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Left atrial diverticulum—An unexpected finding in routine transesophageal echocardiography

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Abstract

We report a 55-year-old male patient with lone paroxysmal atrial fibrillation who underwent routine transesophageal echocardiography (TOE) at our institution. In a mid-esophageal 125° three-chamber angulation, a distinct thinning of the left atrial (LA) wall was observed, forming a 7 × 4 mm canal with only a small membrane separating the LA from the pericardial space. Cardiac magnetic resonance imaging diagnosed a small LA diverticulum. To the best of our knowledge, this is the first manuscript describing detection of a small LA diverticulum via TOE.

KEYWORDS

2D Echocardiography, echocardiography, left atrium, multiplane transesophageal

We report a 55-year-old male patient with lone paroxysmal atrial fibrillation who underwent routine transesophageal echocardiography (TOE) at our institution to exclude left atrial thrombi before ablation therapy. In a mid-esophageal 125° three-chamber angulation, a distinct thinning of the left atrial wall was observed, forming a 7 × 4 mm canal with only a small membrane separating the atrium from the pericardial space. An artifact was excluded by imaging from several angulations as well as by the application of color Doppler and a left heart contrast agent (Figure 1). Cardiac magnetic resonance imaging (CMR) diagnosed a small left atrial (LA) diverticulum.

In cardiac computed tomography (CT) and CMR, small LA diverticula are a frequent finding. Previous studies have reported a prevalence of 30% both in the general population and in patients with atrial fibrillation.[1] While giant diverticula both in the left and in the right atrium have previously been described by echocardiography,[2] to the best of our knowledge this is the first manuscript describing detection of a small LA diverticulum via TOE.

Different aspects have been discussed regarding small LA diverticula and left atrial ablation therapy: While LA diverticula were previously suspected to be potential arrhythmogenic foci, a recent literature review found no association between atrial fibrillation and presence of an LA diverticulum.[3] Cardiac perforation with ablation in an LA diverticulum has been described as a potential clinical complication. Rarely, atrial thrombi can be originating from an LA diverticulum.[4]

1 | CONCLUSION

Detection of small LA diverticula via TOE is possible. Close examination and exact morphologic description of these lesions by the echocardiographer are crucial, particularly if the patient will undergo subsequent ablation therapy. Ablation strategy was adapted in this case, and cryoablation was performed in order to minimize the chance for perforation.

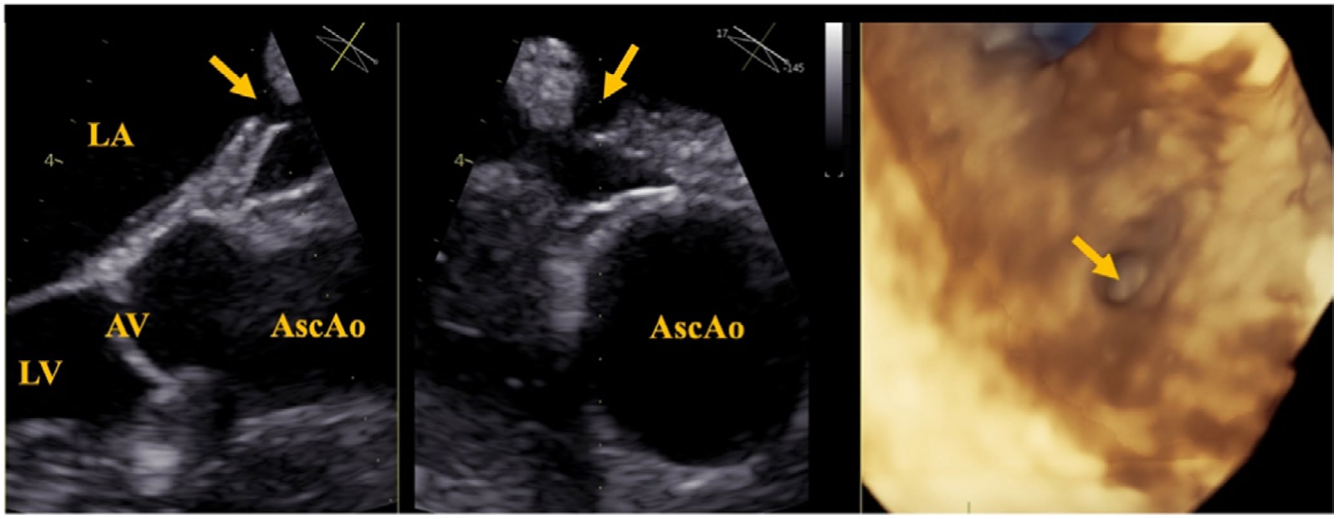

FIGURE 1 Biplane angulation and 3D reconstruction of the small (7 × 4 mm) diverticulum of the anterior wall of the left atrium, mid-esophageal 125° angulation. AV = aortic valve, AscAo = ascending aorta, LA = left atrium, LV = left ventricle, yellow arrow points into the diverticulum. For moving video loops of this figure, see embedded Movies S1 and S2

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CONFLICT OF INTEREST

All authors have read and approved submission of the manuscript and have no conflict of interest to disclose.

DATA AVAILABILITY STATEMENT

Data sharing was not applicable to this article as no datasets were generated or analyzed.

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SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section.

Movie S1. Biplane angulation of the diverticulum (for labels see Figure 1).

Movie S2. 3D reconstruction of the diverticulum (for labels see Figure 1).

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