



ORIGINAL ARTICLE

National Registry of Cardiac Electrophysiology (2015/2016)[☆]



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KEYWORDS

Registry;
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Abstract

Introduction: Year-by-year analysis of the practice of cardiac electrophysiology in Portugal enables assessment of its development over time and of its position within the overall picture in Europe.

Objective: We present the results of the National Registry of Cardiac Electrophysiology of the Portuguese Association for Arrhythmology, Pacing and Electrophysiology (APAPE) for 2015 and 2016.

Methods: This is a voluntary, observational, annual registry collected retrospectively.

Results: The data of the electrophysiological studies and ablations related to the referred years are presented.

Conclusion: Changes in these data over the years are analyzed and the relation of the Portuguese data in the European panorama and possible implications are discussed.

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PALAVRAS-CHAVE

Registo;
Eletrofisiologia;
Ablação

Registo Nacional de Eletrofisiologia Cardíaca (2015/2016)

Resumo

Introdução: O conhecimento da atividade efetuada num país permite posicioná-lo dentro da comunidade onde se insere.

Objetivo: Apresentam-se os dados referentes ao registo nacional de eletrofisiologia cardíaca da Associação Portuguesa de Arritmologia, Pacing e Eletrofisiologia (APAPE) relativo aos anos de 2015 e 2016.

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Métodos: Trata-se de um registo de dados anual, voluntário, observacional, com colheita retrospectiva de dados.

Resultados: São apresentados os dados dos estudos eletrofisiológicos e de ablações relativos aos anos referidos.

Conclusão: Analisam-se a sua evolução ao longo dos anos e a posição relativa dos dados nacionais em relação ao panorama europeu e eventuais implicações.

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Introduction

We present the results of the National Registry of Cardiac Electrophysiology of the Portuguese Association for Arrhythmology, Pacing and Electrophysiology (APAPE) for 2015 and 2016.

The publication of these data follows the publication of the registry's results for the previous 14 years of interventional electrophysiology, thus completing coverage of all electrophysiological interventions performed in Portugal in this century up to 2016.

The registry is voluntary but aims to include all Portuguese centers, both public and private, that perform diagnostic and therapeutic electrophysiology. It is observational in nature, intended to reflect all activity in electrophysiology in the country, publishing data every one or two years that can be used to assess changes in electrophysiology in Portugal. Maintenance of the registry is thus crucial to understanding the national situation with regard to the number and sizes of centers, types of procedures performed in each center, and the training they carry out.

The publication of these results is also used as a basis to report to the national health authorities concerning the production, distribution and activity of each center and to enable comparisons with other European countries.

The data in this registry have been included in the White Book of the European Heart Rhythm Association (EHRA), which in 2017 published the tenth edition of its European registry. This can be used to compare the situation in European countries and to analyze the differences between them in the invasive treatment of arrhythmias.¹

The data in this report were presented at the Annual Meeting of Cardiac Electrophysiology held by APAPE in February 2016 and 2017.

Methods

Data for the registry are collected retrospectively by means of a questionnaire on the previous years activity sent to all centers in Portugal that perform electrophysiology. This assesses the total number of procedures and their distribution in the different centers, divided between electrophysiological studies and ablations, and identifies which arrhythmias were treated.

Table 1 Electrophysiological studies and ablations in Portugal in 2015 and 2016.

	2015	2016
Total no. of centers	25	21
Public centers	14	14
Diagnostic electrophysiological studies	3173	3486
Ablations	2580	2974
Mean ablations per center	103	142
Median ablations per center	44	71
Centers performing >100 ablations per year	6	8
Centers performing <10 ablations per year	3	0

Results

All Portuguese centers performing electrophysiological studies responded to the survey for 2015, but in 2016 four centers did not respond. These four were all private centers that in the previous year had had little activity, and after several fruitless attempts to communicate with the head of the center were assumed to have closed.

The main data for the two years under analysis are summarized in [Table 1](#).

In 2015 a total of 3173 electrophysiological studies were performed, 2580 (81.3%) of them associated with ablation, in 25 electrophysiology laboratories (44% of them public and responsible for 79% of ablations). Each laboratory performed a mean of 103 ablations (median 44).

In 2016, a total of 3486 electrophysiological studies were performed, 2974 (85.3%) of them associated with ablation. In this year there were 21 active centers, 66.6% of them public and responsible for 84% of ablations. Each laboratory performed a mean of 142 ablations (median 71).

Six centers (24%) performed more than 100 ablations in 2015, a figure that rose to eight centers (38%) in 2016. In 2015 three centers performed fewer than 10 ablations, but this figure fell to zero in 2016.

The distribution of electrophysiological studies and type and number of ablations by center for 2015 and 2016 are shown in [Figures 1 and 2](#), respectively.

The distribution by type of ablation in 2015 and 2016 is shown in [Figure 3](#). As in previous years, the most frequently treated arrhythmia in these two years was atrial fibrilla-

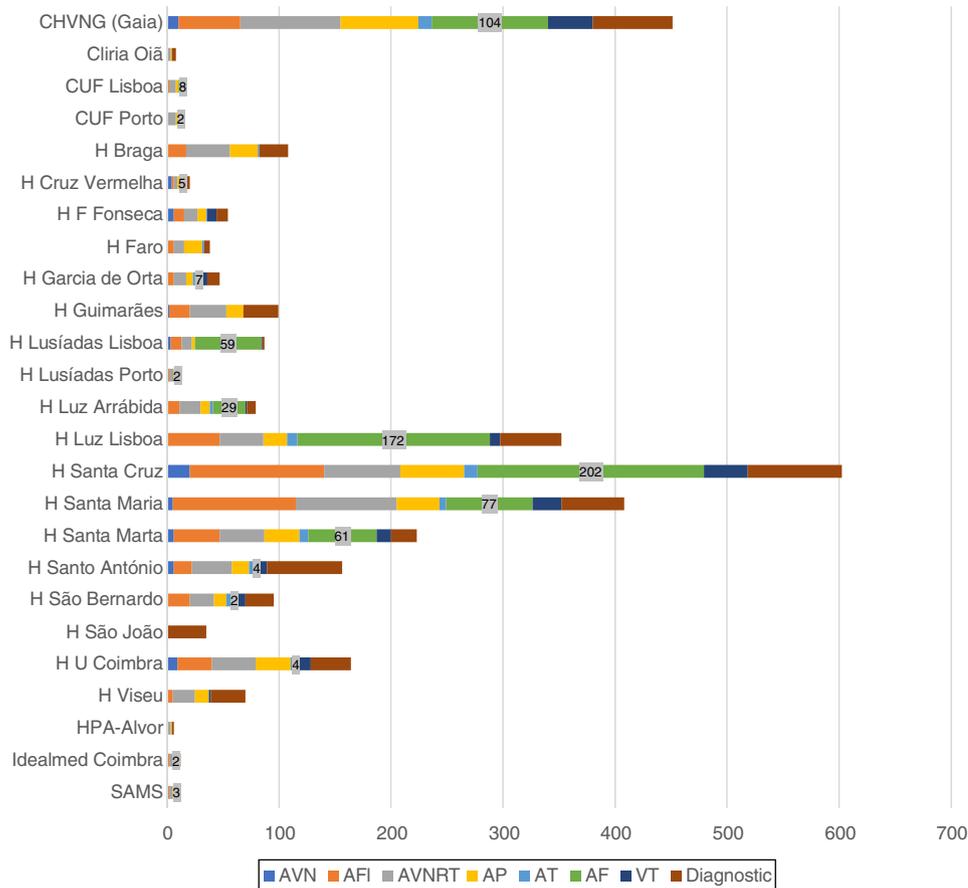


Figure 1 Distribution of electrophysiological studies and type and number of ablations by center in 2015. The numbers of ablations of atrial fibrillation performed in each center are shown. AF: atrial fibrillation; AFI: atrial flutter; AP: accessory pathway; AT: atrial tachycardia; AVN: atrioventricular node; AVNRT: atrioventricular nodal reentry tachycardia; VT: ventricular tachycardia.

tion (AF) (29.7%), followed by atrioventricular nodal reentry tachycardia (23.6%) and isthmus-dependent atrial flutter (17.5%) (all percentages from 2016). Ventricular arrhythmias accounted for only 6.7% of the number of ablations in 2015 and 6.9% in 2016. In 2016 the survey included a question on the presence of structural heart disease in cases of ventricular arrhythmias; the results showed that 47% of ventricular arrhythmias treated by ablation were idiopathic.

Discussion

This article presents the data from all Portuguese centers that performed electrophysiological studies in 2015 and 2016. The results show that the trend for an increase in the total number of ablations continued, from the 11.1% increase between 2014 and 2015 (7.3% increase in AF ablations) to 15.3% between 2015 and 2016 (19.1% increase in AF ablations).²

Despite the increase in the number of procedures between 2014 and 2015, the number of electrophysiology laboratories remained the same, while as stated above, in 2016 the number of centers fell due to the smaller number of low-volume centers. In 2015 these centers had carried out

only 29 ablations, accounting for a mere 1.1% of all ablations in that year.

The number of centers performing a high volume of ablations (more than 100 per year) was six in 2015 and eight in 2016. However, the EHRA recommend that centers that provide training for electrophysiologists should offer use of three-dimensional mapping and more than 200 ablations per year, of which at least 50 should be of AF and at least 20 of ventricular tachycardia (VT). On this basis only three centers in Portugal in any one year have this capacity, which has important implications in terms of the national capacity for training in this area.³

With regard to AF ablation, in 2015 only three centers performed more than 100 ablations per year; this increased in 2016 to four centers, which carried out 69.2% of all AF ablations in that year. These numbers are important, since success and complication rates are directly related to the number of procedures performed. It should, however, be noted that some of the centers performing a low volume of AF ablations shared operators with high-volume centers, and thus the quality of their work was not necessarily negatively affected. Regarding VT, the number of ablations remains relatively low, at less than 10% of all ablations. This may mean that patients with implanted devices and with

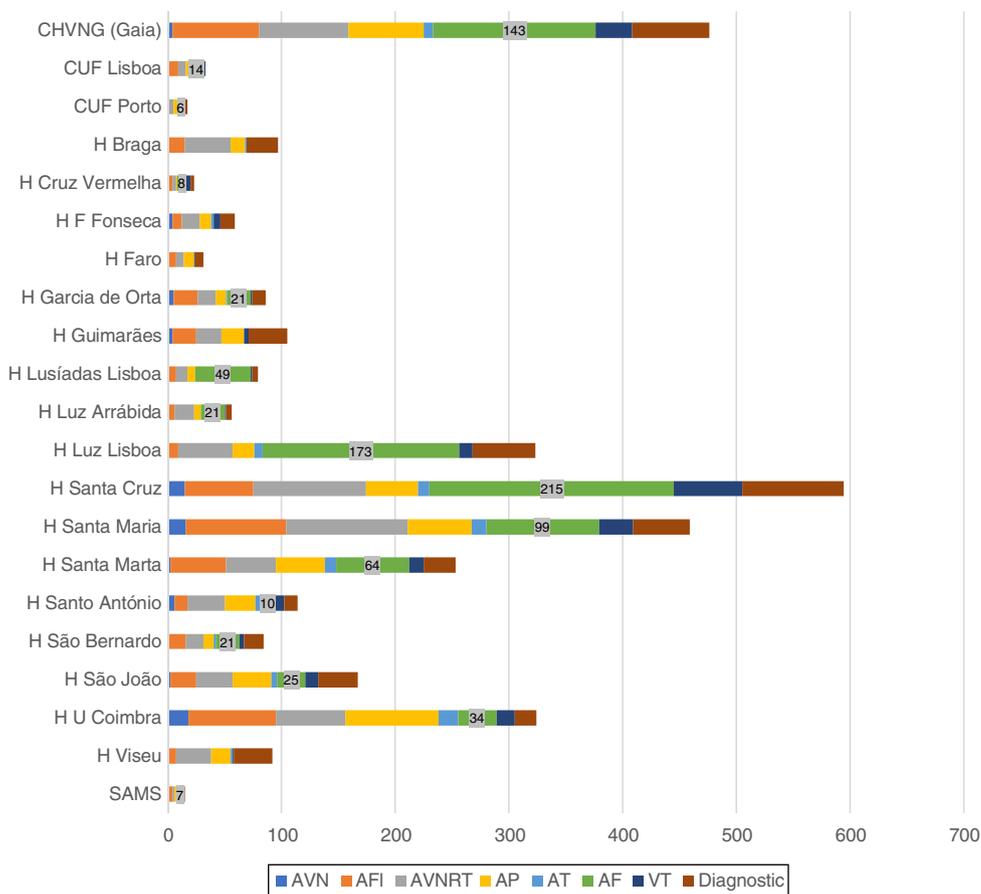


Figure 2 Distribution of electrophysiological studies and type and number of ablations by center in 2016. The numbers of ablations of atrial fibrillation performed in each center are shown. AF: atrial fibrillation; AFI: atrial flutter; AP: accessory pathway; AT: atrial tachycardia; AVN: atrioventricular node; AVNRT: atrioventricular nodal reentry tachycardia; VT: ventricular tachycardia.

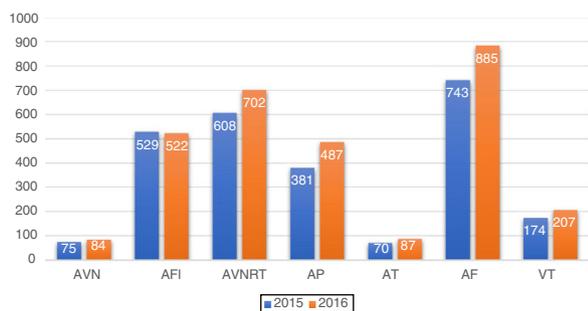


Figure 3 Distribution by type of ablation in 2015 and 2016. AF: atrial fibrillation; AFI: atrial flutter; AP: accessory pathway; AT: atrial tachycardia; AVN: atrioventricular node; AVNRT: atrioventricular nodal reentry tachycardia; VT: ventricular tachycardia.

indication for VT ablation are still under-referred and/or undertreated.

Comparisons with other European countries show that according to the EHRA White Book, in 2015 and 2016 Portugal had a mean of 2.31 and 1.94 electrophysiology laboratories per million population, respectively, which is significantly

higher than the European average (1.34 and 1.36). On the other hand, this higher number of centers carried out a mean of 238 and 275 ablations per million population in 2015 and 2016, respectively, slightly less than the European average for the same years (256 and 288) and significantly less than the average in central Europe.⁴ This discrepancy between the number of centers and volume of ablations in Portugal is related to the large number of low-volume centers and low mean number of electrophysiologists per center. Even so, in the EHRA analysis, Portugal is in the third quartile in terms of number of ablations per million population, close to Spain and the UK in both of the years under analysis.

In terms of AF ablation, Portugal was also in the third quartile of number of ablations per million population, with 69 and 82 procedures in 2015 and 2016, respectively, approaching the mean of the 28 European Union member states (101 per million population).

Conclusion

To conclude, in 2015 and 2016 electrophysiology in Portugal maintained the steady increase in number of ablations that had been observed in previous years, with a trend toward more marked growth in complex procedures as opposed to

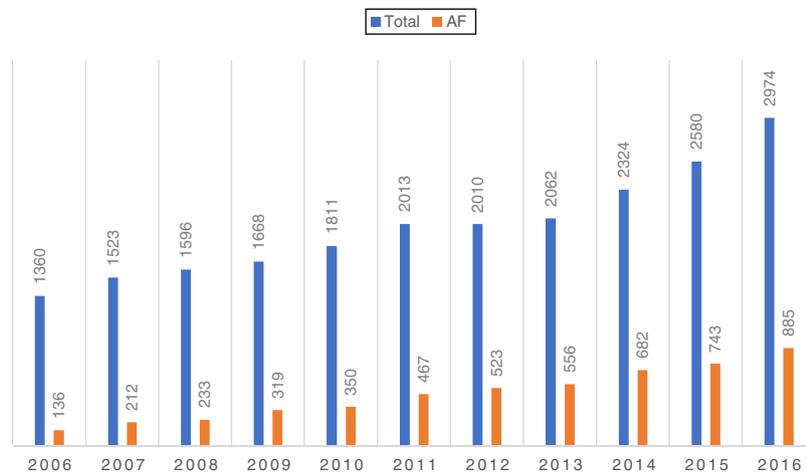


Figure 4 Distribution of numbers of all ablations and ablations for atrial fibrillation per year in Portugal, 2006-2016. AF: atrial fibrillation.

growth in the number of ablations for AF, which is currently the most frequently treated arrhythmia, even though at a rate that is inadequate for national needs (Figure 4).

Ethical disclosures

Protection of human and animal subjects. The authors declare that no experiments were performed on humans or animals for this study.

Confidentiality of data. The authors declare that they have followed the protocols of their work center on the publication of patient data.

Right to privacy and informed consent. The authors declare that no patient data appear in this article.

Conflicts of interest

The authors have no conflicts of interest to declare.

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