

Left Atrial Appendage Aneurysm with Paroxysmal Atrial Fibrillation

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ABSTRACT

Aneurysm of the left atrial appendage is extremely rare, and afflicted patients most commonly present with atrial tachyarrhythmia or thromboembolism. For these patients, resection of the aneurysm is the recommended and preferred therapy. We present the case of a 57-year-old woman who was found incidentally to have a large aneurysm of the left atrial appendage presenting as atrial fibrillation. After surgical intervention with resection of the aneurysm and a Cox maze III procedure, the patient recovered and was discharged in sinus rhythm.

INTRODUCTION

Left atrial aneurysms are uncommon, the first case having been reported by Semans and Taussing in 1934 [Semans 1934]. Left atrial aneurysms can be either congenital or acquired [Gold 1996], and patients often present with complications, including systemic thromboembolism, severe atrial arrhythmia, and heart failure [Stone 1990; Gullestad 1991; Kalicinski 2001]. Aneurysms are more common in the left atrial appendage than in the left atrium [Stone 1990; Gullestad 1991]. We report a rare case of aneurysm of the left atrial appendage accompanied by atrial fibrillation. Surgical intervention should be considered in the event of this complication.

CASE REPORT

A 57-year-old Taiwanese woman was admitted to our hospital after reporting sudden onset of abdominal pain in the left upper quadrant, along with vomiting and cold sweating. She did not present with palpitations, chest tightness, or dyspnea, and she had no other heart diseases, such as mitral valve disease or arrhythmia. A physical examination revealed no thrill or cardiac murmur; however, tachycardia with



Figure 1. A bulge on the left cardiac border with cardiomegaly in the posterior-anterior view of a chest radiograph.

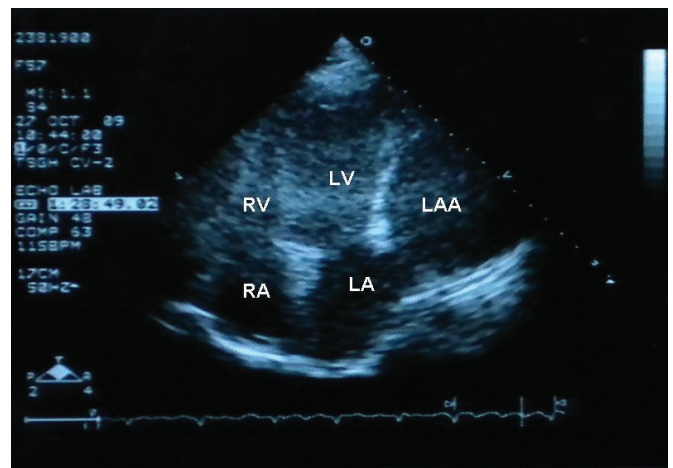


Figure 2. Transthoracic echocardiography (4-chamber view) revealed a cystic lesion 6.4 cm x 6.5 cm in size. LA indicates left atrium; LAA, left atrial appendage aneurysm; LV, left ventricle; RA, right atrium; RV, right ventricle.

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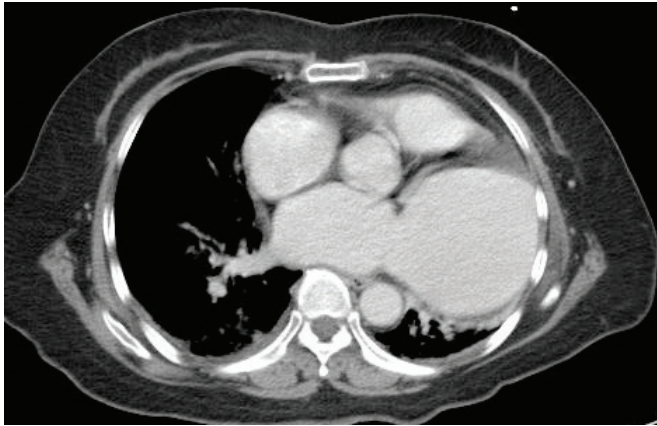


Figure 3. Contrast-enhanced computed tomography image showing a large mass (>8.5 cm) with contrast medium entering and communicating with the left atrium.

irregular rhythm was noted. An electrocardiogram revealed paroxysmal atrial fibrillation with a mean ventricular rate of 127 beats/min, and a chest radiograph showed an enlargement of the left cardiac border (Figure 1).

A transthoracic echocardiography (TTE) examination revealed an obvious large mass at the left atrial appendage (approximately 6.4 cm × 6.5 cm; Figure 2). A normal left ventricular function and a normal cardiac valve function were also noted. Additionally, a contrast-enhanced computed tomography (CT) evaluation revealed contrast medium entering the mass through the left atrium. This large mass was >8.5 cm in size and arose from the left aspect of the left atrium (Figure 3).

Following a routine median sternotomy, resection of the mass and a standard Cox maze III procedure were performed with the aid of an extracorporeal-circulation machine. An aneurysm originating from the left atrial appendage (approximately 7 cm × 7 cm in size) was found intraoperatively, with a histologic examination confirming this diagnosis.

Normal sinus rhythm and absence of atrial fibrillation were noted immediately following the operation, and the patient was discharged after 16 days. After a 1-year follow-up, the patient was asymptomatic and healthy. No cardiac murmurs or thrills were noted, and an electrocardiography examination showed sinus rhythm. Additionally, her chest radiograph was also normal.

DISCUSSION

Left atrial appendage aneurysms are rare and can be congenital or acquired. Acquired aneurysms are usually caused by increased atrial pressure or weakness of the atrial wall, owing to conditions such as rheumatic mitral valve disease, tuberculosis, and syphilitic myocarditis [Zhao 1999]. Enlargement of the left atrium may also occur because of an abnormality of the mitral valve [Gold 1996]. Congenital aneurysms typically develop at a younger age and tend to affect patients in their 20s or 30s, with common symptoms being palpitations,

dyspnea, or chest pain due to atrial arrhythmia [Wagshal 2000; Pomerantzeff 2002]. Although our patient was older, we believe that the aneurysm was congenital, owing to the absence of the abovementioned associated diseases and the presentation of atrial fibrillation.

A patient with a left atrial aneurysm initially shows complications such as atrial arrhythmia [Gullestad 1991; Gold 1996], systemic thromboembolism, and congestive heart failure owing to compression of the left ventricle [Stone 1990; Gold 1996]. Most asymptomatic patients have received their diagnoses incidentally on the basis of abnormal findings from chest radiographs [Sigfusson 1997; Park 2003]. Our patient also received her diagnosis incidentally via chest radiography and showed atrial fibrillation, which may have originated from the left atrial aneurysm.

Diagnosis of these aneurysms can be difficult. A chest radiograph showing an abnormal cardiac border of the left atrium may indicate this condition, which can be confirmed by echocardiography. TTE is usually a favorable and non-invasive diagnostic method [Sigfusson 1997]. Color-flow Doppler TTE can also identify blood exchange between the 2 chambers [Taori 2006]. In our case, TTE was important for the diagnosis; it revealed a large echo-free space adjacent to the left atrium. Contrast-enhanced CT is also an effective diagnostic method [Taori 2006]. Furthermore, the anatomy involving the aneurysm and neighboring structures can be investigated via CT. Specifically, the contrast-enhanced CT image can show the communication between the aneurysm and the left atrium through the flow of the contrast medium.

After the diagnosis is confirmed, surgical excision of the aneurysm is suggested, and previous studies have yielded favorable results. Surgical intervention is also recommended for patients without symptoms and for patients with major complications, including atrial arrhythmia, heart failure, and systemic thromboembolism [Gullestad 1991; Gold 1996]. Excision of the aneurysm of the left atrial appendage alleviates this condition in patients with fibrillatory atrial arrhythmias, although the substrate for ectopic foci needs to be resected completely. It has been reported that patients may not experience atrial arrhythmias for a period of 6 months to 8 years after aneurysmectomy [Zhao 1999; Pome 2000; Wagshal 2000; Victor 2001]. Our patient underwent aneurysmectomy and a Cox maze III procedure and was in normal sinus rhythm after the surgery. This indicates that resection of the aneurysm alone can keep a patient free of fibrillatory atrial arrhythmias; however, Mathur et al reported a case of aneurysm of the left atrial appendage in 2005 and suggested that the Cox maze III procedure can be performed after the aneurysmectomy. After the resection, their patient experienced recurrent atrial tachyarrhythmias, although this patient experienced no arrhythmias after the Cox maze III incision had healed [Mathur 2005]. Although our patient experienced no atrial tachyarrhythmias after the aneurysmectomy, we still suggest the routine Cox maze III procedure for patients with fibrillatory atrial arrhythmias, owing to the failure of aneurysmectomy alone in the case of Mathur et al. Our patient did not receive any antidysrhythmic drugs postoperatively.

In conclusion, aneurysm of the left atrium with paroxysmal atrial fibrillation should be considered if abnormal bulging of the cardiac margin is revealed in chest radiographs. TTE is usually the initial diagnostic tool, although CT is also useful. After diagnosis, surgical intervention with aneurysmectomy and a Cox maze III procedure is recommended.

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