

Large left atrial thrombus in a patient in sinus rhythm without mitral valve disease: A case report

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Abstract

We report a case of a 63-year-old man without a history of atrial fibrillation or mitral valve disease who was admitted to our hospital. Echocardiography revealed a large left atrial mass attached to the atrial septum. We suspected the mass to be a myxoma, but it turned out to be a large thrombus after the surgery. Left atrial thrombus without mitral valve disease or atrial fibrillation is rare. Although the degree of urgency varies based on the case, early surgical resection is recommended for a large left atrial thrombus to prevent embolism.

1 INTRODUCTION

Left atrial (LA) thrombus is associated with atrial fibrillation (AF) and mitral valve disease in most cases. Although other conditions such as low cardiac function and coagulation abnormalities can cause LA thrombi, LA thrombus without atrial fibrillation or mitral valve disease is very rare. Most LA thrombi form within the left atrial appendage, but when thrombi form in the left atrium, distinguishing the thrombi from the LA tumors is often difficult. We report a case of a man with no history of AF or mitral valve disease who underwent LA mass resection for suspected LA tumor, which turned out to be a large thrombus after the surgery.

2 CASE REPORT

A 63-year-old man with a history of mesh insertion for an abdominal incisional hernia was admitted to the previous physician with the chief complaint of fever. A diagnosis of mesh infection made and long-term antibiotic therapy was initiated. Preoperative echocardiography revealed a 39-mm mass in his left atrium. He was transferred to our hospital for further treatment of mesh infection and LA mass. Echocardiography showed that the LA mass was adherent to the atrial septum (Fig. 1). The ejection fraction was 56%, and no valvular abnormalities were noted. Computed tomography showed a 39-mm partially calcified mass in his left atrium (Fig. 2). Brain magnetic resonance imaging showed very small scattered infarctions; however, he did not have any neurological disorders. Therefore, we suspected LA mass to be an cardiac tumor, especially myxoma, and we scheduled surgery for tumor resection after a 6-week course of antibiotic therapy.

We selected the transseptal approach to reach the left atrium. A smooth-surfaced mass was observed in the left atrium. The mass was severely adherent to the atrial septum and was carefully resected (Fig. 3). The operation time was 4 h and 10 min. Pathophysiology revealed that the excised specimen was a thrombus with Zahn lines composed of fibrin and stratified calcification, indicating the long process of thrombus formation (Fig. 4). There was no tumor component in the specimen. The postoperative course was uneventful, and he was discharged on postoperative day 14, after administering direct oral anticoagulants to prevent thrombus formation. At 6 months after the surgery, follow-up transthoracic echocardiography showed no residual mass in the left atrium, with a preserved ejection fraction of 55%.

3 DISCUSSION

LA thrombus, a common cause of cerebral infarction, is caused by conditions involving blood stagnation in the left atrium. It has been reported that 93.6% of patients who develop LA thrombus have atrial fibrillation and 88.7% have concomitant mitral valve disease.^{1, 2} Other causes of LA thrombus are low left ventricular function, large left atrium, bradycardia, and congenital hypercoagulability. However, cases without AF or mitral regurgitation are extremely rare.

The reason for the formation of large LA thrombus in this case is unclear. Echocardiography showed no mitral valve disease or low left ventricular function. The left atrial diameter was within the normal range (37 mm). He had no bradycardia. Blood tests revealed that the anti-thrombin III level was within the normal range (99%), and the fibrinogen level was slightly elevated (493 mg/dL) probably because of the preoperative mesh infection. Congenital coagulopathy could be a differential diagnosis, but no significant past medical history of significant coagulopathy or family history was found. He had started taking oral anticoagulants after the surgery; hence, detailed blood tests for coagulation, including protein C and protein S, were unavailable. Some reports have reported that the patent foramen ovale causes LA thrombus, but only when the thrombus extends from the right atrium through the patent foramen ovale into the left atrium, which is not consistent with the present case.³ The remaining possibility was that the small LA tumor triggered the formation of a thrombus, but no obvious tumor component was detected on pathological examination. During hospitalization, he had sinus rhythm and no subjective symptoms, but some possibility of paroxysmal atrial fibrillation existed; hence, a more detailed evaluation, including Holter electrocardiography, was required. Furthermore, infection and dehydration are known to trigger thrombus formation. It is likely that the mesh infection temporarily increased coagulability and dehydration caused by fasting accelerated thrombus formation.

Cardiac tumors in the left atrium are mostly benign, with half of them being myxoma and the other half being lipoma or papillary fibroelastoma. It is often difficult to distinguish between LA tumors and LA thrombi on echocardiography. Myxomas appear with a smooth surface, usually are attached to the atrial septum by the stalk in the fossa ovalis and could present inhomogeneous areas of hyperechogenicity due to calcification. Contrarily, thrombi have frequently homogenous, and are usually found in the left atrial appendage.⁴ Contrast echocardiography has been reported as a way to distinguish between thrombi and myxomas,⁵ and may be an option for further evaluation to differentiate between them.

Early surgical resection is recommended for large LA thrombi. Leung et al. reported that patients with LA thrombus have an embolism risk of 10.4% per year and a mortality rate of 15.8% per year.⁶ In patients with small thrombus size, small left atrial diameter, and fresh thrombus, anticoagulation therapy may be effective against LA thrombus;⁷ Surgical resection is required if the aforementioned conditions are not met. Mobile thrombi are considered to have a higher risk of embolism⁸ and may require early surgery. It also has been reported that the average time between the diagnosis of LA thrombus by echocardiography and the onset of embolism is 53 days.⁷ If the patient is elderly or otherwise at high surgical risk, anticoagulation should be attempted if LA thrombus is suspected; however, if anticoagulation is found to be ineffective, surgical resection should be considered as early as possible. In this case, based on the size of the thrombus and the presence of calcification, anticoagulation was probably ineffective. Fortunately, the patient was cured with early surgery without embolism. We believe that predicting the risk of embolization and the effect of anticoagulation therapy based on the characteristics of the thrombus and if required, early surgical intervention can prevent thrombosis and improve patient's prognosis.

AUTHOR CONTRIBUTIONS

Concept, supervision, and drafting: Hiroyuki Watanabe, Supervision: Masayoshi Otsu, Data collection: Yuichi Hirano

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FIGURE LEGENDS

Fig. 1 Computed tomography showing large left atrial thrombus with calcification attached to the atrial septum

Fig. 2 Transthoracic echocardiography showing large left atrial thrombus attached to atrial septum

Fig. 3 Intraoperative image of the large left atrial thrombus adhering to and being removed from the left atrium

Fig. 4 Pathophysiology specimen showing thrombus components and Zahn line composed of fibrin indicating the process of long thrombus formation. No tumor component is observed in the thrombus.







