



Case Report

Left atrial thrombus in a patient without mitral valve disease or atrial fibrillation



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ABSTRACT

A 54-year-old man presented with back pain. His medical history included hypertension and gout. There was no history of heart disease or arrhythmia. The electrocardiogram showed normal sinus rhythm. Chest computed tomography demonstrated a large calcified tumor (65 mm) in the left atrium (LA). The echocardiogram showed a round hyperechoic mass in the enlarged LA (56 mm) attached to the atrial septum without mitral valve disease. Urgent surgery for excision of the LA mass with the atrial septum and reconstruction by autologous pericardial patch was performed. There was no pathological change in the mitral valve. Due to surgical injury to the conduction system, implantation of a permanent pacemaker was required postoperatively. Histopathological examination revealed calcification, fibrosis, and thrombus formation. LA thrombus without any history of mitral valve disease or atrial fibrillation is rare. Although the mechanism of the present case was unclear, extensive calcified LA myxoma or undiagnosed patent foramen ovale might have been associated with the disease.

<Learning objective: A smooth surface, floating left atrial “ball thrombus” occurs rarely in patients with mitral valve disease or atrial fibrillation. We present a rare case of a giant round left atrial thrombus in a patient without any history of mitral valve disease or atrial fibrillation. Transesophageal echocardiogram showed that the thrombus was round, fixed to the septum, and not floating, and that its surface was calcified. This disease in this patient might have been associated with extensive calcified left atrial myxoma, paroxysmal atrial fibrillation, or undiagnosed patent foramen ovale.>

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Introduction

Any condition that leads to blood flow stasis in the left atrium (LA) predisposes to thrombus formation. The most frequent site of this effect is the left atrial appendage (LAA). Rarely, formation of a smooth-surfaced, floating “ball thrombosis” occurs in the LA in patients with mitral valve disease [1,2] or atrial fibrillation [3,4]. We present a rare case of giant round shape LA thrombus in a patient without any history of mitral valve disease or atrial fibrillation (AF).

Case report

A 54-year-old man was referred to our hospital with sustained back pain for one month. Past history included hypertension and

gout, but he had no history of heart disease or arrhythmia. There was no significant family history. Height was 167 cm and body weight was 97 kg. Body weight had been over 120 kg between the ages of 24 and 40 years, but gradually reduced to below 100 kg after a change in job from desk work to manual labor in a construction company. Blood pressure was 138/86 mmHg. There was no significant heart murmur by auscultation over the heart. Neurological examination was negative. Complete blood count, creatinine, blood urea nitrogen, transaminase, bilirubin levels, activated partial thromboplastin time, and prothrombin time were normal. C-reactive protein was 0.31 mg/dl (normal < 0.5 mg/dl). B-type natriuretic peptide was 52.5 pg/dl. Electrocardiogram showed normal sinus rhythm at the rate of 80 bpm. Chest X-ray showed calcification in the cardiac silhouette. Chest computed tomography (CT) demonstrated a large calcified tumor in the LA, and no significant mediastinal lymph node enlargement (Fig. 1). Brain CT showed no abnormalities. Transthoracic echocardiogram showed a hyperechoic LA tumor (65 mm × 28 mm × 57 mm), enlarged LA (53 mm), concentric left ventricular (LV) hypertrophy (interventricular septal wall thickness/posterior wall thickness: 13 mm/13 mm), and normal LV ejection fraction (65%) without any

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Fig. 1. Chest computed tomography showed a large calcified tumor in the left atrium attached to the intraatrial septum.

significant valvular disease including the mitral valve. Transesophageal echocardiogram (TEE) showed a LA tumor attached to the atrial septum which was separated from the LAA (Fig. 2a and b). The tumor was round in shape, not floating but partially fixed to the septum, and the tumor surface was calcified. Pulse Doppler imaging of TEE showed that the maximal velocity of the LAA during atrial contraction was 38 cm/s (Fig. 3a), indicating normal contraction of the LAA. The left upper pulmonary vein (PV) was also visualized (Fig. 2c), and assessment of systolic and diastolic PV velocities by pulse Doppler imaging (Fig. 3b) showed

maximal velocities of 38 cm/s and 34 cm/s, respectively (normal). No moyamoya echo was seen in the LA by TEE.

Urgent surgery was performed. A superior transeptal approach was used for excision of the LA tumor with the atrial septum (Fig. 4). There were no pathological findings in the mitral valve and no thrombus was found in the LAA. Tumor excision caused a large defect in the atrial septum, which was reconstructed by autologous pericardial patching. The patient was weaned from cardiopulmonary bypass without difficulties, but required temporary pacing due to complete AV block. On postoperative day (POD) 2, the heart rhythm recovered to normal sinus rhythm, but complete AV block reoccurred on POD 5, so a permanent DDD pacemaker was implanted on POD 13. Postoperative course was otherwise uneventful. Histopathological examination of the tumor revealed calcification, fibrosis, and thrombus formation. The patient was treated with warfarin therapy for 6 months and low-dose aspirin (100 mg) thereafter. Three years after the operation, restoration of normal sinus rhythm was found on annual pacemaker check. At seven years after the operation, the patient is presently doing well, and the transthoracic echocardiogram shows no recurrence of thrombus formation in the LA.

Discussion

LA thrombus is not rare in patients with mitral valve disease, and around 12% of patients with AF show LA thrombus formation on TEE [5]. Rarely, however, a “ball thrombus” is formed in the LA. This thrombus type is assumed to originate from a small mural thrombus created secondary to chronic blood stagnation, which becomes rounded by the sculpting effect of numerous multifaceted collisions with the atrial wall [3]. Although the LAA is the most frequent site of thrombus formation, LA thrombus may detach from the LAA and form a floating “ball thrombus” [6]. Since the first report by Wood et al. in 1814 [1], numerous case reports of a LA

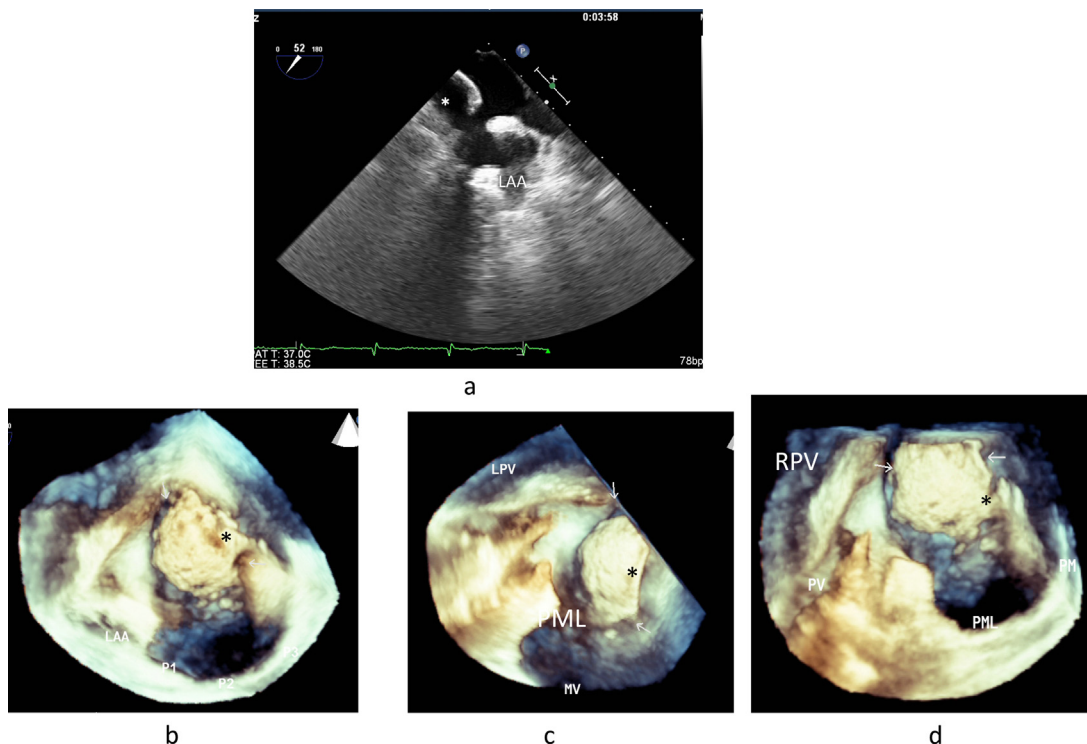


Fig. 2. Two-dimensional (a) and three-dimensional (b–d) transesophageal echocardiography showed thrombus in the left atrium attached to the atrial septum (*). LAA, left atrial appendage; LPV, left pulmonary vein; MV, mitral valve; PML, posterior mitral leaflet; RPV, right pulmonary vein.

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