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Case Report

Giant left atrial aneurysm

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ABSTRACT

Congenital aneurysmal dilatation of the left atrium is a rare anomaly that could be associated with supraventricular arrhythmias and life-threatening systemic embolization. We describe a 32-year-old man with a giant left atrial aneurysm diagnosed with new imaging modalities that underwent surgical resection with good results.

<**Learning objective:** Left atrial aneurysms are rare and characterized by their origin from an otherwise normal atrium, a clearly defined communication with the atrial cavity, and their intrapericardial location. Because of associated complications, early diagnosis and surgical excision are mandatory even in asymptomatic, otherwise healthy patients. The evaluations with cardiac imaging techniques should be considered in any patient with an unexplained abnormality on the chest radiograph or initial echocardiography.>

Introduction

Dilatation of the left atrium (LA) and the left atrial appendage (LAA) can be congenital or acquired. Acquired cases are generally secondary to mitral valve disease, left ventricular dysfunction, or other conditions that lead to elevated atrial pressure [1]. However, true congenital aneurysms most frequently involve the atrial appendage but may extremely, rarely arise from the body of the LA [2].

Previous studies have postulated that these aneurysms may be caused by congenital dysplasia of the musculi pectinati and the LA muscle bundles related to them [1].

Case report

The patient was a 32-year-old man, who presented with frequent episodes of palpitations of 2 months' duration. His heart sounds were normal. He had supraventricular tachycardia with intermittent atrial fibrillation (AF). The underlying rhythm was sinus. Chest radiography revealed cardiomegaly with abnormal contour of the left cardiac border (Fig. 1). Echocardiography demonstrated a dilated LA with normal valvular functions and pulmonary pressure. The function of both ventricles was acceptable. Subsequent transesophageal echocardiographic (TEE) studies confirmed an aneurysm of the LA with mild dilatation of the LAA. Magnetic resonance imaging (MRI) also documented the left atrial aneurysm without other abnormalities (Fig. 2a and b).

The patient was operated on through median sternotomy. Extracorporeal circulation was instituted with bicaval cannulation, and myocardial protection was achieved by cold antegrade cardioplegia with local cooling. Intraoperative surgical findings and TEE confirmed the presumptive preoperative findings. A giant LA aneurysm, measuring 6 cm × 7 cm, with a wide neck appeared to has arisen at a 1-cm distance from the mitral annulus. The aneurysm occupied the LA portion of the pericardial cavity and protruded inferiorly (Fig. 3a). It was thin-walled and contained no thrombus. The aneurysmal neck was defined clearly by a muscular ring that separated it from the normal atrial cavity. The aneurysm was excised and the LA was closed in two layers with continuous sutures from the inside of LA then reinforced by two layers of Prolene Teflon felt strips from outside (Fig. 3b). The LAA seemed normal in appearance.

Removal of the LAA and modified cut-and-sew MAZE III procedure were performed under cardiopulmonary bypass (CPB) without complication.

Post-CPB TEE confirmed the disappearance of the aneurysm and normal function of the mitral valve. Sinus rhythm was restored.

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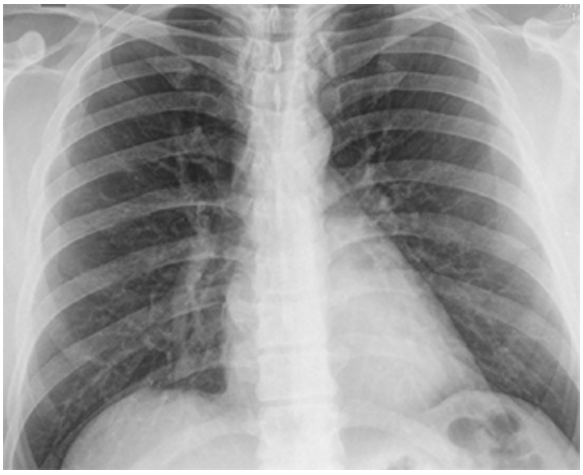

Fig. 1. Chest radiography revealed cardiomegaly with abnormal contour of the left cardiac border.

Pathological findings were consistent with a large part of an atrium, approximately 7.5 cm × 6.2 cm × 1.5 cm representing an aneurysm with 0.4 mm thick wall joining to a left atrial wall which was thick by 2 mm. The inner surface shows a vertical myocardial border which separates less altered atrial wall with a normal looking endocardial surface. The aneurysm appeared semi-translucent and showed, in parts, a finely trabeculated inner surface (Fig. 4). No thrombus could be detected. The atrial appendage seemed slightly hypertrophied and dilated (Fig. 4). Microscopically, sections of the aneurysm showed parts where the wall was wholly composed of fibro-fatty tissue and muscle tissue partly lined by flattened cellular layer. No intrinsic inflammatory, vascular, or neoplastic disease could be detected to account for the formation of the aneurysm.

Postoperative course was uneventful with resumption of normal sinus rhythm. The patient was discharged home on postoperative day 6 and has remained free of symptoms since his operation 8 months ago.

Discussion

Isolated localized LA aneurysms are rare entities in clinical practice. Usually, the condition is diagnosed in the second to fourth decades of life [2,3]. There are limited reported cases in childhood as well [4]. These aneurysms predispose the patient to AF because of the ectopic foci of atrial rhythm generation and thrombus formation because of sluggish blood flow, which may lead to life-threatening systemic emboli [1]. Because of these major complications, early diagnosis and surgical excision are mandatory even in asymptomatic, otherwise healthy patients [1,2]. Median sternotomy aided by CPB is the most common approach and is considered

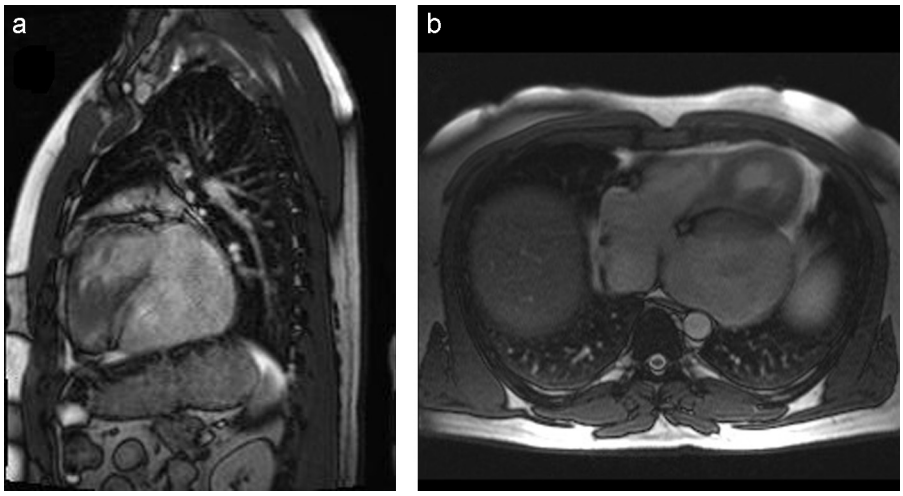

Fig. 2. Magnetic resonance imaging of the thorax confirming a large aneurysm arising from the left atrium in sagittal plane (a) and axial plane (b).

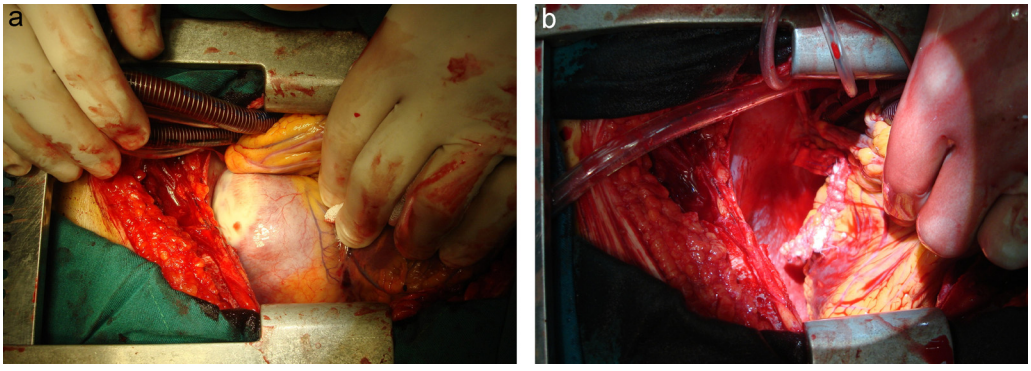

Fig. 3. Aneurysm of the left atrium after opening of the pericardial sac (a) and after surgical excision (b).

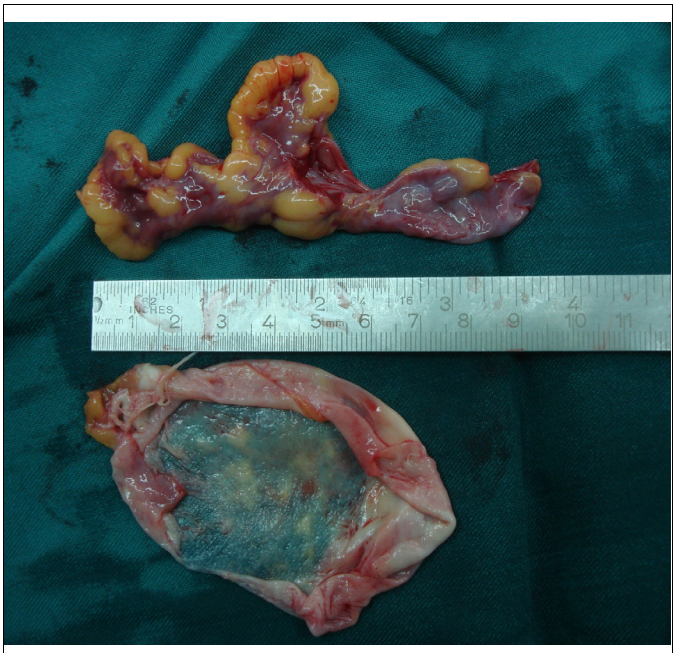

Fig. 4. Giant semi-translucent left atrial aneurysm (on bottom); hypertrophied and mildly dilated left atrial appendage (on top).

the safest, especially in cases of giant aneurysms with wide necks or thrombi [1].

Diagnosis of aneurysms can be suggested by various radiologic examinations. However, preoperative assessment of the location of the aneurysm in relation to the coronary arteries, as well as the pulmonary veins and other cardiac structures, can be visualized with MRI or computed tomography (CT). Furthermore, preoperative cardiac CT scan can evaluate potential clot burden within the aneurysm, as well as assess atherosclerotic changes in the coronary arteries, obviating the need for cardiac angiography in older patients [5]. TEE can serve as a useful intraoperative adjunct by further delineating the relevant anatomy in real time. These techniques have replaced older, more dangerous and time-consuming methods such as radionuclide-gated blood pool scanning and angiocardiography.

Differential diagnoses include mediastinal mass, pericardial cyst, cardiac tumor, and pericardial or extrapericardial fluid collection. Nevertheless, true aneurysms of the LA wall are entirely intrapericardial in position [1,2].

The pathogenesis of atrial aneurysms is not known, but it is assumed that a congenital weakness of the atrium results in local dilation that gradually increases in size. Microscopic studies of aneurysms describe their walls as being composed of hypertrophied myocardium or fibrous tissue, but others have found the composition of the aneurysmal wall to be normal [6]. However, some have used the term LA diverticulum to describe structures protruding from the LA that have normal myocytes in wall [7].

Conclusion

LA aneurysms are characterized by their origin from an otherwise normal atrium, a clearly defined communication with the atrial cavity, and their intrapericardial location. Although these aneurysms are rare, the associated complications and the ease of surgical resection suggest that their evaluations with cardiac imaging techniques should be considered in any patient with an unexplained abnormality on the chest radiograph or initial echocardiography.

Conflict of interest

The authors declare no conflict of interest.

References

[1] Yao R, Hunsaker RP, Gelman B. An unusual echocardiogram. J Cardiothorac Vasc Anesth 2008;22:636–8.
[2] Foale RA, Gibson TC, Guyer DE, Gillam L, King ME, Weyman AE. Congenital aneurysms of the left atrium: recognition by cross-sectional echocardiography. Circulation 1982;66:1065–9.
[3] Thadani U, Whitaker W, Watson DA. Congenital intrapericardial aneurysms of the left atrium. Thorax 1975;30:102–9.
[4] Awasthy N, Tomar M, Radhakrishnan S, Shrivastava S, Iyer KS. Symptomatic giant left atrial aneurysm in a child: a rare entity. Images Paediatr Cardiol 2010;12:9–13.
[5] Vagefi PA, Choudhry M, Hilgenberg AD. Excision of an aneurysm of the left atrial appendage. J Thorac Cardiovasc Surg 2007;133:822–3.
[6] Terada H, Tanaka Y, Kashima K, Sannou K, Arima T. Left atrial diverticulum associated with severe mitral regurgitation. Jpn Circ J 2000;64:474–6.
[7] Nagai T, Fujii A, Nishimura K, Inoue K, Suzuki J, Kido T, Nakamura M, Matsumoto Y, Izutani H, Mochizuki T, Kawachi K, Higaki J, Ogimoto A. Large thrombus originating from left atrial diverticulum: a new concern for catheter ablation of atrial fibrillation. Circulation 2011;124:1086–8.