

Editorial



Is Right Atrial Remodeling an Additional Marker for the Progression of Atrial Fibrillation?

Jin-Kyu Park , MD, PhD

Division of Cardiology, Department of Internal Medicine, Hanyang University Medical Center, Seoul, Korea

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Correspondence to

Jin-Kyu Park, MD, PhD

Division of Cardiology, Department of Internal Medicine, Hanyang University Medical Center, 222, Wangsimni-ro, Seongdong-gu, Seoul 04763, Korea.

Email: cardiohy@gmail.com

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ORCID iDs

Jin-Kyu Park 

<https://orcid.org/0000-0001-7931-777X>

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Atrial fibrillation (AF) is a common cardiac arrhythmia that affects millions of people worldwide and is associated with significant morbidity, mortality, and healthcare expenditures. Maintaining sinus rhythm is a major strategy for symptom control in AF patients.¹⁾ Direct current cardioversion (DCCV) is an effective and safe method to evaluate symptoms of AF and assess the function of the sinoatrial node, particularly in patients with persistent AF who do not maintain sinus rhythm despite antiarrhythmic medication in outpatient clinic base.²⁾

Although the immediate success rate of DCCV is high,³⁾ predicting the possibility of failure is important to minimize unnecessary thromboembolic risk. Several clinical and echocardiographic factors influence the success of DCCV. Among echocardiographic parameters, left atrial (LA) size, in particular, has been associated with DCCV outcome,⁴⁾ while the role of right atrial (RA) size has received less attention. While LA enlargement is a well-known feature of AF,⁵⁾ studies have shown that RA remodeling follows a different pattern and is independently associated with worse clinical outcomes in AF patients.⁶⁾ RA enlargement appears to be more closely related to mid-term AF recurrence after DCCV,⁷⁾ but its relevance for the immediate outcome of DCCV remains uncertain.

In the latest issue of the *Korean Circulation Journal*,⁸⁾ the authors hypothesize that the size of the RA may be more relevant for immediate success after DCCV than the dimensions of the LA. They included 589 patients in their study and found that RA area was significantly correlated with DCCV success, while LA volume was not. RA area was also found to be correlated with the number of DCCV tries and cumulative shock energy levels. The authors recommend measuring RA size in addition to LA size to identify patients who are more likely to benefit from DCCV. Identifying patients with larger RA dimensions could help clinicians tailor their treatment strategies and potentially improve patient outcomes. However, the exact mechanisms underlying the association between RA size and DCCV outcome are not yet fully understood. It is possible that RA enlargement may reflect more advanced stages of atrial remodeling and fibrosis, which could make it more difficult to restore sinus rhythm. Alternatively, RA enlargement may be a marker of more severe AF or underlying cardiovascular disease, which could also affect the success of DCCV.

Data Sharing Statement

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

The contents of the report are the author's own views and do not necessarily reflect the views of the *Korean Circulation Journal*.

In this study,⁸⁾ echocardiography was used to assess RA area in the apical 4 chamber view. However, accurately estimating RA size using echocardiography in patients with AF may be challenging due to difficulties in assessing RA dimensions, resulting in measurement errors and interobserver variability.⁹⁾ The irregularity and rapidity of atrial contractions in AF may also contribute to less stable and clear images of the RA. Other imaging modalities such as magnetic resonance imaging (MRI) and computed tomography may provide a more comprehensive assessment of RA size and function. However, previous studies have shown that two-dimensional echocardiography methods have been found to be accurate, acceptable, and reproducible for assessing RA compared to MRI.¹⁰⁾ Therefore, while there may be limitations, the clinical significance of echocardiography in evaluating the RA is considered clear, particularly given its non-invasive nature and widespread availability. The authors of the study acknowledge additional limitations, such as the absence of follow-up data and its single-center nature. A previous study⁶⁾ found that, despite representing different treatment strategies, the size of the RA following catheter ablation for AF was found to be correlated with early recurrence, while long-term recurrence was discovered to be associated with LA remodeling. Hence, it is imperative to conduct further studies to explore the correlation between RA remodeling and long-term outcomes after DCCV in patients suffering from AF.

The study provides valuable insights into the impact of RA size on the immediate outcome of DCCV in patients diagnosed with AF. The findings suggest that considering RA size in the assessment of DCCV success is recommended and may have practical implications for managing AF patients. Therefore, the article's contribution to the field is significant and has the potential to influence clinical practice, particularly in patient selection for DCCV.

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