

**EDITORIAL**

## Editorial to “effectiveness of catheter ablation of atrial fibrillation according to heart failure etiology”

Atrial fibrillation (AF) and heart failure (HF) are two cardiovascular epidemics closely inter-linked through a vicious pathophysiological cycle that can be explained by the presence of common risk factors which induce myocardial cellular and extracellular alterations, electrophysiological and neurohormonal changes, leading finally to both HF and AF. Catheter ablation of AF is a well-established treatment option for patients without HF and is indicated in symptomatic paroxysmal, persistent or longstanding persistent AF patients after at least one antiarrhythmic medication has been tried and proven to be ineffective or poorly tolerated.<sup>1</sup> The frequent coexistence of AF and HF has, in recent years, stimulated research on the safety and efficacy of AF catheter ablation in HF patients.

In this context, the Catheter Ablation versus Standard Conventional Therapy in Patients with Left Ventricular Dysfunction and Atrial Fibrillation (CASTLE-AF) trial included HF patients with left ventricular ejection fraction (LVEF)  $\leq 35\%$  who underwent AF catheter ablation or conventional care.<sup>2</sup> The authors showed that in well-selected patients with HF and AF, catheter ablation led to significant improvement in the primary composite endpoint of all-cause mortality and worsening HF hospitalizations with a relative risk reduction of 38%, while LVEF increased by 8% at 5 years of follow-up in the catheter ablation group.<sup>2</sup> Similarly, the subgroup analysis of the Catheter Ablation vs Antiarrhythmic Drug Therapy for Atrial Fibrillation (CABANA) trial showed a trend of superiority for AF catheter ablation compared to antiarrhythmic drugs in patients with a history of congestive HF regarding the primary endpoint (death, disabling stroke, serious bleeding, or cardiac arrest).<sup>3</sup> Moreover, a recent meta-analysis of randomized controlled trials showed that compared to medical therapy, AF catheter ablation was associated with significant improvements in all-cause mortality, HF hospitalization, LVEF as well as functional status in HF patients with reduced LVEF and AF.<sup>4</sup>

Concerning the role of the type of cardiomyopathy (ischemic vs non-ischemic) in catheter ablation outcomes, a subgroup analysis of the CASTLE-AF trial showed that the primary endpoint did not differ significantly between the ablation and the conventional care groups in patients with non-ischemic cause of HF, while a significant superiority of AF ablation was found in patients with ischemic cause of HF.<sup>2</sup> However, the primary endpoint did not differ significantly between ischemic and non-ischemic HF patients.<sup>2</sup> It

has been hypothesized that non-ischemic HF patients may experience worse outcomes following AF ablation compared with patients with HF of ischemic etiology, mainly due to a predisposition for more extensive atrial myopathy in patients with non-ischemic HF.

In this context, Black-Maier E et al conducted a retrospective observational study aiming to assess the comparative efficacy of AF ablation in patients with ischemic versus non-ischemic HF.<sup>5</sup> The outcomes of this analysis were as follows: in-hospital events, symptoms (assessed by the Mayo AF Symptom Inventory [MAFSI]), functional status (assessed by New York Heart Association [NYHA] class), and freedom from atrial arrhythmias at 12-month follow-up. The cohort studied consisted of 242 patients ( $n = 70$  [29%] ischemic,  $n = 172$  [71%] non-ischemic) while, regarding the baseline characteristics, patients with non-ischemic cardiomyopathy were younger, more often women and had higher mean LVEF. The study included patients with both preserved and reduced LVEF with a mean LVEF of 45.6% and this is a major difference between this study and the CASTLE-AF as CASTLE-AF enrolled exclusively patients with reduced LVEF. Black-Maier E et al found that all-cause adverse events were similar in the two groups (15% vs 17%,  $P = .7$ ), while NYHA class and MAFSI scores improved significantly at follow-up in both groups and did not differ according to HF etiology. Furthermore, no significant differences were observed in freedom from recurrent atrial arrhythmias at 12 months between ischemic (74%) and non-ischemic patients (78%).


Despite the limitations of the study by Black-Maier E et al, mainly arising from its retrospective nature, the small sample size and the between group differences in the baseline characteristics, this study provides further important evidence of the safety and efficacy of AF catheter ablation procedure in HF patients, independent of the type of cardiomyopathy. Furthermore, this consists a starting point for future prospective studies with a larger sample size that will elucidate the role of AF catheter ablation in ischemic and non-ischemic cardiomyopathy patients and additionally investigate the role of AF catheter ablation in specific subtypes of non-ischemic cardiomyopathy.

### CONFLICTS OF INTEREST

The authors declare no conflict of interests related to this article.

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