Association of left atrial enlargement and increased left ventricular wall thickness with arrhythmia recurrence after cryoballoon ablation for atrial fibrillation

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Cryoballoon-based (CB) catheter ablation is a safe and effective method to maintain sinus rhythm in symptomatic patients with atrial fibrillation (AF) and to improve quality of life. Postablation AF recurrence is associated with AF duration, patient age, left atrial size, renal dysfunction, substrate visualization by magnetic resonance imaging (MRI), or the abundance of epicardial fat tissue [1]. The use of risk prediction models for AF recurrence would be a necessary means to assess patients at risk, but these have only moderate performance [1].

Multiple studies addressed the effect of left atrial size and left ventricular ejection fraction (LVEF) on the recurrence of AF after catheter ablation [1, 2]. Long-term efficacy is highly influenced by left atrial enlargement (LAE), but less so in the case of coincidently reduced LVEF [2], or normal or mildly decreased LVEF [3]. Additionally, left ventricular wall thickness (LVWT) correlates with LAE and atrial arrhythmias [1, 4, 5]. Moreover, wall thickness is also known to be associated with unfavorable outcomes (higher rate of ventricular arrhythmias and death [6]), and it has also been linked to the prevalence and recurrence of atrial fibrillation [7–9]. However, we only possess restricted data on LVWT's role in AF recurrence after catheter ablation.

Warmiński et al. studied LVWT to predict AF recurrence after cryoballoon catheter ablation for the first time. The authors presented a retrospective analysis of the effect of concurrent increased LVWT and the presence of LAE on AF recurrence. LVWT and LAE were measured with the use of two-dimensional echocardiography and computed tomography (CT). Even though CT identified more frequently common or accessory pulmonary veins, echocardiographic and CT measurements of LAE had similar predictive values. In the case of concurrent increased LVWT and LAE, a high prevalence of cardiomyopathy and transient ischemic attack or stroke was observed. Patients with concomitant increased LVWT and LAE experienced the highest rate of AF recurrence (61.9%) up to 2 years. The recurrence rate decreased in patients with LAE without LVWT, in the presence of increased LVWT without LAE, and was the lowest in patients without an increased LVWT and LAE. Concomitant increased LVWT and LAE were independent predictors of AF recurrence with a 1.8-fold increased risk [10].

Beyond having these new results on easily measured parameters such as LVWT with LAE and AF recurrence after CB ablation, the article by Warmiński et al. is important for everyday clinical practice. It is of utmost importance to aid physicians in identifying patients at risk of AF recurrence. These patients need strict follow-up, especially those with heart failure. Studies such as the one conducted by Warmiński et. al give us easily assessable factors and prediction models with variables like LVWT or left atrial size to identify patients needing close medical attention.

Article information

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