

## EDITORIAL

## Editorial to “Longer diagnosis-to-ablation time is associated with recurrence of atrial fibrillation after catheter ablation: Systematic review and meta-analysis”

Atrial fibrillation (AF) is a progressive disease. AF begets AF is a well-accepted concept. With time, paroxysmal AF often progresses to persistent and then permanent AF if no optimal therapy intervenes. Rheumatic and ischemic heart disease, hypertension, and congestive heart failure are important risk factors for the development of AF leading to a prevalence of as high as 50% in patients with overt congestive heart failure. Besides the progressive changes due to underlying heart disease, atrial fibrillation itself causes progressive electrophysiological and/or structural changes to the atria, which promote the initiation or perpetuation of AF.<sup>1</sup> Patients with PAF have an annual risk of progression to permanent AF ranging from 15% to 24.7% by 5 years. In the Kochhäuser et al's monocentric observational study, during a median period of 9.7 months, 60 of 564 patients (11%) awaiting AF ablation, progressed from PAF to persistent AF, suggesting the importance of performing AF ablation earlier.<sup>2</sup> Bunch et al demonstrated that delays in the treatment of AF with catheter ablation impact the procedural success rates and are associated with a worse prognosis, as measured by heart failure events and death. The 1-year AF recurrence rate ranges from 19.4% to 24% according to the period from the initial diagnosis and the ablation.<sup>3</sup> Triggers and substrates are two major pathogeneses of AF. Triggers play a major role in paroxysmal AF, whereas substrates play a major role in persistent AF. Several factors including a female sex, persistent/long-lasting persistent AF, left atrial enlargement, presence of left atrial scarring, valvular heart disease, renal failure, lack of a successful anatomical ablation of all targeted pulmonary veins, acute pulmonary vein reconnections during the pulmonary vein isolation, and early recurrence of AF in the blanking period were reported to be associated with an increasing recurrence of AF after catheter ablation. Patients in whom AF terminated during the index procedure had a lower recurrence rate of atrial arrhythmias than those in whom AF did not terminate.<sup>4</sup> Nowadays, the contact force-based radiofrequency ablation catheter, new generation cryoballoon, new ablation strategies including a rotor ablation, substrate modification, and non-PV foci ablation confer better clinical outcomes than initially.

In the article published in the *Journal of Arrhythmia*, Pranata et al analyzed the latest evidence on the importance of the

diagnosis-to-ablation time (DTAT) and investigated whether they could predict the AF recurrence after catheter ablation. They included six studies in the meta-analysis. This is the first meta-analysis on the DTAT and its impact on AF recurrence after catheter ablation. They found that a longer DTAT was associated with an increased risk for AF recurrence in all studies included. The meta-analysis of these studies showed that the DTAT had an HR of 1.19 [1.02, 1.39],  $P = .03$  for AF recurrence. A DTAT time >3 years was associated with an HR of 1.73 [1.54, 1.93] and  $P < .001$  for the recurrence of AF.<sup>5</sup> With different degrees of atrial substrate remodeling, the weight of the DTAT on AF recurrence might differ between paroxysmal and persistent AF. The difference was larger in the study by Hussein et al (HR 1.23 [1.14–1.31]), which included 100% persistent AF patients, than that in the study by Lunati et al (HR 1.18 [1.02–1.37]) who included 100% paroxysmal AF patients. This result partly supports the speculation. However, they were not a direct comparison between paroxysmal and persistent patients. The other four studies were a mix of paroxysmal and persistent AF patients. The percentage of paroxysmal AF patients ranged from 58.5% to 70.7%. However, they showed only pooled data without comparisons between the paroxysmal and persistent patient groups. Whether the weight of the DTAT on AF recurrence in persistent AF patients is higher than that in paroxysmal AF patients remains for further investigations. The readers will also be curious as to whether the procedure time, complication rate, energy type used to do the ablation, and event-free rates from all-cause death, cardiovascular death, heart failure hospitalization, and ischemic strokes will differ in short versus long DTAT patients. Kawaji et al found that the risk of an ischemic stroke and transient ischemic attack increased with the DTAT and the rate of heart failure hospitalizations was significantly lower in those with a short DTAT further emphasizing the importance of the DTAT in outcomes other than AF recurrence. However, these indexed studies only provided limited data to elucidate these issues. Nonetheless, these individual studies and the meta-analysis have shown that a shorter DTAT was important for reducing AF recurrence in both the paroxysmal and persistent patient groups. Furthermore, the DTAT was a modifiable factor, which could be manipulated under the consensus of the physician and patient. An early interventional strategy after an AF diagnosis might improve the outcomes and should be encouraged.

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## CONFLICT OF INTERESTS

The author declare no conflict of interests for this article.

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