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Editorial

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Meaning of Ventricular Arrhythmia Burden Reduction as a Marker of Ablation Success

Namsik Yoon, MD, PhD[1,2]

[1]Division of Cardiology, Department of Internal Medicine, Chonnam National University Medical School, Gwangju, Korea
[2]Heart Center, Chonnam National University Hospital, Gwangju, Korea

▸ See the article "Ventricular Arrhythmia Burden as a Marker of Success Following Catheter Ablation of Ventricular Arrhythmias in Patients with Structural Heart Disease" in volume 51 on page 455.

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Correspondence to
Namsik Yoon, MD, PhD
Division of Cardiology, Department of Internal Medicine, Chonnam National University Medical School, 42, Jebong-ro, Dong-gu, Gwangju 61469, Korea.
E-mail: yoonnamsik@gmail.com

ORCID iDs
Namsik Yoon
https://orcid.org/0000-0001-9112-150X

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Treatment of ventricular arrhythmia (VA) with ablation in patients with structural heart disease (SHD) has long been challenging. While a substantial proportion of patients benefited from the therapy, their ablation outcome was frequently regarded as a failure due to the excessively strict criteria for success, even with single documentation of VA recurrence. Therefore, the authors sought to establish the definition of ablation success.

The issue of the *Korean Circulation Journal*, Bennett et al.[1] is a retrospective study evaluating 108 patients who underwent catheter ablation for VA. VA episodes and implantable cardioverter-defibrillator (ICD) therapies were recorded over a 6-month period before and after the final ablation. They were significantly reduced after ablation. The success rate at 6 months was significantly higher when ≥75% reduction in VA burden was defined as success, instead of VA-free survival. The authors suggested that catheter ablation was highly therapeutic when success was defined as reduction in VA, rather than using a single VA recurrence as a metric for failure.

With regard to the study results, it is no wonder that the success rate was significantly higher when a lenient definition was used, as opposed to a stringent one. As the authors reported, if there was no difference in the combined endpoint between the stringent and lenient definitions of success, I agree to use the lenient one. However, they only evaluated outcomes after 6 months. Hence, they would need to show longer-term follow-up data in order to support their statement. Additionally, if we accept the lenient definition of success, we won't be able to define the outcome of ablation of ventricular tachycardia (VT) before VT burden evaluation. Therefore, we need to classify the clinical benefit of the VT ablation such as clinical and procedural success. Hence, it would have been much clearer to change the article title like "VA burden as a marker of clinical success following…"

Bennett et al.[1] referred to relatively long-term success rather than acute success after VT ablation. Consequently, the acute success remains to be reviewed. Acute success of VT ablation is defined as noninducibility of VT by programmed extrastimulation (PES) after ablation, and it predicts VT recurrence after VT ablation in patients with SHD.[2] Despite obtaining noninducitibility of VT, the rate of VT recurrence varies among electrophysiology labs or operators, possibly due to varying definitions of noninducibility, such as noninducible VA of any type resulting from up to triple extrastimuli from 2 right ventricular sites and 2 drive

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cycle lengths (CLs), initiation of only nonclinical VTs with morphologies and/or CLs that had not been previously observed spontaneously, and a previously easily inducible VT being no longer inducible at that step of the PES protocol without completing the PES protocol.[3] Furthermore, PES itself is not a completely reliable assessment tool. Despite these limitations, VA noninducibility is the standard means for evaluating the effects of catheter ablation.

To analyze the long-term success, several studies have compared the arrhythmia burden in patients with ICDs over a specified time period prior to and after ablation.[4-6] This type of analysis can be challenging. The programmed ICD detection criteria and antiarrhythmic drug management could affect the VT burden before and after ablation. Clinicians do not always have access to the results of prior ICD interrogations, which would enable them to determine the arrhythmia burden. Thus, the clinical VT burden is not clearly defined and is expected to vary with other patient factors.

Readers might ask themselves, "What are the benefits of a lenient definition?" To that, the authors reply that the clinical impact of the present study focuses on the realignment of patient and healthcare provider expectations. Despite the use of the lenient definition of success, healthcare providers may explain to patients that the benefits of VT ablation include improved quality of life and reduced fear of ICD therapies. Thus, both patients and cardiologists would be encouraged to embrace the procedure. This is in keeping with contemporary thoughts on catheter ablation for atrial fibrillation (AF), where a single recurrence of AF is not deemed a procedural failure; rather success is defined as a significant reduction in the AF burden and an improvement in symptoms.

VT burden reduction (>75%) after catheter ablation for VA could be accepted as the definition of clinical success. However, this new definition can only be applied when the outcome is also deemed positive by the conventional definition. Therefore, longer-term follow-up data are mandatory for validating the new definition.

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