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EDITORIAL COMMENT

Atrial fibrillation ablation in patients with heart failure: Which patients are most likely to respond?

Ablação da fibrilhação auricular em doentes com insuficiência cardíaca - quais são os doentes com maior probabilidade de resposta?

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Atrial fibrillation is the most common arrhythmia in clinical practice. Its prevalence increases with age and it is also more common in patients with other forms of heart disease.[1]

A recently published study on the healthcare burden of atrial fibrillation examined an extensive remote monitoring database of patients (n=21 391) with an implanted cardiac device. The study found that a high percentage of these patients (36.5%) experienced atrial fibrillation. Among this group, the prevalence of heart failure (HF) was markedly higher at 44%, which may be attributed to the specific characteristics of these patients (who had cardiac resynchronization therapy devices, implantable cardioverter-defibrillators, and pacemakers). Additionally, the study revealed that healthcare resource use was greater among patients with atrial fibrillation than in those without the condition, mainly due to adverse clinical events.[2] Atrial fibrillation is thus a public health problem, and treatments aimed at improving prognosis are welcome.

Ablation has become the primary form of therapy for atrial fibrillation. It has proved more effective than medication for a wide range of patients, reducing the arrhythmia burden and hospitalizations while improving overall quality of life.[3]

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The results are even more impressive in the subset of patients with HF and reduced left ventricular ejection fraction (LVEF). There is clear evidence of a reduction in hard endpoints, including mortality. This is true for the majority of patients, including both those with milder and those with more advanced forms of HF, and even those on a waiting list for heart transplantation. The CASTLE AF trial compared atrial fibrillation ablation with medical therapy in patients with HF and showed a significant reduction in a composite primary endpoint of death or hospitalization. The trial also found that all-cause mortality was reduced in patients who underwent atrial fibrillation ablation.[4] The CASTLE-HTx trial studied a population with advanced HF on a waiting list for heart transplantation (these patients had been excluded from other trials). Again, there was a benefit in a composite endpoint of mortality, urgent transplantation, or left ventricular (LV) assist device implantation.[5] There is now evidence that atrial fibrillation ablation is indicated in patients with HF across a broad spectrum of the disease – from milder to more advanced forms.

In patients with HF and reduced LVEF, there are basically two clinical scenarios: patients with a known cause of HF who also have atrial fibrillation, and those in whom the arrhythmia is the cause of the depression in LV function (arrhythmia-induced cardiomyopathy).

Not all HF patients respond to atrial fibrillation ablation. It is tempting to speculate that some patients with a better response share the same characteristics as patients with-

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out HF – mainly paroxysmal forms of atrial fibrillation and without a severely dilated left atrium. It is also tempting to assume that HF patients who are stable in sinus rhythm but begin to suffer bouts of atrial fibrillation, with a consequent worsening of clinical status, will benefit the most. However, information regarding the best HF candidates and those with a higher likelihood of response is scarce.

Several variables have been found to be predictive of success. In the Fibrosis-HF study, the presence of fibrosis was assessed during ablation using voltage maps from the mapping system. Patients with left atrial (LA) fibrosis were older and more likely to have diabetes. Fibrosis was more prevalent in the LA anterior wall, followed by the LA septum and posterior wall. Patients with LA fibrosis (30% of the cohort) were less likely to recover LVEF after ablation.[6] Another study, by Zhao et al., showed that absence of LA fibrosis and an LV diameter of less than 50 mm were good predictors of success.[7]

Another group described a score – the Antwerp score – to identify the best candidate for ablation. This score attributes points to various clinical characteristics in patients with HF undergoing atrial fibrillation ablation, namely a known etiology for HF (2 points), wide QRS (1 point), severe atrial dilation (1 point), and paroxysmal atrial fibrillation (1 point). The higher the score, the lower the likelihood of response.[8] This score was recently validated in a multicenter study that included four centers and 605 patients. In this study, the Antwerp score performed well in predicting recovery of LV function after ablation.[9]

The paper by Borges-Rosa et al. published in the current issue of the *Journal*[10] sets out to address the question of finding the best ablation candidates with HF and atrial fibrillation.

This study examined 100 patients with HF and reduced LVEF who underwent atrial fibrillation ablation. The large number of patients analyzed is impressive. In the recently published RIQAFA study, which is a snapshot registry of quality indicators in atrial fibrillation ablation in Portugal, only 5.74% of patients had severe LV dysfunction.[11]

The success rate in this group was excellent – 82% were responders to the therapy. The number of complications was low, even in a population of very sick patients, and this is related to the group's experience: it is a high-volume center for atrial fibrillation ablation.

Borges-Rosa et al.'s study has two main objectives: to validate the Antwerp score proposed by Bogarti et al.; and to identify predictors of the success of atrial fibrillation ablation in this population. In their analysis, the Antwerp score demonstrated good discriminatory power between responders and non-responders, which is in line with previously published results.

However, the predictors of success are not all the same as those identified in the Antwerp model. In Borges-Rosa et al.'s population, the factors identified as predictors of response were as follows: clinical suspicion of tachycardia-induced cardiomyopathy (which is in fact the same as the absence of a specific etiology); QRS width (a marker of severity and prognosis) in HF patients; and LV volumes. By contrast, LA diameter and type of atrial fibrillation were not predictors of response in this study. This can likely be explained by differences in the populations studied and by the small number of patients in the study.

This study has several limitations (some acknowledged by the authors), including the single-center retrospective nature of the analysis, the lack of a comparison group, and inability to accurately quantify atrial fibrillation burden (few patients had a cardiac device implanted). A significant limitation is the lack of information on patient selection, raising questions about selection bias. We do not know how many patients this cohort was selected from or whether patients with more advanced forms of heart disease (valvular, ischemic, or cardiomyopathy) were accepted to undergo ablation. This is even more important because the number of suspected tachycardia-induced cardiomyopathy cases was very high and also because this parameter is used in the model to predict response.

The data presented are not new, but they add to the available evidence, and are also the first available on this issue from a Portuguese center.

In conclusion, this paper confirms the existing idea that the best candidates for atrial fibrillation ablation among HF patients are those in whom no other cause of HF can be identified. Better tools to identify these patients are still needed because in fact, most of the time, the diagnosis of atrial tachycardia-induced cardiomyopathy is made retrospectively after successful ablation with complete recovery of LV function.[12]

Conflicts of interest

The authors have no conflicts of interest to declare.

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