

Editorial



Rare and Elusive Arrhythmia: Atrial Tachycardia From Noncoronary Aortic Cusp During Catheter Ablation for Atrial Fibrillation

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► See the article “Prevalence and Characteristics of Atrial Tachycardia From Noncoronary Aortic Cusp During Atrial Fibrillation Catheter Ablation” in volume 52 on page 513.

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Although atrial fibrillation (AF) is the most common sustained arrhythmia, the mechanisms of AF are not fully understood. Electrical isolation of the pulmonary veins is known to be effective for paroxysmal AF.¹⁾ However, we have no conclusive answer about how to perform catheter ablation for persistent AF.²⁾³⁾ In addition to the pulmonary vein isolation, ablation strategy for non-pulmonary vein triggers was studied.⁴⁾⁵⁾ However, there are no randomized prospective studies that ablation of non-pulmonary vein triggers improves the outcomes of patients with AF. That might be because it was difficult to evoke reproducibly and localize effectively the triggers.

In a considerable number of patients, catheter ablation for AF reduces AF burden.⁶⁾ However, in a small number of patients, atrial tachycardia (AT) and atypical atrial flutter occur after catheter ablation for AF.⁷⁾ Because those atrial tachyarrhythmias tend to make rapid ventricular response and be more symptomatic than AF, the patients suffer severely. The mechanisms of atrial tachyarrhythmia after catheter ablation for AF have been suggestive, including macro- or microentry using the electrical gaps on the ablation lesion and enhanced automaticity.⁸⁾ However, it is still debatable.

In the recently published study, AT originating from the noncoronary cusp (NCC) after electrical isolation of the pulmonary veins has been reported.⁹⁾ The authors reviewed the cases of AT from the NCC from the South Korean nationwide database. They found that 1) the prevalence of NCC AT was 0.08%, 2) localization using P wave morphology was not useful, 3) tachycardia cycle length was shorter than de novo NCC AT, and (4) catheter ablation for NCC AT was safe and effective.

NCC AT after electrical isolation of the pulmonary veins is uncommon and largely unknown. The mechanistic relationship between AF and NCC AT and roles of NCC AT for AF initiation still remain unknown in the present study. Appearance of NCC AT might be associated with AF or coincident. To vigorously confirm the association, we should compare the prevalence of NCC AT in patients with and without AF. NCC AT might be a trigger of AF or a consequence of pulmonary vein isolation. We might perform the aggressive provocation test with placing

Data Sharing Statement

The data generated in this study is available from the corresponding author upon reasonable request.

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an electrophysiological catheter in the sinus of Valsalva after pulmonary vein isolation. Macro- and microscopic examination of the aortic cusp can reveal the important information of the connection of muscle fibers between the aortic cusp and atrium.¹⁰⁾ The present study may provide the new insight of the mechanisms of non-pulmonary-vein-triggered AF and AT after AF ablation. We should continue to elucidate the mechanisms of initiation and maintenance of AF, and effective treatment for persistent AF.

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