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Multimodality imaging in multifocal biatrial masses: Differential diagnosis

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Cardiac masses remain a diagnostic challenge. Multimodality imaging, including transesophageal echocardiography (TEE), cardiac magnetic resonance (CMR) and cardiac computed tomography (CCT), is of pivotal importance in the diagnostic work-up to guide their proper treatment [1, 2]. Hereby we report the case of recurrent biatrial cardiac masses in a patient with prothrombotic diathesis due to protein-C deficiency.

An 85-year-old man with a history of coronary artery disease, aortic stenosis and protein-C deficiency underwent a TEE to confirm the presence of a left atrial mass that was suspected on a transthoracic echocardiogram. He had no previous history of atrial fibrillation. The TEE showed a large mass in the left atrium (LA) (**Figure 1A**; Supplementary material, *Video S1*), which appeared ovoid-shaped, mobile, with a thin stalk attached to the LA septum, of homogeneous echogenicity and regular borders. A CMR confirmed its morphological features (26 × 16 mm) and documented also a smaller mass (19 mm) attached to the right atrium (RA) base next to the RA appendage (Supplementary material, *Video S2*). At CMR, both masses showed iso-intense signal at steady-state free precession cine sequences (Supplementary material, *Videos S2–S4*) and no contrast medium uptake at both first-pass perfusion (**Figure 1B**)

and late gadolinium enhancement sequences. According to the diagnostic echocardiographic mass score, these two masses were likely to be benign [3]. In light of these imaging findings and of the patient's clinical characteristics, the masses were thought to be thrombi. After one year of anticoagulant therapy, a follow-up CMR showed a significant reduction in the dimension of the LA mass (8 mm) and complete disappearance of the RA mass. Unfortunately, autonomous early discontinuation of anticoagulant therapy contributed to thrombotic recurrence. After 2 years, a new bigger LA mass was shown (53 × 27 mm) respectively at TEE (Figure 1C–D), CMR (Figure 1E) and cardiac computed tomography (Figure 1F). Also this time, a smaller mass (11 mm) with no LGE was visualized in the RA at CMR (Figure 1E), but missed during TEE evaluation.

The patient ultimately underwent transcatheter aortic valve replacement for worsening aortic stenosis, followed by open surgical exeresis of both masses one week later.

The choice of a staged treatment was based on the high surgical risk of a combined surgery involving simultaneously the aortic valve and the masses. Histological examination confirmed their thrombotic nature and excluded malignancy. Lifelong anticoagulation was prescribed. Follow-up is uneventful at 2-years follow-up from surgical excision.

In conclusion, it is of outmost importance to correctly determine the nature of atrial masses in order to provide proper treatment; and the main differential diagnoses include vegetations, tumors and thrombi [4]. Multimodality imaging is essential for their proper characterization, especially in uncommon cases of bi-atrial recurrent masses that may mimic metastases [5].

In the present clinical case, the use of CMR as a complement to echocardiography allowed, on the one hand, to reveal the simultaneous presence of a mass also in the RA and, on the other hand, to confirm their thrombotic nature and thus to guide treatment even before diagnostic biopsy.

Supplementary material

Supplementary material is available at https://journals.viamedica.pl/polish_heart_journal.

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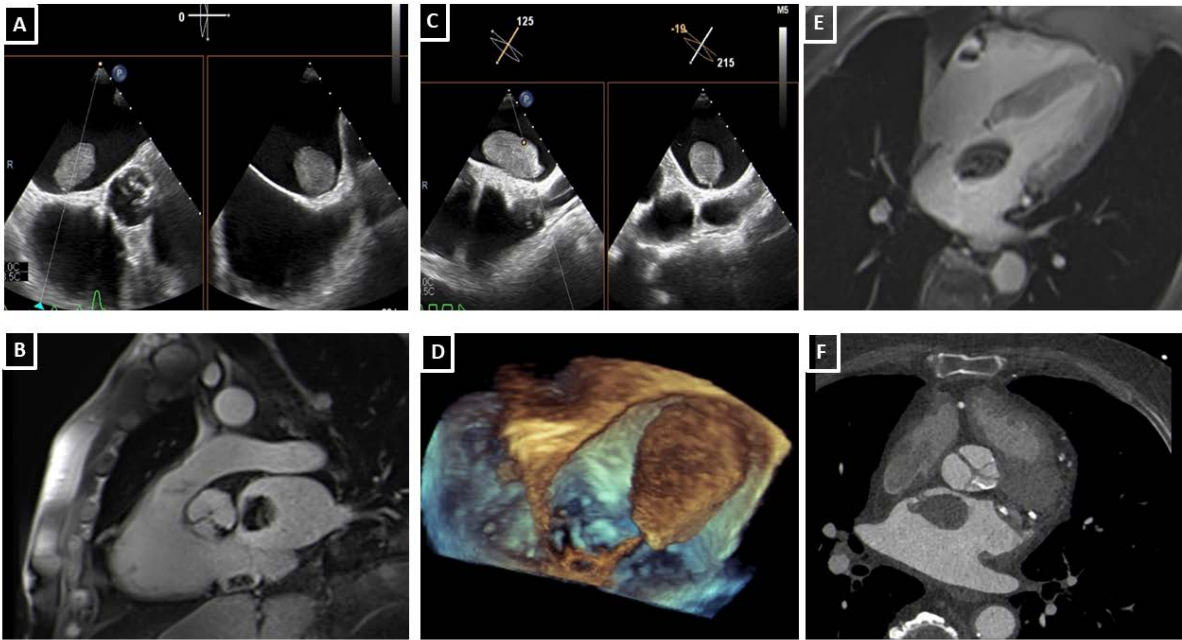


Figure 1. Multimodality imaging of recurrent biatrial cardiac thrombi. **A.** TEE showing a large thrombus in the LA (first diagnosis). **B.** CMR first-pass perfusion imaging showing biatrial thrombi. **C.** and **D.** recurrence of LA thrombus showed at TEE 2D and 3D imaging. **E.** recurrence of biatrial thrombi confirmed at CMR. **F.** LA thrombus at CCT

Abbreviations: CCT, cardiac computed tomography; CMR, cardiac magnetic resonance; LA, left atrium; TEE, transesophageal echocardiography