

A Report of a Surgical Case of Left Atrial Free Floating Ball Thrombus in the Absence of Mitral Valve Disease

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A 77-year-old woman was admitted to our hospital with transient dysarthria. The patient had atrial fibrillation without a history of valvular disease. Echocardiographic examination showed evidence of a floating mass going and returning between the left atrium and the mitral orifice. With this finding, the cause of the brain embolic episode was found to be due to the thrombus in the heart. Under surgery, a ball thrombus was removed, the size and weight of which were 40×30×25 mm and 15 g, respectively. The patient's postoperative course was uneventful, and she was discharged from the hospital on the 16th postoperative day. (Ann Thorac Cardiovasc Surg 2002; 8: 316–8)

Key words: left atrial thrombus, free floating thrombus, ball thrombus, atrial fibrillation, transient ischemic attack

Introduction

A left atrial free floating ball thrombus is a relatively rare event, especially without mitral valve disease. We present a patient who had suffered a transient ischemic attack and underwent successful surgical removal of a left atrial free floating ball thrombus. The patient had no evidence of cardiac disease except atrial fibrillation.

Case

A 77-year-old woman was admitted to our hospital complaining of dysarthria. She had no history suggestive of valvular heart disease. Her symptom disappeared soon after admission. A computed tomographic scan of the brain demonstrated no remarkable lesion. An electrocardiogram showed atrial fibrillation. She had not pointed out atrial fibrillation. Transthoracic echocardiography demonstrated a mobile round ball like mass with no apparent pedicle, which was floating in the left atrium in the systolic phase and migrated into the mitral orifice in the diastolic phase. There was no evidence of valvular

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heart disease.

The patient subsequently underwent an urgent cardiac operation with removal of the circular mass. Cardiopulmonary bypass was established with aortic cannulation and bicaval venous drainage. The aorta was cross-clamped and the heart was arrested using antegrade warm blood cardioplegia. A longitudinal left atriotomy was performed, and the attachment-free ball like mass was found in the left atrium. No other thrombus was found in the left atrium. The round ball like mass was removed. The left atrium was closed and the cardiopulmonary bypass was discontinued. The patient received anticoagulation with warfarin postoperatively. She was discharged on postoperative day 15 in a stable condition, and has experienced no further embolic event during a four-month follow up period.

The removed mass was oval in shape, of a homogenous dark orange color, and elastically firm. The size of the mass was 40×30×25 mm and it weighed 15 g. On transection, the cut surface was a grayish color, and contained partially gelatin like black mucus (Fig. 1). The histologic examination proved that it was an organized thrombus (Fig. 2).

Discussion

Since the first description of a left atrial ball thrombus in



Fig. 1. The cut surface of the removed mass is an almost gray color, and contained partially gelatin like black mucus.

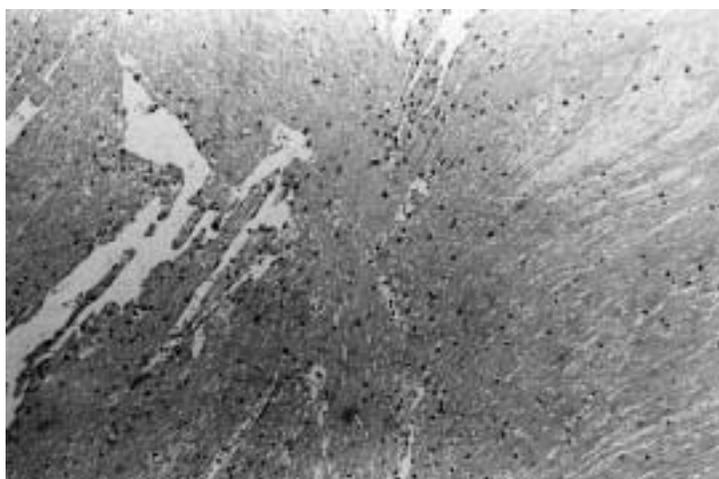


Fig. 2. The microscopic findings showed organized thrombus and no tumor cell.

1814, reports of this entity have increased with the development of echocardiography, computed tomography, and magnetic resonance imaging. However, left atrial ball thrombi have rarely been reported in patients who have had no mitral valvular disease. A left atrial ball thrombus in nonrheumatic atrial fibrillation was first described in 1992.¹⁾ Since then, a few cases of left atrial free floating ball thrombi in the absence of mitral valve disease have been reported.²⁻⁴⁾ In almost all of these reports, the patient's first symptoms were in relation to the thromboembolism. Echocardiography, especially transesophageal echocardiography is sensitive in detecting left atrial free

floating ball thrombi.⁴⁾ Echocardiography should be performed in patients with atrial fibrillation in whom thromboembolic symptoms are apparent.

Almost all patients with a left atrial free floating ball thrombus have atrial fibrillation. Concomitant cardiac diseases are mitral stenosis, post mitral valve replacement, myocardial infarction, myocarditis, hypertrophic cardiomyopathy and infective endocarditis.⁴⁾ The etiological mechanism of left atrial free floating ball thrombus with no evidence of these cardiac diseases, except atrial fibrillation, is unclear. It is speculated that a fixed thrombus in the left atrium is formed initially, which grows gradually

into the left atrial cavity and forms a spherical shape, with final disconnection of the pedicle between the thrombus and the atrial wall.

The presence of a left atrial free floating ball thrombus may be expected to indicate higher embolic potential.⁵⁾ There is a possibility of sudden death caused by the occlusion of the mitral orifice by the ball thrombus. In patients with a left atrial free floating ball thrombus, prompt surgical removal is recommended to prevent catastrophic complications such as cerebral vascular incidents and sudden circulatory arrest.²⁾ Surgical removal of a left atrial free floating ball thrombi using a cardiopulmonary bypass is the first therapy of choice, because it can safely prevent critical complications and further systemic embolic events.

Anticoagulation and thrombolytic therapy do not appear to have a role in the acute management of left atrial ball thrombus,³⁾ however, anticoagulation therapy with warfarin reveals a significant reduction in the risk of stroke and the recurrence of embolic events.²⁾ Therefore, anticoagulation therapy with warfarin is recommended postoperatively in patients with atrial fibrillation.

In conclusion, echocardiography is recommended in patients with atrial fibrillation in whom thromboembolic

symptoms appear. Left atrial free floating ball thrombi should be removed by operation immediately following diagnosis.

References

1. Kuo CT, Chiang CW, Lee YS, Ho YS, Chang CH. Left atrial ball thrombus in nonrheumatic atrial fibrillation diagnosed by transesophageal echocardiography. *Am Heart J* 1992; **123**: 1394–7.
2. Saito A, Hanzawa K, Nakayama T, Moro H, Ohzeki H, Hayashi J. Left atrial ball thrombi without mitral valve disease treated by surgical removal. *Jpn J Thorac Cardiovasc Surg* 1998; **46**: 592–4.
3. Kato M, Miyazawa S, Narumi J, et al. A case of left atrial ball thrombus with acute myocardial infarction and atrial fibrillation. *J Med Ultrasonics* 1998; **25**: 113–8.
4. Furui E, Hanzawa K, Hoshiyama M, Nakajima T, Fukuhara N. Cerebral embolism due to left atrial ball thrombus without mitral stenosis. Usefulness of the transesophageal echocardiography for the diagnosis. *Rinsho Shinkeigaku* 1998; **38**: 13–6. (in Japanese)
5. Tsioufis CP, Stefanadis CI, Tsiamis EG, Kallikazaros IE, Toutouzas PK. A free floating ball thrombus in the left atrial cavity. *J Thorac Cardiovasc Surg* 1999; **118**: 1120–2.