

Incidentally Found, Growing Congenital Aneurysm of the Left Atrium

A left atrial aneurysm is a very rare cardiac anomaly that usually develops in the left atrial appendage. It usually develops congenitally, and has a risk of life-threatening complications. Here, we report a case of a growing aneurysm of the left atrium that was incidentally found in a 42-yr-old woman. Eighteen years prior, an abnormal cardiomegaly was found on a chest radiography for a pre-operative study. The chest radiography at this time demonstrated a more prominent cardiomegaly than the previous radiography findings. The left atrial aneurysm was diagnosed by echocardiography and cardiac catheterization. Although asymptomatic, she underwent a successful surgical excision to allay the possibilities of rupture, arrhythmia, heart failure, or thromboembolism. The surgical findings demonstrated an 8 × 15 cm sized saccular aneurysm at the left atrial appendage, and the pathologic findings showed three myocardial layers. The patient has been asymptomatic during the 15 months of follow-up. In conclusion, a congenital left atrial aneurysm can grow with time, even in asymptomatic cases, and an aneurysmectomy is a curative treatment, which can eliminate the potential complications.

Key Words : Heart Aneurysm; Atrial Appendage

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INTRODUCTION

A left atrial aneurysm, i.e., an aneurysmal dilatation of the left atrium, is a rare cardiac anomaly. The etiology of the aneurysm is usually congenital, but it can develop as an acquired pathology associated with an inflammatory or degenerative process. This anomaly is usually diagnosed in newborns, infants, and sometimes by fetal echocardiography (1-4). Therefore, most of cases are congenital rather than acquired. In this case, there were no anatomic abnormalities of the mitral valve as well as the degenerative or inflammatory processes in the histological section. Therefore, this aneurysm can be classified as congenital in etiology. Most patients with the aneurysm are asymptomatic until about the second decade. Patients generally present with supraventricular tachycardia, systemic embolization, and this condition is sometimes misdiagnosed as a tumor or a cyst on a screening chest radiography. Here, we report an incidentally found congenital left atrial aneurysm in an adult, which was enlarged on a follow-up chest radiography after 18 yr.

CASE REPORT

A 42-yr-old woman was transferred to the cardiology department because of abnormal chest radiography findings on

a pre-operative evaluation for a cervical carcinoma in situ. A cardiac murmur was not detected. She had previously undergone a chest radiography for surgery on a hydatidiform mole 18 yr before (Fig. 1A). The chest radiograph at this time, when compared to the previous one, demonstrated a significantly more prominent left supero-lateral cardiac border, which was further enlarged along the left cardiac margin (Fig. 1B). An ECG revealed no abnormal findings with a normal sinus rhythm. On transthoracic echocardiography, a large aneurysm communicating with the left atrium at the left atrial appendage was shown (Fig. 2A). The left ventricle was slightly compressed and displaced to the medial side in the short axis view due to the aneurysm (Fig. 2B). The intracardiac anatomy was normal except for the aneurysm. Transesophageal echocardiography demonstrated a huge saccular aneurysm originating from the left atrial appendage orifice, with a pulsed flow across the orifice (Fig. 3). Angiography, which was performed through an atrial septal puncture, revealed a huge pouch-like aneurysm that was larger than the left ventricle on the right anterior oblique view (Fig. 4). The surgical findings demonstrated a giant kidney-shaped aneurysm (8 × 15 cm) with a pectinate muscle in it. However, no thrombus was observed in the left atrial aneurysm (Fig. 5). During surgery, the left atrium was approached through a median sternotomy using a standard incision under a cardiopulmonary bypass. The aneurysm was resected and closed

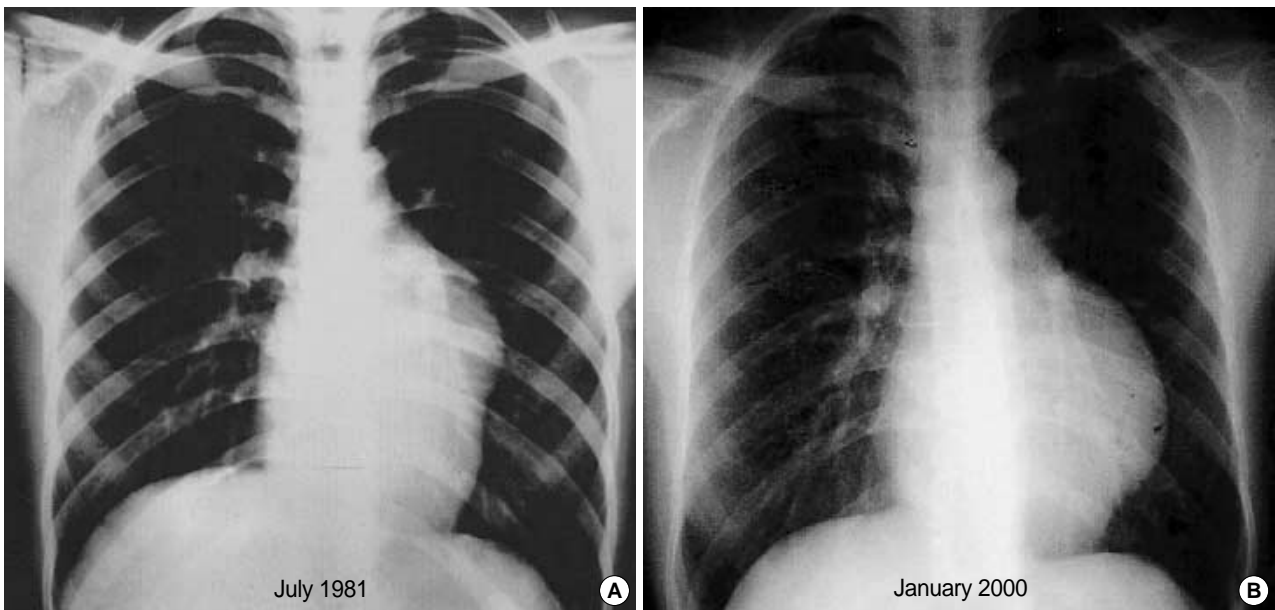


Fig. 1. (A) A chest radiography taken 18 yr prior, shows an abnormal cardiac contour with a prominent left superior cardiac border. (B) At the follow-up study, the left lateral cardiac border is more prominent.

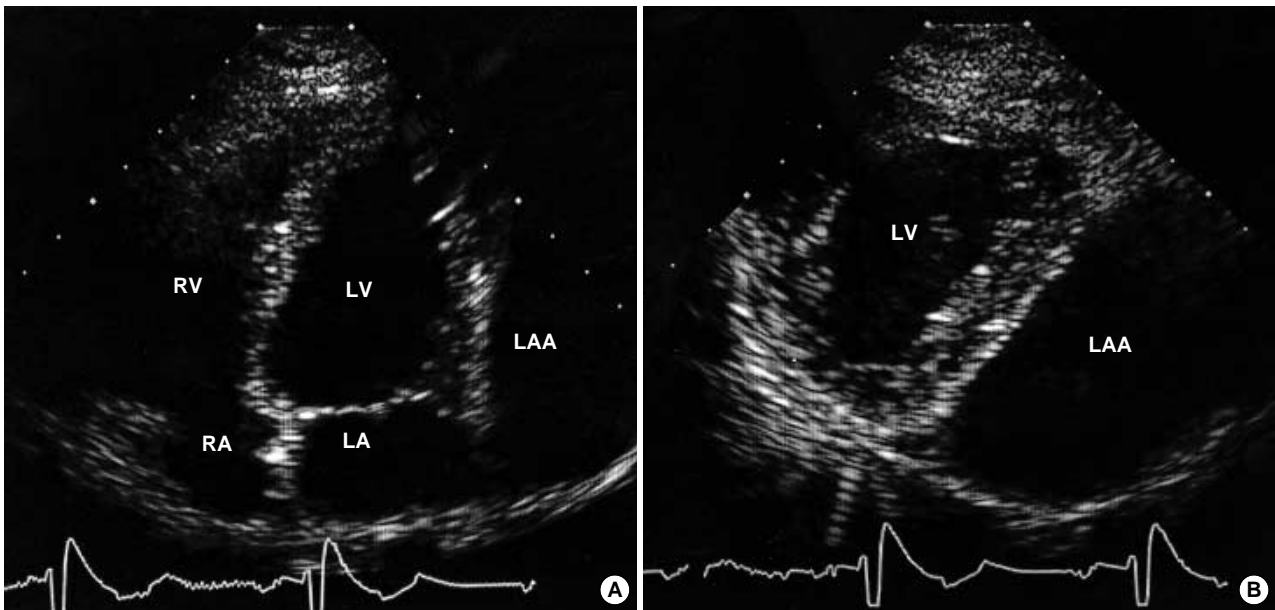


Fig. 2. Transthoracic echocardiographic findings (A) Apical 4-chamber view shows a huge aneurysm at the left cardiac border, communicating with the left atrium. (B) At the short axis view, the aneurysm is compressed and the left ventricle is displaced medially. RV, right ventricle; RA, right atrium; LV, left ventricle; LA, left atrium; LAA, left atrial aneurysm.

with a continuous one-and-one suture. A pathologic examination of the tissue from the aneurysmal wall showed three myocardial layers, where the muscle layers were thin and the number of myocardial layers varied in different sites (Fig. 6). The postoperative course was uncomplicated, and the patient was discharged on the 10th postoperative day.

DISCUSSION

Most adult patients with a left atrial aneurysm present with palpitations, dyspnea on exertion (5), and stroke (6). In infants or children, the aneurysm can be the cause of cardiac arrest, respiratory distress, or heart failure (7, 8), and sometimes presents with a cardiac tamponade (8). However, most cases

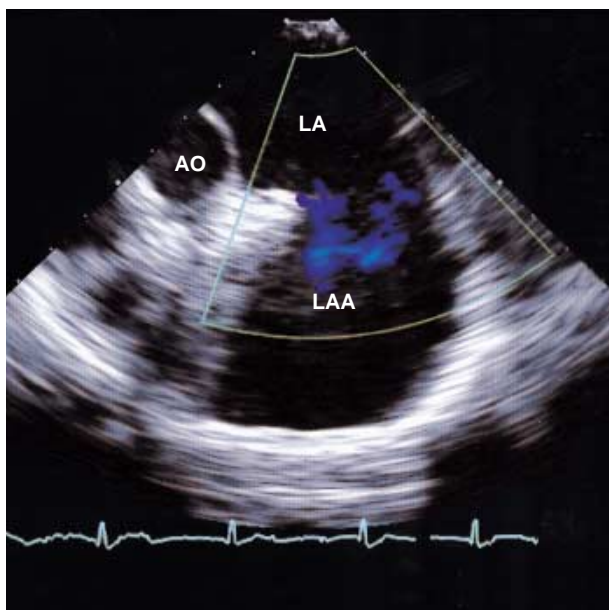


Fig. 3. Transesophageal echocardiographic findings show a huge aneurysm communicating with the left atrium at the site of the atrial appendage. With a color Doppler study, the in-and-out flow to the aneurysm was noted at the orifice of the aneurysm. Ao, aorta; LA, left atrium; LAA, left atrial aneurysm.

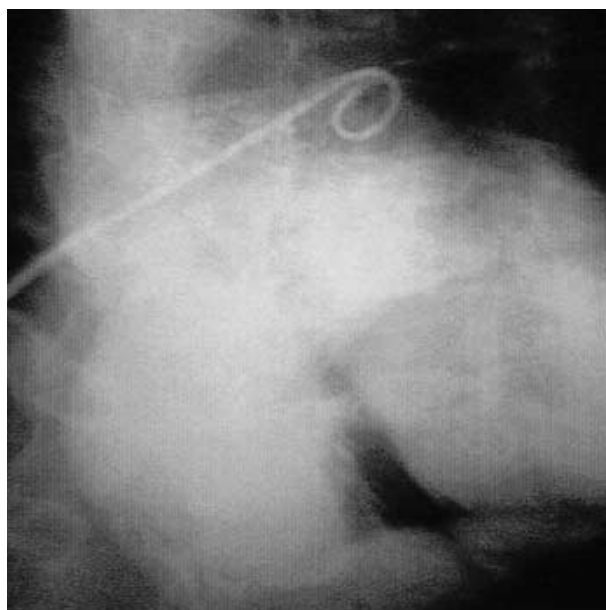


Fig. 4. After an atrial septal puncture, angiography was performed at the entry of the aneurysm. A huge pouch-like aneurysm, larger than the left ventricle, can be seen at the lateral side of the left ventricle.

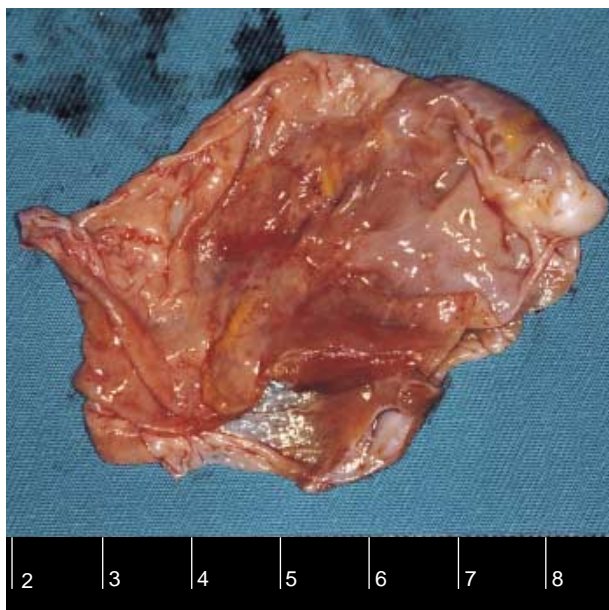


Fig. 5. Gross specimen of the aneurysm after surgical resection is very thin and contains part of the pectinate muscle.

in adults are found incidentally, as was in this case. A chest radiography indicating an enlarged abnormal cardiac contour at the upper left border of the heart should raise the suspicion of a left atrial aneurysm. Occasionally, it is misdiagnosed as a mediastinal mass, a pericardial cyst, a cardiac tumor,

a pericardial defect, or valvular heart disease. Several imaging studies, such as transthoracic echocardiography, transesophageal echocardiography, chest CT, nuclear magnetic imaging, and angiography are useful for diagnosing a left atrial aneurysm. On transthoracic echocardiography, the cyst-like structure can be easily seen on either the apical 4-chamber view or the short axis view. As in this patient, a huge aneurysm usually displaces the left atrium and ventricle medially. Transesophageal echocardiography is a useful diagnostic imaging modality because of the usual posterior location of the aneurysm. Moreover, the presence of thrombi and the in-and-out flow through the orifice can be observed (10, 11). Magnetic resonance imaging is also useful for establishing a diagnosis with the use of a coronal imaging plane (12). However, angiography is unnecessary unless the echocardiographic or MRI findings are questionable. In this case, angiography was performed to exclude any associated cardiac lesions and to define the exact size of the aneurysm.

A left atrial aneurysm is commonly associated with life-threatening complications, such as tamponade (7), tachyarrhythmias (13, 14), systemic and pulmonary embolization (11, 15), and congestive heart failure (7, 16). The aneurysm can grow, which increases the risk of complications. To our knowledge, this is the first case of an asymptomatic left atrial aneurysm with a long-term follow-up more than 10 yr. A surgical resection is recommended to eliminate the potential risks even in asymptomatic cases (7). At the time of surgery, a thrombus can be observed in approximately one-third

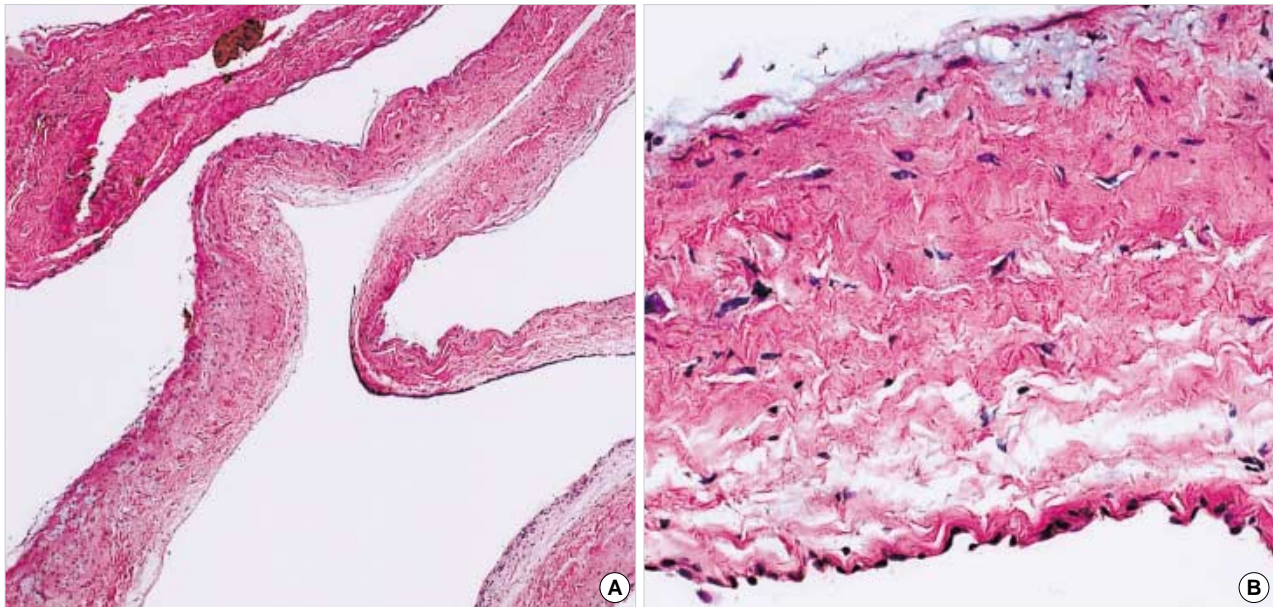


Fig. 6. Histological findings of the aneurysmal atrial wall. (A) Muscular layers of different thickness are observed (H&E, $\times 40$). (B) Three layers, an atrial wall, epicardial, myocardial and endocardial layers, are present, indicating a true atrial aneurysm (H&E, $\times 200$).

of cases (17, 18). Therefore, careful manipulation of the aneurysm is essential in order to prevent a systemic embolization. In this case, a thrombus was not observed on either the transesophageal echocardiography or operative findings.

In the pathologic findings of the aneurysmal wall, three layers of myocardium are normally shown, as was in this case. However, the atrial wall occasionally shows large areas where the myocardial layer is absent or the muscular layer is markedly fragmented and thin (9).

In conclusion, many diagnostic tools such as chest radiography, echocardiography including transesophageal echocardiography, and angiography are useful for diagnosing a left atrial aneurysm. Furthermore, a congenital left atrial aneurysm can enlarge even in asymptomatic patients. Therefore, early diagnosis and prompt surgical excision are essential in order to eliminate the risk of complications.

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