Left Atrial Size and the Risk for Recurrence After Catheter Ablation: Is a Small Left Atrial as Bad as a Large One?

To the Editor:
Atrial fibrillation (AF) is the most common sustained arrhythmia in clinical practice, associated with cardio- and cerebrovascular complications, dementia and mortality. Left atrial (LA) size is a routine diagnostic criterion before pulmonary vein isolation because of its significant association with arrhythmia recurrence. Another important variable associated with AF progression and severity stage is periprocedural evidence of low voltage areas (LVA) representing advanced remodeling processes in the LA.

Catheter ablation targeting the pulmonary veins still remains the most important therapeutic strategy in AF. In most patients, catheter ablation is superior to antiarrhythmic drugs, but up to 30–50% of ablated AF patients suffer recurrence within the first year. This explains the considerable clinical interest in predicting the risk for recurrence before invasive procedures, with the goal of shaping personalized strategies for AF patients.

With great interest we read the article by Wang and colleagues demonstrating the U-shaped relationship between LA size and the rhythm outcomes after catheter ablation. The authors found that patients with small LA diameter had a similar incidence of arrhythmia recurrence as the patients with a large LA. Although LA enlargement is a known risk factor for poor rhythm outcomes, the finding that small LA size was associated with a similar arrhythmia risk is novel – but questionable.

We absolutely agree that LA size influences the rhythm outcome after catheter ablation. However, we have some comments mainly from our and other studies.

First and of clinical relevance, the LA size analysis was performed using echocardiography only. Clear advantages of an echocardiographic study are its cost effectiveness, quick performance and wide availability in clinical settings. However, some patients (e.g., with obesity, lung disorders or with a narrow ultrasound window) remain a big challenge, even for experienced echocardiographers, which may explain the interobserver inaccuracies. In these patients, cardiac magnetic resonance (CMR) remains the gold standard. However, in some patients (and especially in an outpatient setting) echocardiographic performance and LA volume (LAV) analysis could be considered as essential because LA size is associated with structural remodeling in AF. Also, CMR is not widely available compared with echocardiography and is relatively time consuming. However, in our recent study we found that CMR-derived LAV was a stronger predictor for the presence of LVA than the LA anterior-posterior diameter.

Second, there are no data regarding electroanatomical mapping during ablation, which could influence the ablation approach and often defines the prognosis of arrhythmia recurrence. Pathophysiological AF results in electrical and structural remodeling (inflammation, fibrosis, and atrial dilatation). LVA represent atrial remodeling processes and are considered to play an important role in AF progression. LVA can be found in 10% of patients with paroxysmal AF and in 35% of patients with persistent AF. However, by performing individually tailored substrate modification, a significantly higher arrhythmia-free survival rate compared with the conventional approach can be achieved.

Furthermore, the reliable documentation of rhythm outcomes is not possible using 2 days’ Holter monitoring, as the most of asymptomatic arrhythmia episodes, which occur frequently after ablation, cannot be adequately detected. Therefore, continuous ECG monitoring is preferred when analyzing the prediction of rhythm outcomes.

Finally, the group with a very small LA was small compared with the other groups in this study, which could impair the statistical analysis and its interpretation. Furthermore, the patients in this group were young, had mostly paroxysmal AF (>90%) and low rates of cardio-vascular comorbidities. All this does not really “fit” with our understanding of AF progression and does not explain worse rhythm outcomes. In our opinion, this might be related to the poor access and manipulation during catheter ablation in a small atria. It would be interesting to see how single-shot devices such as the cryo-balloon would have performed in this patient group. Although not explicitly mentioned in the manuscript, probably a double-transseptal approach was used with simultaneous LA access by 2 long sheaths; this could in particular affect the results because in very small atria this technique is rather demanding in terms of manual skills.

In summary, the role of LA size remains an interesting topic with regard to predicting LVA and rhythm outcomes. However, because AF is a multifaceted disorder including polymorphic mechanisms during its development and perpetuation, a meaningful combination of different variables (imaging, biomarkers, patients’ clinical profile) could be helpful in shaping individualized AF management and predicting rhythm outcomes.

Disclosures
None.

References


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