: 0.75-1.3 *versus* 1.0 IQR: 0.82-1.38), higher number of lesions (2 IQR: 1-4 *versus* 3 IQR: 1-4) and a lower rate of normal coronary arteries (10.5% *versus* 3.9%, p < 0.001). The prevalence of significant CAD in this population, before and after HST, was 65% and 73%, respectively (p = 0.001). However, when clinically relevant characteristics and judgement were accounted for, both standard troponin (OR: 0.99, 95%CI: 0.99-1.01) and HST (1.0, 95%CI: 1.0-1.0) were poor predictors of significant CAD. Sensitivity was 69% *versus* 72%, specificity 30% *versus* 30%, PPV 65% *versus* 73% and NNP 34% *versus* 28%, respectively. Finally, rates of percutaneous intervention did not differ between the two periods (30% *versus* 33.5%, p = 0.157), nor between ACS types within each period.



Conclusions: The introduction of HST did not result in an increase of the diagnosis of NSTEM *versus* UA, suggesting that clinical judgment remains an important determinant of the diagnosis of ACS. Also there was no evidence of an increase in PCI rates, despite worse CAD severity in NSTEMI patients.

Segunda-feira, 29 Abril de 2019 | 14H00-15H30

NEPTUNO I | COMUNICAÇÃO ORAL 10 - ARRITMOLOGIA

CO 64. CONTACT-FORCE SENSING TECHNOLOGY *VERSUS* SECOND-GENERATION CRYOBALLOON FOR FIRST PULMONARY VEIN ISOLATION: A PROPENSITY SCORE ANALYSIS

João Carmo[1], Francisco Moscoso Costa[1], Diogo Cavaco[1], Pedro Carmo[1], António Ferreira[1], Adriana Barbosa[1], Gustavo Rodrigues[1], António Fontes[2], Afonso Oliveira[1], Daniel Matos[1], Francisco Morgado[1], Pedro Adragão[1], Miguel Mendes[1]

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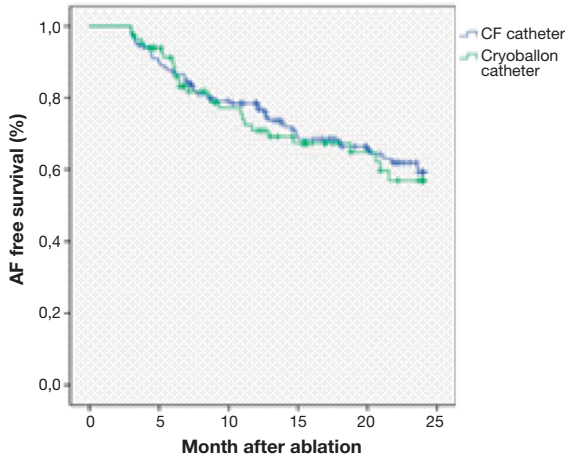
Introduction: In a recent trial, pulmonary vein isolation (PVI) with cryoballoon (CB) was non-inferior to radiofrequency (RF) regarding recurrence of atrial fibrillation (AF). However, contact-force sensing (CF) technology was used in only 25% of patients in the RF group.
Objectives: To evaluate efficacy and safety of RF irrigated catheter with CF technology *versus* CB for first PVI.

A

	Cryoballon (83 patients)	Contact force (157 patients)	P value
Age (years) - IQR*	64 (55-69)	64 (54-71)	0,761
Female sex (%}	52%	48%	0,754
Hypertension (%)	61%	57%	0,537
Diabetes (%)	12%	11%	0,776
Cofonary artery disease (%)	1,2%	1,9%	0,684
Previous stroke (%)	4,8%	3,8%	0,713
Paroxysmal AF (%)	89%	92%	0,513
Left atnum volume - mL (IQR)*	107 (95-134)	111 (87-139)	0,555
Procedure time - min (IQR)*	108 (82-133)	145 (129-176)	< 0,001
Fluoroscopy time - min (IQR)*	21 (12-27)	9 (6-14)	< 0.001

* Median and interquartile range (IQR)

B



N at risk

CF	157	105	46
CB	83	44	18

Methods: Single-center registry of 470 consecutive patients with drug-resistant AF who underwent first PVI between January 2014 and June 2018: 90 procedures with second-generation CB (Arctic Front Advance®) and 380 with CF catheter (ThermoCool® SmartTouch®) . Endpoint was AF/AT/AFL recurrence after a 3-month blanking period. A propensity score (PS) model was developed using type of ablation as the dependent variable and relevant baseline characteristics as covariates. PS probabilities in the treatment group (CB) were matched in a 1:2 fashion (caliper 0.1) to the nearest control patient (CF).
Results: PS matched 83 patients who underwent PVI using CB with 157 controls (CF), yielding well-balanced groups (Fig. A). During a mean follow-up of 15 ± 8 months, recurrence was 34% (54 patients) in the CF group *versus* 33% (27 patients) in CB group (log-rank 0.782) (Fig. B). CF ablation was associated with shorter fluoroscopy (9 *versus* 21 min, p < 0.001) but longer procedure time (145 *versus* 108 min, p < 0.001) when compared to CB ablation. Major complications were rare for both groups (1 transient phrenic nerve palsy for CB and 1 cardiac tamponade for CF).
Conclusions: In this analysis, CF ablation had similar efficacy during short-term follow-up when compared to CB, although requiring significantly lower fluoroscopy time.

CO 65. ELECTROPHYSIOLOGICAL STUDY INDUCED-ATRIAL FIBRILLATION PREDICTS FUTURE CLINICAL ATRIAL FIBRILLATION - SHOULD WE INTERVENE EARLIER?

António Candjondjo, Artur Lopes, Leonor Parreira, Dinis Mesquita, Pedro Amador, Rui Caria

Centro Hospitalar de Setúbal, EPE / Hospital de São Bernardo.

Introduction: Patients with a lifelong history of non-documented palpitations often have paroxysms of reentrant supraventricular tachycardia, potentially curable by an ablation procedure. Clinical documentation of such arrythmia is often difficult and can only be diagnosed by an electrophysiological study (EPS). Many times the EPS is negative for such arrythmias but, in some patients, there is induction of atrial fibrillation (AF). We studied whether the induction of AF in such patients, with no previous history of documented AF, is associated with the development of clinical AF in the future.
Methods: Single center retrospective study of consecutive patients with symptoms of sudden onset tachycardia that underwent a negative diagnostic EPS looking for reentrant supraventricular tachycardia, from January 2000 to February 2018. Patients were divided into two groups based on the induction of AF at EPS. Follow up was made using medical records from the outpatient clinic, emergency room visits and hospital discharge notes.
Results: We studied a total of 44 patients (mean age of 55.9 ± 19.1 years, 33 women) with a negative diagnostic EPS. Atrial fibrillation was induced in 23 (52,5%) patients (iAF group). During a mean follow-up of 73 ± 50 months, 13 patients developed clinical AF: 10 in the iAF group (43.5%) and 3 in the non-iAF group (14.3%). Induction of AF at EPS was significantly associated the latter development of clinical AF (OR: 4.6, 95%CI: 1,05-20,16), as shown by Kaplan-Meier survival curves (Fig.). In multivariate analysis considering age, gender, mean follow-up time and type of palpitations (irregular *versus* regular), only irregular palpitations was associated with latter development of clinical AF (OR: 8,64, 95%CI: 1,50-49,89) (Table).

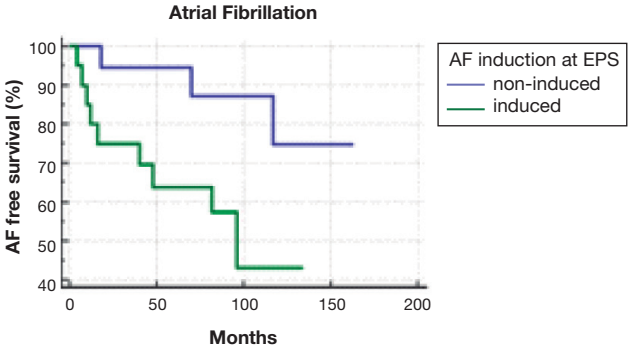


Figure 1. Kaolan-Meier curve for clinical atrial fibrilation (AF) at follow-up for induced AF at electrooh biological study.

Logist regression analysis for development of clinical atrial brilation at follow up						
	Univariate analysis			Multivariate analysis		
	OR (95% CI)		p value	OR (95% CI)		p value
Age	1,01	(0,98 – 1,05)	0,59	0,99	(0,95 – 1,04)	0,74
Gender, male	4,46	(1,05 – 19,02)	0,04	2,51	(0,47 – 13,36)	0,74
Irregular palpitations*	9,78	(1,76 – 54,26)	0,01	8,64	(1,50 – 49,89)	0,74
Follow-up time	0,99	(0,98 – 1,01)	0,33	1,00	(0,98 – 1,01)	0,74

VI: Condence internal; OR Odds Ratio.
*Patients previous complaints of irregular vs regular palpitations

Conclusions: Induction of AF in patients complaining of non-documented paroxismal tachycardia is significantly associated with development of clinical AF in the future. Therapeutic interventions at this stage could potentially change the prognosis of these patients by preventing future thromboembolic events and progression to clinical AF. Future trials are warranted.

CO 66. PREVALENCE AND SIGNIFICANCE OF SUSTAINED PULMONARY VEIN ISOLATION IN REPEAT AF ABLATION PROCEDURES

Daniel Matos[1], Diogo Cavaco[1], Gustavo da Rocha Rodrigues[1], João Carmo[1], Maria Salomé Carvalho[1], António Miguel Ferreira[1], Francisco Costa[2], Pedro Carmo[1], Francisco Morgado[1], Miguel Mendes[1], Pedro Adragão[1]

[1]Centro Hospitalar de Lisboa Ocidental, EPE / Hospital de Santa Cruz. [2]Ucardio, Centro Clínico - Unidade Cardiovascular.

Introduction: Pulmonary vein (PV) reconnection is a common cause of relapse after catheter ablation of atrial fibrillation (AF). However, some patients have AF recurrence despite durable PV isolation. The aim of this study was to assess the PV isolation status at the time of a second catheter ablation (redo) procedure, and its relationship with subsequent AF relapse.
Methods: Consecutive patients with symptomatic drug-resistant AF who underwent redo procedures from January 2006 to December 2017 were identified in a single-center observational registry. Pulmonary vein isolation status was assessed during the electrophysiologic study with a circular mapping catheter. Additional radiofrequency (RF) energy applications were also recorded. AF relapse was defined as symptomatic or documented AF/atrial tachycardia/atrial flutter after a 3-month blanking period.
Results: We identified 240 patients (77 [32%] females, median age 61 [IQR: 53-67] years, 85 [35%] with non-paroxysmal AF) undergoing redo procedures during the study period. At the time of redo, 17 (7%) of the patients presented bidirectional conduction block of all PVs PV reconnection occurred in 157 (65%) of cases in the left superior vein, 142 (59%) in the left inferior vein, 177 (73%) in the right superior vein, and 163 (68%) in the right inferior vein (table). All of the PVs were reconducted in 91 (38%) patients. Additional RF applications were performed in the left atrium (LA) roof, LA posterior wall, cavotricuspid isthmus, mitral isthmus, superior vena cava, coronary sinus, and left atrial appendage ostium, at the operator's discretion (table). Over a median follow-up of 2-years (IQR: 1-5), 126 patients (53%) suffered AF recurrence, yielding a mean relapse rate of 17%/year. In multivariate Cox regression analysis, the lack of PV reconnection at the time of redo emerged as an independent predictor of subsequent relapse (HR: 1.97, 95%CI: 1.12-3.49, p = 0.019) even after adjustment for univariate predictors including non-paroxysmal AF, body mass index, female sex, and active smoking.
Conclusions: In patients undergoing redo AF ablation procedures, less than 10% present with complete PV isolation. Despite being relatively infrequent, this finding is independently associated with greater likelihood of subsequent recurrence, suggesting that other mechanisms, not fully addressed by additional RF applications, are at play.

Baseline and procedure characteristics	
Age (years) – median (IQR)	61 (53-67)
Female sex – no. (%)	77 (32)
BMI kg/m2 – median (IQR)	27 (22-33)
Non-paroxysmal AF – no. (%)	85 (35)
CHADS-VASC2 score – median (IQR)	2 (0-4)
Indexed LA volume – mL/m2 – median (IQR)	57 (37-77)
CTI ablation – no. (%)	156 (65)
LA roof ablation- no. (%)	29 (12)
LA posterior wall box lesion – no. (%)	4 (2)
Mitral isthmus ablation – no. (%)	14 (6)
SCV ablation – no. (%)	8 (3)
LAA isolation – no. (%)	7 (3)
CS ablation – no. (%)	3 (1)

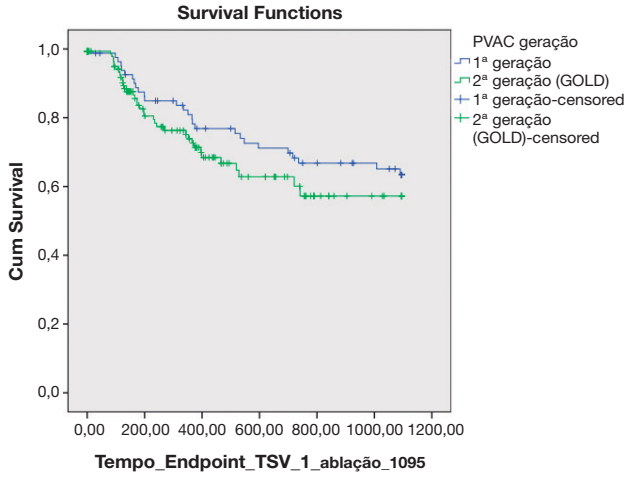
AF: atrial fibrilation; BMI: body mass index; CS: coronary sinus; CTI: cavotricuspid isthmus; LA: left atrium; LAA: left atrial appendage; SVC: superior vena cava

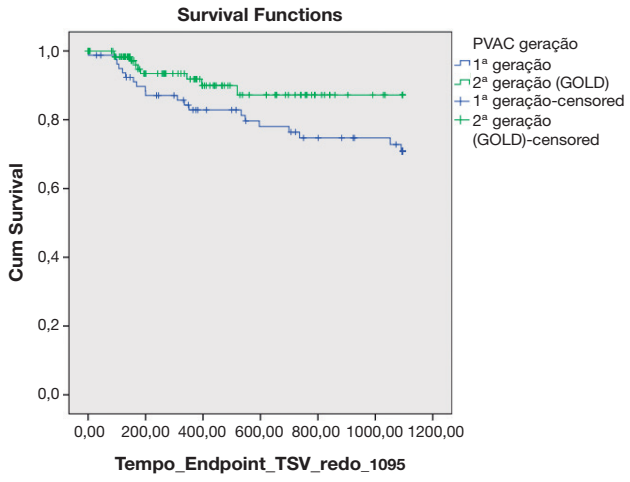
CO 67. ISOLATION OF PULMONARY VEINS WITH DUTY-CYCLED CIRCULAR MULTIPOLAR CATHETER: BENEFIT OF USING THE GOLD CATHETER

Pedro Silvério António[1], Nuno Cortez-Dias[2], Gustavo Lima da Silva[2], Tatiana Guimarães[2], Afonso Nunes-Ferreira[2], Ana Rita Francisco[2], Sílvia Sobral[2], Ana Bernardes[2], Céu Barreiros[2], Joana Quaresma[2], Luís Carpinteiro[2], Fausto J. Pinto[2], João de Sousa[2]

[1]Centro Hospitalar de Lisboa Norte, EPE / Hospital de Santa Maria. [2]Serviço de Cardiologia, Departamento Coração e Vasos, CHULN, CCUL, Faculdade de Medicina, Universidade de Lisboa, Lisboa.

Introduction: The PVAC® (Medtronic) *duty-cycled* circular multi-polar catheter has been developed to provide pulmonary vein isolation (PVI) in a practical, guidewire-guided manner under fluoroscopic control, without the use of electroanatomical mapping systems. The catheter underwent technological improvements (PVAC-GOLD®), with modification of the *loop* angulation and use of gold electrodes, aimed at improving its efficiency and safety.
Objectives: To evaluate the safety and efficacy of PVAC-GOLD® catheter ablation and to compare it with the first generation of the PVAC® catheter.
Methods: Prospective observational study of patients with AF refractory to antiarrhythmic therapy, submitted to the first PVI procedure with circular multipolar catheter. Acute success was determined by obtaining isolation of each of the pulmonary veins, demonstrating bidirectional blockade. The fluoroscopy time, duration of the procedure and complication rate were compared according to the catheter used: PVAC® *versus* PVAC-GOLD®.
Results: A total of 281 patients (69.8% males, 58 ± 12 years) were evaluated, of which 91 were treated with PVAC® (32.3%) and 190 with PVAC-GOLD® (67.7% after July 2014). There was persistent AF in 23.1% and persistent long-term AF in 15.7%. Two-way blockade was achieved in 99.5% of pulmonary veins (738/742) with PVAC-GOLD®, and 92.3% (288/312) with PVAC®. The duration of the procedure was lower among the patients treated with PVAC-GOLD® (105 [90-145] *versus* 195.5 [143-245] min; P < 0.001], as well as the fluoroscopy time (15.5 [12-23] *versus* 43 [32.4-54.5] min; P < 0.001). There were major complications in 2.5% of cases, more frequently in vascular access, statistically significant in relation to PVAC® (χ^2 = 5.3%, p = 0.02). No patient presented tamponade, but one stroke occurred in each of the groups (0.7%). The overall success rate at 36 months after 1st ablation was 74.8% and 67.1% with PVAC-GOLD® and PVAC, respectively (p = ns). The success rate after multiple ablations was 93.5% and 75.3% with PVAC-GOLD® and PVAC®, respectively (long-rank = 3.4%, p = 0.06).





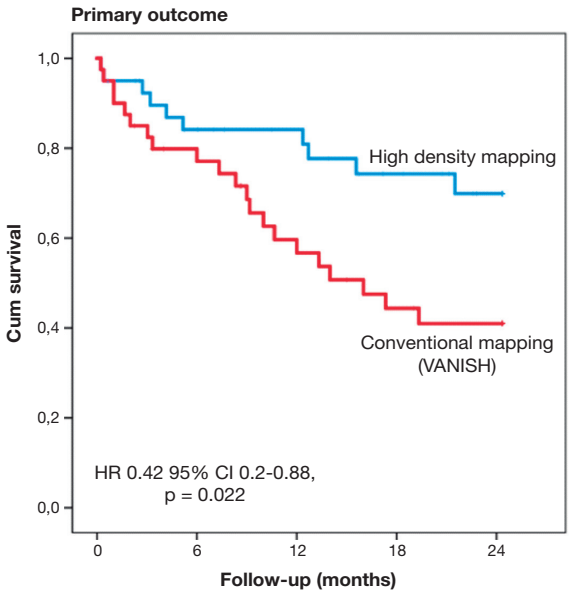
Conclusions: The new multi-polar PVAC-GOLD® catheter may provide added value in AF ablation, with a tendency for greater efficacy, faster and reducing the need for radiation exposure. Although it is a generally safe technique, it is necessary to monitor the risk of stroke.

CO 68. DOES HIGH DENSITY MAPPING INCREASE THE EFFICACY OF ISCHEMIC VENTRICULAR TACHYCARDIA ABLATION?

Afonso Nunes Ferreira[1], Gustavo Lima da Silva[1], Nuno Cortez-Dias[2], Inês Gonçalves[1], João R Agostinho[2], Inês Aguiar-Ricardo[2], Joana Rigueira[2], Rafael Santos[2], Nelson Cunha[2], Pedro Silvério António[2], Luís Carpinteiro[2], Fausto J. Pinto[2], João de Sousa[2]

[1]Centro Hospitalar de Lisboa Norte, EPE / Hospital de Santa Maria.
[2]Serviço de Cardiologia, Departamento Coração e Vasos, CHULN, CCUL, Faculdade de Medicina, Universidade de Lisboa, Lisboa.

Introduction: The treatment of ventricular tachycardia (VT) in patients (pts) with ischemic heart disease (IHD) represents a challenge because of its high morbidity and mortality rates and low long-term success rates. In the VANISH clinical trial, 51% of pts undergoing the conventional ablation technique developed within 2 years the combined outcome of mortality or electrical storm (ES) or appropriate CDI shock. The use of high density substrate maps can lead to greater precision in substrate evaluation and ideally to improved ablation success.
Objetives: To assess the efficacy of substrate-guided ischemic TV ablation using high density mapping.
Methods: Single-center prospective study of consecutive IHD pts submitted to endocardial ablation of substrate-guided VT using multipolar catheters (PentaRayTM or HDGridTM) and three-dimensional mapping systems with automatic annotation software (Carto 3® or Ensite Precision®). The maps were evaluated in order to identify the intra-cicatricial channels (areas of bipolar voltage < 1.5 mV) in which sequential propagation of local abnormal ventricular activities (LAVAs) were observed, during or after QRS. The ablation strategy aimed at the abolition of all intra-cicatricial LAVAs, directing the radiofrequency applications primarily to the entrances of the channels. The success of ablation was assessed by the primary outcome (death by any cause or ES or appropriate CDI shock) at 2 years and compared to the population of the VANISH study undergoing conventional ablation, using Cox regression and Kaplan- Meier survival analysis.
Results: We included 40 patients, 95% males, 70 ± 8 years, mean ejection fraction 34 ± 10%. 82% on previous amiodarone therapy and 72% were ICD carriers. 32% underwent ablation during hospitalization for ES and 20% had previously undergone TV ablation. The median duration of substrate mapping was 74 minutes, with a mean of 2290 collected points. Major complications were seen in 1 patient (aortic dissection). During a mean follow-up time of 17.3 ± 12.9 months, the long-term success rate of VT ablation was 75%. Additionally, there was a reduction in the proportion of patients receiving amiodarone before *versus* after ablation (82% *versus* 45% respectively). The rate of events observed during follow-up was lower than expected, namely by comparison with the population of the VANISH study undergoing conventional ablation (25% *versus* 51% at 24 months, HR: 0.42, CI95%: 0.2-0.88, p = 0.022), reflecting a relative risk reduction of 58%.



Conclusions: High density mapping allows a detailed characterization of the dysrhythmic substrate in patients with VT in an IHD context. Our results suggest that these technological innovations may be improving the clinical success of TV ablation.

CO 69. HOW CAN WE IMPROVE THE SUCCESS OF CARDIAC RESYNCHRONIZATION THERAPY IMPLANTATION?

Afonso Nunes Ferreira[1], Pedro Silvério António[1], Inês Aguiar-Ricardo[2], João R. Agostinho[2], Joana Rigueira[2], Rafael Santos[2], Tiago Rodrigues[2], Nelson Cunha[2], Ana Bernardes[2], Fausto J. Pinto[2], João de Sousa[2], Pedro Marques[2]

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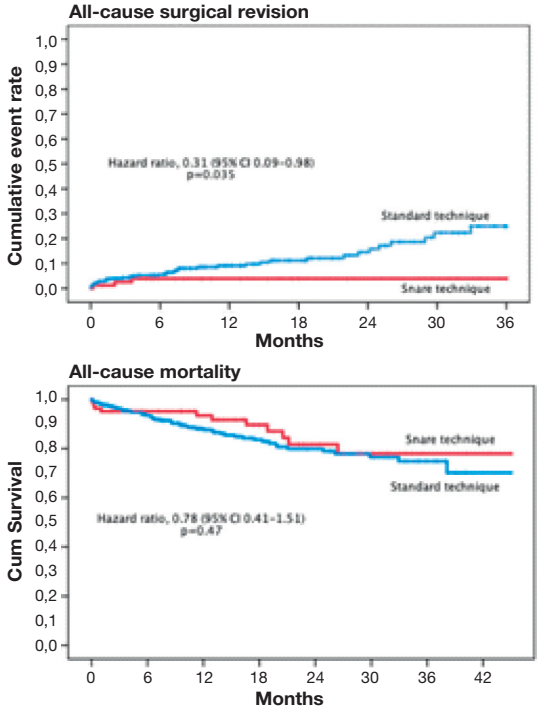
Introduction: The left ventricular (LV) lead implantation in cardiac resynchronization therapy (CRT) is one of the most important and complex

Characteristics	Snare group (n = 84)	Standard group (n = 402)
Median age (IQR) - years	72 (64-79)	73 (66-79)
Male sex	64 (76)	295 (74%)
Ejection fraction < 30%	50 (60)	227 (64)
Hypertension	59 (88)	347 (88)
Dyslipidemia	44 (68)	227 (58)
Diabetes	29 (45)	151 (38)
CKD (GFR < 60 mL/min/1,73 m²) - N (%)	12 (18)	86 (22)
COPD - N (%)	5 (8)	34 (9)
Active smoker	4 (6)	25 (6)
Ex-smoker - N (%)	17 (25)	91 (23)
AF - N (%)	18 (22)	123 (31)
NYHA I - N (%)	0 (0)	8 (3)
NYHA II - N (%)	45 (76)	128 (56)
NYHA III - N (%)	14 (24)	91 (40)
NYHA IV - N (%)	0 (0)	3 (1)
Left bundle branch block - N (%)	31 (52)	95 (59)
Median QRS duration (IQR) - ms	162 (152-174)	161 (147-177)
CRT-P	26 (31)	176 (44)
CRT-D	58 (69)	222 (56)
Auriculo-ventricular block	3 (4)	7 (2)
HF etioiogy - ischemic	34 (41)	141 (37)
HF etiology - dilated cardiomyopathy	41 (49)	216 (57)
HF etiology - hypertrophic cardiomyopathy	1 (1)	2 (0)
HF etiology - valvular	3 (3)	14 (4)
HF etiology - other	2 (2)	0 (0)



CO 69 Figure

steps, leading to implantation failure in 10-15% of cases. New LV lead implantation techniques are needed to improve resynchronization and decrease mortality and hospitalizations.

Objectives: To evaluate the efficacy and safety of the snare technique in the LV lead implantation in cases of standard technique failure.

Methods: Prospective, unicentric study of patients undergoing CRT implantation since 2015. Demographic, clinical, and CRT implantation techniques were evaluated, taking into account the vessel with the best resynchronization capacity. The snare technique, through the active traction of the lead to the target vessel, was used in cases of standard technique failure. Time to surgical revision and mortality were evaluated by the Cox regression and Kaplan-Meier methods. Major complications, defined as reasons for prolonged hospitalization or potentially fatal, were evaluated.

Results: 486 CRTs were implanted since 2015 (73.9% males, 73 years (IQR: 66-79), median follow-up of 487 days (IQR: 175-749), 91% for heart failure, dilated cardiomyopathy in 55.4%. In 17.3% of these patients (n = 84), LV lead was implanted through the snare technique, 94% of the cases in a lateral vein, 100% efficacy in the positioning in the intended vessel. Comparing the snare technique with the standard technique, patients implanted with snare presented a lower all-cause surgical revision (HR: 0.31, 95%CI: 0.094-0.98, p = 0.035), with a number needed to treat of 25 patients to prevent one surgical revision, and a lower revision rate due to LV lead implant failure/dislodgement (log-rank 5.1, p = 0.024). There were no surgical revisions for LV lead repositioning in patients undergoing the snare technique. The rate of major complications (4.8% *versus* 3.0%, p = 0.41), 30-day mortality (3.5% *versus* 1.8%, p = 0.28) and all-cause mortality (13.1% *versus* 13.9%, p = 0.47) were similar to the standard procedure. Major complications in both groups were pericardial effusion and contrast nephropathy. The snare technique presented a longer procedure duration (104 *versus* 78 min, p < 0.01) and fluoroscopy time (26.6 *versus* 15.5 min, p < 0.01). There has been a learning curve with reduction in the duration of procedure and fluoroscopy.

Conclusions: The snare technique allows LV lead implantation in the vein with the best resynchronization characteristics, increasing the success rate in the implantation of CRT. It also reduced all-cause surgical revisions and surgical revisions due to LV lead implant failure/dislodgement, with a favorable safety profile similar to the standard technique.

CO 70. SUBCLINICAL ATRIAL FIBRILLATION: MORE THAN A HIGHER RISK FOR STROKE?

Rita Marinheiro, Leonor Parreira, Pedro Amador, Cláudia Lopes, Andreia Fernandes, Dinis Mesquita, Marta Fonseca, José Farinha, Ana Fátima Esteves, António Pinheiro, José Venâncio, Rui Caria

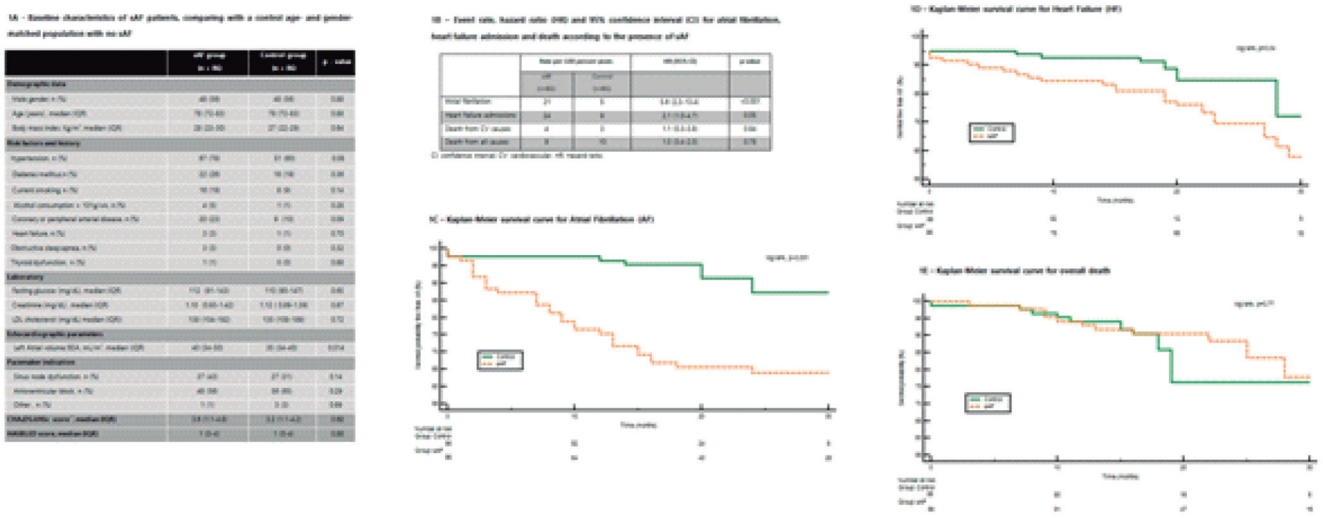
Centro Hospitalar de Setúbal, EPE / Hospital de São Bernardo.

Introduction: Subclinical atrial fibrillation (sAF) is common in pacemaker patients and it has been demonstrated to increase the risk of stroke. However, there is not always a temporal relationship between sAF and stroke occurrence, suggesting sAF can be just a marker of stroke risk and be related with other concomitant cardiovascular (CV) diseases.

Objectives: To compare patients with sAF to those without it in what concerns baseline CV risk factors and also clinical outcomes (AF, heart failure (HF), cardiovascular (CV) death and overall death) during the follow-up.

Methods: From 2014 to 2017 we selected patients with pacemaker and without prior diagnosis of AF, in whom sAF was detected. sAF was defined as atrial high-rate episodes (> 6 min and < 24 h) with lack of correlated symptoms, detected with continuous intracardiac ECG monitoring. We used an age- and gender-matched population with pacemaker but no sAF as a control group. During the follow-up, we analysed future development of AF (in ECG or Holter monitoring), admissions for new-onset HF with reduced (HFrEF), mid-range (HFmrEF) or preserved ejection fraction (HFpEF) (admission with new or increasing symptoms or signs of the disorder), CV death and overall death. Since a proportion of patients with sAF initiated oral anticoagulation, according to current AF guidelines, we were not able to compare ischemic events in the 2 groups.

Results: We studied 172 patients: 86 with sAF and 86 with no sAF (control group). Baseline characteristics were not different between the groups, except for indexed left atrium volume - 40 mL (IQR: 34-50) in sAF group *versus* 35 mL (IQR: 34-40) in control group (p = 0.01) (Fig. A). During a mean follow-up of 24 ± 10 months, 32 patients (37%) had AF in the sAF group, comparing to 6 (7%) in the control group (hazard ratio [HR]: 5.6, 95% confidence interval [CI]: 2.3-13.4, p < 0.001) and 35 patients (41%) had new-onset HF in the sAF group (32 with HFpEF; 3 HFmrEF), comparing to 9 (10%) in the control group (8 with HFpEF; 1 HFmrEF) (HR: 2.1, 95%CI: 1.0-4.7, p = 0.05). No interaction was found between AF and new-onset



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HF (p = 0.46). The risk of CV death and overall death was not significantly different between the two groups. Rate per 100-person-years and HR are presented in figure 1B. Kaplan-Meier survival curves are presented in figures 1C, 1D and 1E.
Conclusions: In this group of patients with pacemakers, the presence of sAF was useful for predicting the future development of AF and new-onset HF. sAF is possibly a marker of electrophysiological atrial remodeling, predicting the future development of AF and HF. Indeed, it is of paramount importance to monitor sAF patients more closely, not only due to AF and stroke risk, but also due to HF, even in the presence of a normal EF. Death was not different between the groups, probably due to the short time of follow-up.

Segunda-feira, 29 Abril de 2019 | 14H00-15H30

NEPTUNO II | COMUNICAÇÃO ORAL 11 - CIRCULAÇÃO PULMONAR / CONGÉNITOS

CO 71. LATE FAILING FONTAN IN A TERTIARY CENTER IN PORTUGAL: 18 YEARS FOLLOW-UP

Ana Luísa Costa, Paulo Éden Santos, Jorge Casanova, António Rodrigues Sousa, Sofia Granja

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Introduction: The Fontan procedure represents the final surgical stage of the troublesome univentricular pathway. We aimed to describe some of the factors associated with «Late Failing» Fontan (FF) circulation.
Methods: Clinical medical records of children/young adult born after 1987 submitted to Fontan procedure and followed up at a tertiary centre in Portugal, were reviewed. Patients with evidence of early FF were excluded. Late FF was defined as: death/transplant, Fontan conversion, heart failure (HF) symptoms, protein-losing enteropathy (PLE) or plastic bronchitis.
Results: Fourty-six patients were included, 25 males (54.3%), with 4-29 yo at present, with complex CHD (table). Thirty patients had single LV anatomy, 12 single RV anatomy and four biventricular heart. Total cavopulmonary connection (TCPC) was performed in all patients and the median age was 5,7yo (P25-P75: 4.4-7.6 yo). Forty-one patients had an extracardiac conduit (EC) and five a lateral tunnel (LT); 37 were fenestrated Fontan. Eleven patients (23.9%) developed late FF: five PLE, five HF and one death. No patient was submitted to cardiac transplant or Fontan conversion. The only deceased patient was 13 yo (5,2 yo after surgery) with malignant arrhythmia. The median time of FF presentation was 5.0 yo (P25-75: 0.6-9.9) after the Fontan surgery. Comparing with the non-FF, FF patients more frequently had LT Fontan (4/5 *versus* EC conduit 7/41, p < 0,001) and arrhythmias (4/8 *versus* no arrhythmia 5/30, p = 0.049). All patients with ventricular dysfunction (5/46) developed FF (p < 0,001). No other significant differences were found between the groups (ventricular morphology, size of pulmonary arteries, presence of fenestration, collateral vessels).
Conclusions: Less than 25% of our patients developed late FF. The lack of associations between some of the studied factors and FF might be due to the small sample. Future studies on the factors predicting the outcome of Fontan procedure are imperative to improve the management of these patients.

CO 72. LONG-TERM ANTIHYPERTENSIVE MEDICATION AFTER EFFECTIVE STENT IMPLANTATION FOR AORTIC COARCTATION

Mariana Timóteo Lemos, Susana Cordeiro Mendes, Odete Mingas, João Rato, Rui Anjos

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

Introduction: Aortic coarctation (AoCo) patients frequently maintain hypertension. We assessed determinants of freedom from medication at long-term follow-up after stent implantation.
Methods: We studied 75 patients with native AoCo and recoartation who had undergone effective stent implantation with a follow up of 1 to 17 years. Medication, imaging measurements, Doppler and invasive data were studied.
Results: Native coarctation was present in 47 patients (63%); median age at stent implantation was 25 (SD: 15.4) years. Before stenting 66 patients (88%) were on antihypertensive therapy, with 41 (62%) on multiple drugs. Minimal diameter of coarctation was 6.6 (SD: 3.7) mm, 25 patients (33%) had a diameter of transverse aorta/aorta at diaphragm level (Tao/DiaphAo) < 0.8. Invasive gradients decreased from 42.6 (SD: 22.1) mmHg to 5.1 (SD: 7.2) mmHg. A second procedure was performed in 12 patients (16%) for multistage procedure (n = 6), recoil (n = 4), stent fracture, neointima hyperplasia. There were no major complications. At a mean follow up of 7.3 (SD: 4.6) years, one patient died of stroke 4 years after the procedure.Nine patients were not medicated before stenting and remained medication free at follow up. It was possible to discontinue at least one antihypertensive drug in 45 (60%) patients and 21 (28%) became medication free at late follow up. Logistic regression was used to determine predictors of freedom from medication. Patients who became or remained medication free were younger (23.0 *versus* 32.9 years, p = 0.011), had a lower Doppler gradient (38.1 *versus* 52.8 mmHg, p = 0.01), and lower invasive gradient before intervention (32

Table CO 71. Baseline Characteristics of all patients, Non-"Failling" Fontan and "Failling' Fontan Patients

	All n= 46	Non-"Failling" Fontan n= 35	"Failling" Fontan n= 11	p
Demography				
Age at analysis (years)	15.0 (P25-75: 11.8-18.0)	14.2 (P25-75:9.3-23.5)	16.5 (IC 95%:14.0-17.3)	0.570
Male sex	25 (54.3%)	22 (62.9%)	3 (27.3%)	0.039
Age at Glenn Surgery	2.0 (P25-75: 0.8-4.2)	2.0 (IC 95%: 0.8-4.7)	2.6 (IC 95%: 1.0-4.2)	0.887
Age at Fontan Surgery	5.7 (P25-75: 4.4-7.6)	5.9 (IC 95%: 4.5-7.8)	4.6 (IC 95%: 4.1-7.5)	0.157
Congenital Heart Disease				
Double-inlet LV	11 (23,9%)	7 (20.0%)	4 (36.4%)	
Tricuspid atresia	10 (21,7%)	9 (25.7%)	1 (9.1%)	
Pulmonary atresia	9 (19,6%)	8 (22.9%)	1 (9.1%)	
Hypoplastic Left Heart	9 (19,6%)	8 (22.9%)	1 (9.1%)	
Syndrome	3 (6,5%)	1 (2.9%)	2 (18.2%)	
Double-outlet RV	2 (4,3%)	2 (5.7%)	0 (0%)	
L-TGA	1 (2,2%)	0 (0%)	1 (9.1%)	
D-TGA	1 (2,2%)	0 (0%)	1 (2.2%)	
Unbalanced AVSD	11 (23,9%)	7 (20.0%)	4 (36.4%)	
Type of Total Cavopulmonary Connection				0.002
Extracardiac conduit (EC)	41 (89%)	34 (97.1%)	7 (63.6%)	
Lateral tunnel (LT)	5 (11 %)	1 (2.9%)	4 (36.4%)	
Fenestration	37 (82.2%)	27 (77.1%)	10 (100%)	0.095
Other characteristics				
Hypoplastic Pulmonary arteries	10/40 (25.0%)	7 (22.6%)	3 (33.3%)	0.512
Ventricle Dysfunction	5 (11%)	0 (0%)	5 (100%)	<0.001
Presence of Collateral vessels	10/29 (34.5%)	7 (35.0%)	3 (33.3%)	0.930
Dysrhythmias	8/38 (21.1%)	4 (13.8%)	4 (44.4%)	0.049

versus 49 mmHg, p = 0.004). In patients with Tao/DiaphAo > 0.8, 46% were medication free at last follow up, but with Tao/DiaphAo < 0.8 only 20% did not require medication (p = 0.015).A multiple logistic regression model predicted freedom from medication using age, invasive gradient and Tao/DiaphAo > 0.8 (AIC: 82, p < 0.05 in all β-coefficients).
Conclusions: Percutaneous stent implantation in patients with coarctation reduces long term need for antihypertensive medication. Reintervention was required in 16% of the cases. Patients who became and/or remained medication free were younger at the time of stenting, with lower initial gradients and larger Tao/DiaphAo ratio.

CO 73. 10 YEARS OF PERCUTANEOUS PULMONARY VALVE IMPLANTATION

Petra Loureiro, José Diogo Ferreira Martins, Lídia de Sousa, Ana Agapito, Fátima F. Pinto

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

Introduction: The congenital heart diseases affecting the right ventricular outflow tract (RVOT) are commonly associated with a significant morbidity, as they require multiple surgical interventions to treat native and residual lesions. A less invasive alternative is percutaneous pulmonary valve implantation (PPVI).
Objectives: To assess the safety, the immediate and long-term efficacy of PPVI in patients followed at a single tertiary center over 10 years.
Methods: We retrospectively analyzed data of all the patients that underwent PPVI between 2008-2018. We performed a statistical analysis of demographic, clinical and anatomical variables.
Results: Thirteen patients with RVOT dysfunction, 76.9% males, with a mean age of 21 years (7.7-39.2 years) and mean weight of 52.4 kg (29-88 kg) underwent PPVI. Of these, 6 (46.1%) had a diagnosis of Tetralogy of Fallot and 12 (92.3%) presented a homograft between the right ventricle (RV) and the pulmonary artery branches. Pre-stenting of the RVOT was performed in all patients. 10 *Melody* valves and 3 *Edwards Sapien XT* valves were implanted. The success of the procedure was 92.3% (n = 12). There was one case of pulmonary valve (PV) embolization, that required surgery, after an attempt of transventricular PPVI.On the 12 patients with a successful procedure, the median peak systolic RVOT gradient decreased from 48.9 mmHg (18-77 mmHg) to 11.2 mmHg (2-20 mmHg) and the ratio between RV pressure / aortic pressure decreased from 76% (48.6-132%) to 37.9% (23-49%). There were no major intra-procedure complications. In long-term follow-up (mean 7 years [2.9-10 years]), 3/12 patients (25%) required a surgical replacement of the PV due to bacterial endocarditis (BE), and there was one case of BE medically treated. The incidence rate of BE was 5.2% person-year. In the remaining 8 patients of the sample, the current pulmonary transvalvular gradient is 26.75 mmHg (17-58 mmHg), with absence or mild pulmonary valve regurgitation. There was 1 early complication: an aortic fistula to the RVOT, which was surgically treated with PV preservation, and one death (12.5%) of unknown cause. 1/12 patients had stent fractures (Nordmeyer type I). In total, 9/12 patients (75%) are currently free of re-intervention.
Conclusions: In a short and medium-term follow-up PPVI is a safe and effective technique with good hemodynamic results and a low complications rate. BE was the main cause of re-intervention.

CO 74. SAFETY OF BALLOON PULMONARY ANGIOPLASTY FOR CTEPH: INITIAL SINGLE CENTER PORTUGUESE EXPERIENCE

Daniel Sebaiti[1], Filipa Ferreira[2], Rita Calé[1], Maria José Loureiro[1], Sofia Alegria[1], Sílvia Vitorino[1], Pedro Santos[1], Debora Repolho[2], Gonçalo Jácome Morgado[1], Hélder Pereira[1]

[1]Hospital Garcia de Orta, EPE. [2]Hospital Garcia de Orta.

Introduction: Balloon pulmonary angioplasty (BPA) is an emerging therapeutic strategy for inoperable chronic thromboembolic pulmonary hypertension (CTEPH). However, it is a complex procedure and not risk free.

Objectives: We aimed to determine procedural safety for BPA in patients with inoperable, recurrent or residual CTEPH.
Methods: Detailed procedural and technical aspects were collected for consecutive patients with inoperable, residual or recurrent CTEPH undergoing BPA at a single institution from December 2017 to December 2018.
Results: A total of 57 BPA sessions in 12 patients were performed (age 64.1 ± 10.7 years; 67% women; pre-BPA mean pulmonary artery pressure (mPAP) (30.8 ± 10.3 mmHg). Femoral access was used for all patients. 230 vessels were treated in 139 segments. Ring-like stenosis, webs, subtotal occlusions, and total occlusions were noted in 16 (7%), 164 (71%), 31 (13%) and 18 (8%) treated vessels, respectively. Average number of treated vessels per session was 4.0 ± 1.9 in 2.4 ± 1.0 segments. We performed 11 pressure-wire guided sessions for patients with mPAP > 40 mmHg. Intravascular imaging was used in 4 procedures. Average time of procedure including right heart catheterization and BPA was 122 ± 31 minutes (mean radiation dose 9,374,730 mGy) and average volume of contrast used was 268 ± 81 mL per session. To examine the BPA procedure-related complications, all 57 sessions were reviewed. Procedure-related adverse events occurred in 24% of the interventions. Pulmonary artery (PA) vascular lesions were noted in 7 sessions (12%): 3 distal wire perforations and 4 dissections. Haemoptysis was noted in 5 sessions (9%). None of the patients with PA dissection showed need of transcatheter or surgical procedures. Balloon inflation was performed for 2 distal perforations, and 1 sealed without any intervention. We had 3 reperfusion edemas, all grade 2. None of the patients required oral intubation or mechanical ventilation at any time. Extra-pulmonary complications included 2 access site complications (hematoma and seroma). There was 1 contrast nephropathy KDIGO AKI staging 1. No patients had acute radiation-induced dermatitis. Importantly, there was no peri-procedural death.
Conclusions: In our initial experience, we show that BPA can be safely performed in patients with inoperable, residual or recurrent CTEPH, with 24% minor procedural-related complications but no major adverse event.

CO 75. IMPLEMENTATION OF THE NEW CHRONIC THROMBOEMBOLIC PULMONARY HYPERTENSION TREATMENT ALGORITHM: AN ONGOING EFFORT FROM A PORTUGUESE REFERRAL CENTRE

Sofia Alegria[1], Maria José Loureiro[1], Filipa Ferreira[2], Rita Calé[1], Margarida Cabral[3], Hélder Pereira[1]

[1]Hospital Garcia de Orta, EPE. [2]Hospital Garcia de Orta. [3]Centro Hospitalar de Leiria / Hospital de Santo André.

Introduction: The first-line treatment for chronic thromboembolic pulmonary hypertension (CTEPH) is pulmonary endarterectomy (PEA), although a significant number of patients will have inoperable disease or residual pulmonary hypertension (PH). Balloon pulmonary angioplasty (BPA) has provided a new therapeutic option for these patients. In addition, medical therapy (MT) also plays an important role.
Objectives: Characterization of patients with CTEPH or chronic thromboembolic disease (CTED) and comparison of the treatment strategies according to the updated treatment algorithm.
Methods: Retrospective analysis of patients with CTEPH / CTED followed in a referral centre for the treatment of PH submitted to different treatment strategies: PEA, plus MT and BPA in patients with residual PH (group A); MT plus BPA (group B); and MT only (group C). Cox regression was used to identify predictors of all-cause mortality.
Results: 58 patients were included (median age 64 years, 74% female); 17% had CTED, and the remaining had CTEPH. 50% (n = 29) were submitted to PEA (group A), of which 58% had residual PH (21% underwent BPA, n = 3). Among the remaining patients, 31% (n = 9) underwent MT plus BPA (group B), and 69% (n = 20) were treated with MT only (group C). Overall, 55% were under pulmonary vasodilator therapy, including 38% with riociguat. 67% were in functional class III/IV, the distance in the 6 MWT was 328 ± 147 m, the NT-proBNP was 1534 ± 2049 pg/mL, 40% had RV systolic dysfunction, the mPAP was 42 ± 13 mmHg, and the PVR was 11 ± 6 WU. Comparing the treatment strategies, during follow-up (median 945 days) the following differences were found (comparison between group A *versus* B *versus* C): improvement in functional class (class III-IV: 0% *versus* 0% *versus* 58%); 6 MWT (438 ± 83 *versus* 390 ± 79 *versus* 281 ± 105 m); evolution of NT-proBNP (-984 ± 1736 *versus* -198 ± 205 *versus* +1177 ± 2342); normalization of RV dimensions (89% *versus* 50% *versus* 20%); resolution of pericardial effusion (100% *versus* 100% *versus* 0%); normalization of mPAP (73% *versus* 71% *versus* 0%); PVR (median 3.4 *versus* 2.7 *versus* 10.6 WU); and all-cause mortality (7% *versus* 0% *versus* 35%) ($p < 0.02$ in all). Additionally, comparing with patients in group B, patients in group A were younger (median 58 *versus* 68 years; $p = 0.032$), but there was no significant difference in the prevalence of residual PH or mortality. In the overall population, the most relevant predictors of all-cause mortality were the absence of functional class improvement, baseline and follow-up NT-proBNP, baseline and follow-up SPAP by echocardiogram, and maintenance of prostanoids ($p < 0.05$ in all).
Conclusions: Our results confirm that in patients with CTEPH / CTED, PEA is associated with functional and hemodynamic improvement, and increased survival. BPA is an alternative in patients with inoperable disease or residual PH, with similar results on short-term follow-up. Patients who are not submitted to surgical or percutaneous intervention have a poor prognosis.

CO 76. UTILIDADE DO BOVA *SCORE* NOS DOENTES COM TROMBOEMBOLISMO PULMONAR DE RISCO INTERMÉDIO-ALTO

Hugo da Silva Antunes, Inês Pires, Luísa Gonçalves, João Santos, Júlio Pereira, Luís Abreu, Miguel Correia, Inês Almeida, Costa Cabral

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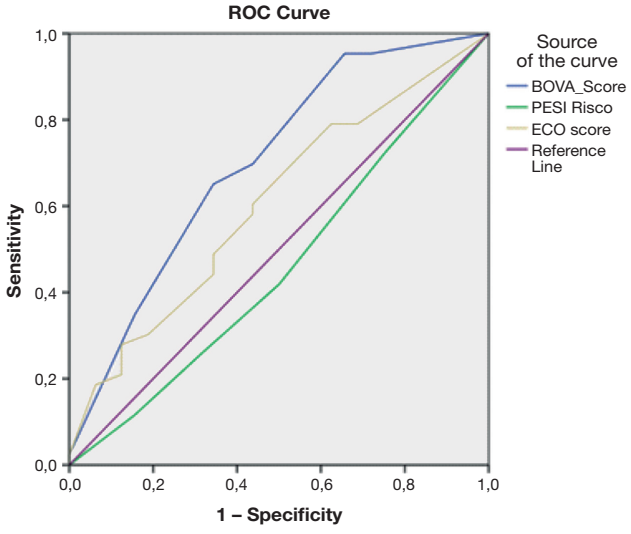
Introdução: O estudo PEITHO pôs em causa a utilidade da terapêutica fibrinolítica por rotina nos doentes (D) com tromboembolismo pulmonar (TEP) de risco intermédio-alto. Hoje em dia, não há ferramentas que permitam prever quais destes D vão instabilizar e necessitar de fibrinólise. O Bova *score* foi estudado em D normotensos com TEP como preditor de eventos aos 30 dias. O objetivo deste trabalho é avaliar a *performance* do Bova *score* em D admitidos por TEP de risco intermédio-alto como preditor de eventos adversos no internamento (instabilidade hemodinâmica (IH) com necessidade de fibrinólise e morte) e compará-lo com *scores* já utilizados na prática clinica: PESI *score* e ECG *score*.
Métodos: Incluídos D admitidos numa UCIC num período de 5 anos, com o diagnóstico de TEP, classificados à admissão como risco intermédio-alto. Calculados o Bova *score* (pressão arterial sistólica 90-100 mmHg - 2 pontos (pts), troponina elevada - 2 pts, disfunção do ventrículo direito - 2 pts; frequência cardíaca ≥ 110 bpm - 1 pt), PESI *score* e ECG *score* para cada D na admissão. Estratificou-se o risco (BR: baixo risco, AR: alto risco) de cada D, em relação a cada *score*: Bova *score* BR (0-3 pts) e AR (4-7 pts); PESI BR (I-III) e AR (IV-V) e ECG *score* BR (≤ 7 pts) e AR (> 7 pts). Com recurso a análise de associações e de desempenho, inferiram-se associações entre os *scores* de risco e os eventos adversos no internamento.



Diagonal segments are produced by ties.

Resultados: Foram incluídos 115 D: 58,1% do sexo feminino; 64 ± 18 anos. Relativamente aos eventos adversos, a mortalidade foi de 6,5% e 51,6% dos D foram submetidos a fibrinólise. À admissão, um maior número de D (56,5%) foi considerado de alto risco segundo o Bova *score* (*versus* 21,1% no ECG *score versus* 38,2% no PESI). De acordo com a estratificação apresentada, nenhum *score* foi preditor de mortalidade intra-hospitalar (Bova *score* AR 6,2% *versus* BR 6,0% p > 0,05, PESI 9,0% *versus* 4,6% p > 0.05, ECG *score* 8,3% *versus* 4,7% p > 0,05). A necessidade de fibrinólise durante o internamento foi estatisticamente superior nos doentes com Bova *score* de AR *versus* BR (67,8% *versus* 32,2%, p = 0,009). Nenhum dos outros *scores* se mostrou preditor de IH e necessidade de fibrinólise (PESI AR 55,2% *versus* BR 51,9%, p > 0.05, ECG *score* AR 61,1% *versus* BR 51,9%, p > 0.05). A curva ROC revela que o BOVA *score* tem melhor desempenho como preditor de IH e necessidade de fibrinólise (AUC: 0,701), seguindo-se o ECG *score* (AUC: 0,605) e finalmente o PESI *score* (AUC: 0,459).
Conclusões: Neste estudo, o BOVA *score* mostrou ser um bom preditor de instabilidade hemodinâmica e necessidade de fibrinólise nos D com TEP de risco intermédio-alto, mostrando superioridade em relação aos outros *scores* testados. Deste modo, o Bova *score* poderá ser útil na estratificação deste grupo de D, ajudando o clínico na tomada de decisão terapêutica.

CO 77. IS THERE A ROLE FOR ELECTROCARDIOGRAPHIC FINDINGS IN PULMONARY EMBOLISM RISK ASSESSMENT?

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Introduction: The electrocardiogram (ECG) is useful in patients (P) with pulmonary embolism (PE), but it is not incorporated in the existing risk prediction tools, such as the Pulmonary Embolism Severity Index (PESI). Intermediate risk PE encompasses a heterogeneous group of P, with different prognosis, some of whom will need fibrinolytic treatment. This study aims to determine the prognostic impact of ECG in intermediate risk PE.
Methods: All P admitted for intermediate risk PE in an Intensive Cardiac Care Unit between 2007 and 2016 were included. P were followed up for 2 years for all-cause mortality. Clinical and analytical variables were collected, as well as ECG, echocardiographic and computed tomography (CT) findings. Statistical analysis used chi-square and Mann-Whitney U tests, binary logistic regressions, Kaplan-Meier curves and Cox-regression.
Results: This study included 209 P: mean age 63 ± 18 years; 38.5% male. T-wave inversion in leads V1-V3 was present in 81 (38.8%), S1Q3T3 pattern in 51 (24.4%), incomplete right bundle branch block (RBBB) in 27 (12.9%), and complete RBBB in 22 (10.5%). T-wave inversion in leads V1-V3 was associated with syncope at presentation (p = 0.032); presence of echocardiographic right ventricle dilation (p = 0.003) and abnormal interventricular septal (IVS) motion (p = 0.001). S1Q3T3 pattern was associated with syncope (p = 0.028); higher heart rate at admission (p = 0.001); higher troponin (p = 0.013) and BNP (p = 0.010) levels; abnormal IVS motion (p = 0.004); and increased CT-derived right-to-left ventricle diameter (RV/LV) ratio (p = 0.014). RBBB were associated with syncope (p = 0.020); higher troponin and BNP levels (p = 0.001); and increased RV/LV ratio (p = 0.029). For each increase in the number of these ECG findings, there was an increase in the odds of fibrinolytic treatment (OR: 1.573, 95%CI: 1.150-2.151, p = 0.005), and the number of ECG findings was a predictor of fibrinolysis independently from PESI (OR: 1.535, p = 0.008). In survival analysis, T-wave inversion in leads V1-V3 was associated with decreased survival during follow up (χ^2 = 4.398; p = 0.036), even after adjustment for PESI (OR: 0.322, p = 0.041).
Conclusions: ECG findings of PE were associated with clinical, analytical and imagiological risk features. They were also predictors of fibrinolysis, and T-wave inversion in leads V1-V3 was associated with decreased survival, after adjustment for PESI. Therefore, in the future, incorporation of ECG findings in risk scores might allow better risk assessment in intermediate risk PE.