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EDITORIAL COMMENT

Catheter ablation of atrial fibrillation in Portugal: Where do we stand?

Ablação de fibrilação auricular em Portugal – estamos no caminho certo?

Renato Margato

Serviço de Cardiologia do Centro Hospitalar de Trás-os-Montes e Alto Douro, Vila Real, Portugal

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Atrial fibrillation (AF) is a major public health problem worldwide, affecting 2–4% of the population. It is an independent risk factor for premature mortality and a common cause of stroke, heart failure and hospitalization, significantly impacting individuals' quality of life. At the same time, AF-related management costs and complications, particularly those associated with hospitalizations, impose an increasing economic burden on countries.[1]

Contemporary management of AF is centered on three fundamental treatment strategies: preventing embolic complications (by means of anticoagulation), improving symptoms (rate control and rhythm control therapy), and addressing associated risk factors and cardiovascular conditions.[1]

According to the latest (2020) European Society of Cardiology (ESC) guidelines and based on the available evidence at that time, the primary indication for pursuing a rhythm control strategy is to reduce AF-related symptoms and improve patients' quality of life.[1] However, the subsequent EAST-AFNET 4 trial demonstrated that an early rhythm control strategy can also significantly reduce the risk of hard cardiovascular outcomes compared to usual care, a finding that may redefine the direction of AF management.[2,3]

Catheter ablation of AF, based on the electrical isolation of the pulmonary veins (known to be main location of focal triggers for paroxysmal AF), plays a central role in the rhythm control approach.[4] Multiple randomized trials have shown its superiority in maintaining sinus rhythm compared to antiarrhythmic therapy when these drugs were unsuccessful, contraindicated or non-tolerated, and even when provided as a first-intention therapy.[1,4–6] Catheter ablation has also been revealed to be superior to antiarrhythmic drugs in different study populations, ranging from mildly symptomatic to terminal heart failure patients, improving quality of life, decreasing health care utilization, reducing the burden of AF and delaying its progression from paroxysmal to more persistent forms.[1,4–7]

Along with the increasing accumulated clinical evidence, there have been continuous technical advances in the ablation field. Catheter ablation technologies have become widely available, with the development of different sources of energy (radiofrequency, cryoablation, pulsed field ablation), diverse ablation tools (high-density mapping, contact force sensors, single-shot devices, high power-short duration), and adjunctive strategies beyond pulmonary vein isolation (including posterior wall isolation, ablation of low-voltage areas, vein of Marshall ablation, and left atrial appendage isolation).[1,4]

Because ablation is an invasive procedure, safety is another major concern. Vascular access complications are the most frequent periprocedural adverse events, occurring in approximately 2–4% of patients. The most feared, although infrequent, complications are cardiac tamponade, atrioesophageal fistula, thromboembolic events and death.[1] In recent years, various measures have been developed to

E-mail address: renatomargato@gmail.com

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minimize these complications. These include the use of ultrasound imaging to guide vascular access, screening for left atrial appendage thrombi prior to ablation, minimizing interruption of anticoagulation therapy, use of intracardiac or transesophageal echocardiography, restriction of energy application in the left atrial posterior wall and the use of esophageal temperature probes to prevent thermal injury.[1,4]

A very recent meta-analysis of randomized controlled trials including >150 000 patients undergoing a first ablation procedure for AF revealed a rate of overall procedure-related complications of 4.5% (pericardial effusion/tamponade 0.78%, stroke/transient ischemic attack 0.17%, death 0.06%). Additionally, a decline of almost 30% in these complication rates was observed when the contemporary period of publication (2018–2022) was compared with the preceding five-year period.[8]

These advancements have led to widespread acceptability and incremental growth of AF ablation, which has become the most commonly performed ablation procedure in the majority of electrophysiology centers worldwide.[1,4]

However, substantial variability among centers in ablation strategies and periprocedural management has been reported.[1,4,9]

Contemporary guidelines have made recommendations to improve the efficacy of AF ablation and reduce the risks of complications. In 2021 the European Heart Rhythm Association (EHRA), in collaboration with other heart rhythm societies, released a position paper that proposed quality indicators to be used by healthcare providers to evaluate care delivery and outcomes of adults with AF at the patient, center, and national levels. Six domains of care were identified: patient assessment, anticoagulation, rate control, rhythm control, risk factor management, and outcome measures.[10]

In this issue of the *Journal*, Carmo et al. present the first results of the Portuguese Association of Arrhythmology, Pacing and Electrophysiology (APAPE)'s prospective registry among Portuguese centers to evaluate quality indicators in atrial fibrillation ablation (RIQAFA).

As observed in other centers worldwide, AF ablation is the predominant ablation procedure performed in Portugal. Unpublished data presented by APAPE in 2023 revealed that AF catheter ablation accounted for 40.5% of ablations in Portugal in 2022 (n=1994), reflecting a growth rate of 22% compared to 2021, confirming the tendency described by the authors of RIQAFA.

Approximately one-third of electrophysiology centers participated voluntarily in this registry, with the study population representing a small percentage (11.8%) of the AF ablations performed in Portugal during the study period.

The authors analyzed 337 patients between 2020 and 2021 regarding characteristics, procedural data, and acute and one-year outcomes. Patients undergoing ablation were relatively old (median age 65 years), predominantly male, with a median CHA_2DS_2-VASc score of 2, and few with structural heart disease. The majority had paroxysmal AF (67%) and mild to moderate symptoms (median EHRA score 3); rhythm control had previously been attempted in 86% of patients (17% by ablation).

Regarding anticoagulation strategies, the majority of patients were appropriately prescribed antithrombotic therapy according to their CHA_2DS_2-VASc score and were screened for intracardiac thrombi prior to ablation, mainly through cardiac computed tomography.

Ablations were performed with anticoagulation interrupted between 12 and more than 48 hours pre-ablation in most patients (92.6%), a practice that is not entirely in line with the current recommendation to perform the procedure without suspending oral anticoagulation.[1,4] Although this practice was not apparently related to increased embolic or bleeding complications, as recognized by the authors, it is a measure that could be improved and that merits the attention of Portuguese electrophysiology centers. Despite this, ablations were correctly performed under anticoagulation with heparin and almost all patients were discharged under anticoagulation.

Concerning the ablation procedure, radiofrequency energy was the preferred technique (74%), with pulmonary vein isolation as the primary strategy. Successful pulmonary vein isolation (confirmed by entry block), with delivery of lower power in the left atrial posterior wall when using radiofrequency energy, was achieved in the great majority of cases. Only 31% of the procedures were conducted under general anesthesia while the remainder were performed under conscious sedation. Given the expected rise in the demand for AF ablations in the future, potentially including more complex patient populations, Portuguese centers should anticipate an increased need for general anesthesia support.

The reported acute and 1 month complications (1.49% and 2.18%, respectively), though not specified, were relatively low compared with similar registries.[1,8,9] There were two deaths described at 1 month of follow-up (0.73%), however, the cause of death or its relation to the procedure wasn't detailed.

In the post-ablation period there was a significant and sustained improvement in symptoms reported by the patients. There were 12.4% reported AF relapses in the first month post intervention (traditionally the recommended blanking period extends to the first 3 months)[4] and 26.4% relapses at the first year. These results are in line with previous reported studies but their interpretation at one year of follow-up is limited because there were fewer patient's data reported at this time (< 22%). The same consideration should be made for the use of antiarrhythmic therapy which was unexpectedly high at 6 months (70.8%) and 1 year (62.5%) of follow-up considering that the majority of the population had paroxysmal AF.

Carmo et al. and APAPE should be commended for their effort to collect data regarding AF ablation in Portugal. This analysis is an opportunistic reflection of current clinical practices in order to guarantee and further improve the quality of care in this area.

The data presented support the observation that there is a good standard of practice concerning patient management and quality of AF ablation.

As acknowledged by the authors, future analysis should be more representative of the Portuguese situation, including more patients and national centers. Regarding quality indicators for the care and outcomes of AF management, forthcoming reports should provide a more thorough characterization of adverse events related to therapeutic interventions (including both antiarrhythmic therapy and

ablation) and a more consistent follow-up of complications and outcomes.

Conflicts of interest

The author has no conflicts of interest to declare.

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