Case Report

Large Left Atrial Aneurysm in a 35-Year-Old Man

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ABSTRACT

A left atrial appendage aneurysm (LAAA) is an extremely rare anomaly commonly diagnosed incidentally or following thromboembolic or tachyarrhythmia occurrence. LAAAs can lead to life-threatening adverse events such as atrial fibrillation, myocardial infarction, and systemic thromboembolism. We herein report an LAAA in a 35-year-old man presenting with episodes of chest discomfort and sudden-onset palpitations, along with exertional dyspnea. He underwent an aneurysmectomy with cardiopulmonary bypass. ***(Iranian Heart Journal 2022; 23(3): 126-130)***

KEYWORDS: LAA aneurysm, Palpitation, Aneurysmectomy

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Aneurysms of the left atrium (LA) and the left atrial appendage (LAA) can be either congenital due to the dysplasia of atrial muscles or acquired secondary to mitral valve diseases.[1,2] Congenital LAAAs are more frequent and commonly involve the LAA; however, they may rarely originate from the body of the LA.[3] LAAAs constitute an uncommon entity. Although first reported in 1962 and 1963 in 2 children, aneurysms were excised in neither case.[4,5] Nowadays, for the routine use of echocardiography in cardiologic examinations, the detection of LAAAs has become more frequent. The first echocardiographic detection was reported in 1900,[6] since which time more than 100 cases have been presented by numerous scientists using various diagnostic and management techniques. According to a published systematic review, there was no sex privilege in LAAA incidence; moreover, affected patients were in a vast range of 22 weeks to 88 years old, with the greatest occurrence in the third decade of life.[7] Hence, LAAAs grow in size as the patient ages, and symptoms become more prominent after 20s,[7,8] which in turn, leads to more susceptibility to thrombus formation.[9]

A few case reports have presented LAAA pathogenesis, diagnosis, management, and follow-up. Herein, we describe a 35-year-old man with a history of chest pain and dyspnea, in whom we detected atrial fibrillation (AF) and a giant LAAA through meticulous assessment techniques. Additionally, we discuss the surgical correction of the giant LAAA.

Case Report

A 35-year-old man was admitted to the Emergency Department of Rajaie Cardiovascular Medical and Research Center with chest discomfort and dyspnea on exertion, in addition to the sudden onset of palpitations, which had deteriorated during the preceding 3 months. Neither cardiac risk factors nor a family history of cardiovascular diseases existed. The primary examination revealed a hyperdynamic myocardial impulse, which was irregular and a 3/6 apical systolic murmur on auscultation. Electrocardiography (ECG) showed AF rhythm with left axis deviation and left anterior fascicular block. The primary differential diagnosis was a secondary cause of AF rhythm that needed more inspection. An increased cardiothoracic ratio and a prominent convexity of the left heart border comprised the chest roentgenology findings (Fig 1). Afterward, transthoracic and transesophageal echocardiographic examinations were performed. Unexpectedly, they revealed a normal-sized left ventricle together with moderate systolic dysfunction, a left ventricular ejection fraction of 35%, and mild-to-moderate right ventricular systolic dysfunction. Surprisingly, a giant saccular aneurysm (7 cm×10 cm) communicating to the LAA with a 2.5 cm neck, along with severe spontaneous contrast and some layered clots at the bottom of the aneurysm (Fig. 2), was detected echocardiographically. Mild-to-moderate mitral valve regurgitation, a normal aortic valve, and a normal pulmonary arterial pressure were other echocardiographic findings.

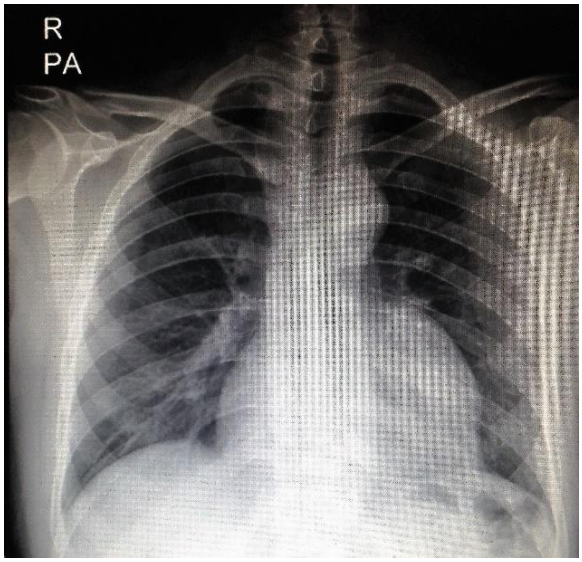

Figure 1: Chest radiography reveals cardiomegaly with the abnormal contour of the left cardiac border.

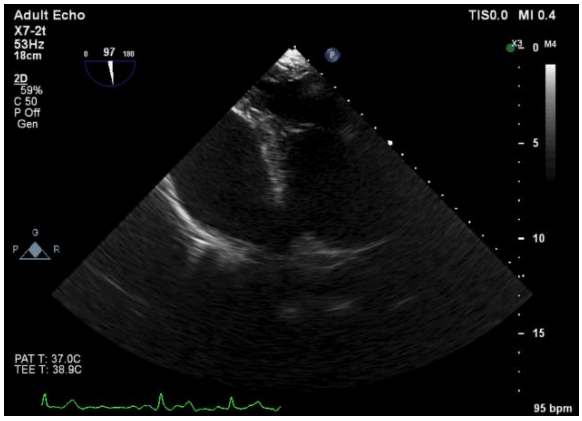

Figure 2: Transesophageal echocardiography shows the left atrial appendage aneurysm and its connection to the left atrium.

Hence, an LA diverticulum was another differential diagnosis. Cardiac magnetic resonance imaging (CMR) was done to confirm the echocardiography findings and to gain an enhanced visualization of the aneurysms and their connections to the adjoining structures. The CMR study similarly revealed an LAAA, accompanied by left and right ventricular dysfunction (Fig 3). Due to the patient's left ventricular dysfunction and complaints of chest discomfort, computed tomography (CT) angiography was done to rule out coronary

artery disease. Fortunately, all the epicardial coronary arteries were normal, and no sign of coronary artery disease was observed.

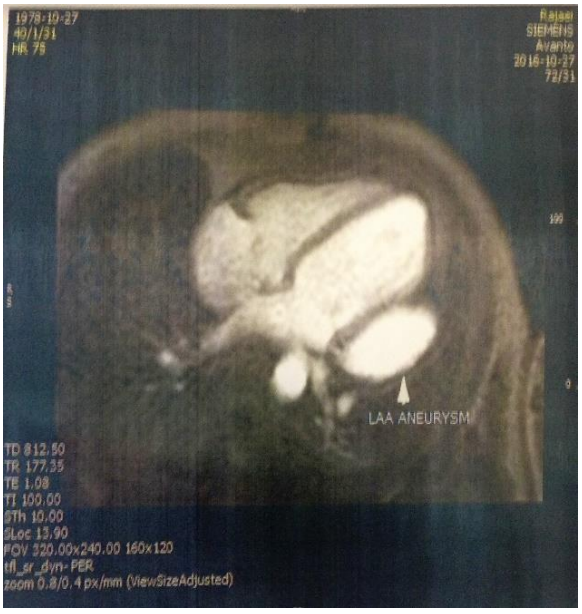

Figure 3: The image presents the cardiac magnetic resonance imaging of the patient and his large left atrial appendage aneurysm.

Owing to the patient's history of arrhythmia, detection of a layered clot in the LAAA, and systolic dysfunction (probably due to his tachyarrhythmia), together with the potential risk of other adverse events, surgical repair was performed. Following a median sternotomy, gross inspection revealed a giant aneurysm in the LAA with a tenuous hypocontractile wall containing some thrombi (Fig. 4) as was previously detected by transesophageal echocardiography. During cardiopulmonary bypass and cardioplegic arrest, the LAA was excised, and the base was closed with a 3-0 polypropylene suture material using a continuous suture pattern.

The histopathology study discovered no inflammatory response or tumorigenesis of the harvested tissue. A very thin pericardium, a normal endocardial tissue, but some focal fibrinoid changes were the other histopathology findings.

No postoperative adverse event was recorded. Due to definite improvement in the patient's clinical condition, accompanied by a restored sinus rhythm in ECG and a normal-sized left heart border in the chest roentgenogram, he was discharged home. A postoperative regimen of warfarin, metoprolol succinate (47.5 mg daily), captopril (12.5 mg twice daily), and spironolactone (25 mg daily) was administered. At 1-month follow-up following the surgery, the patient was asymptomatic and had no complaint.

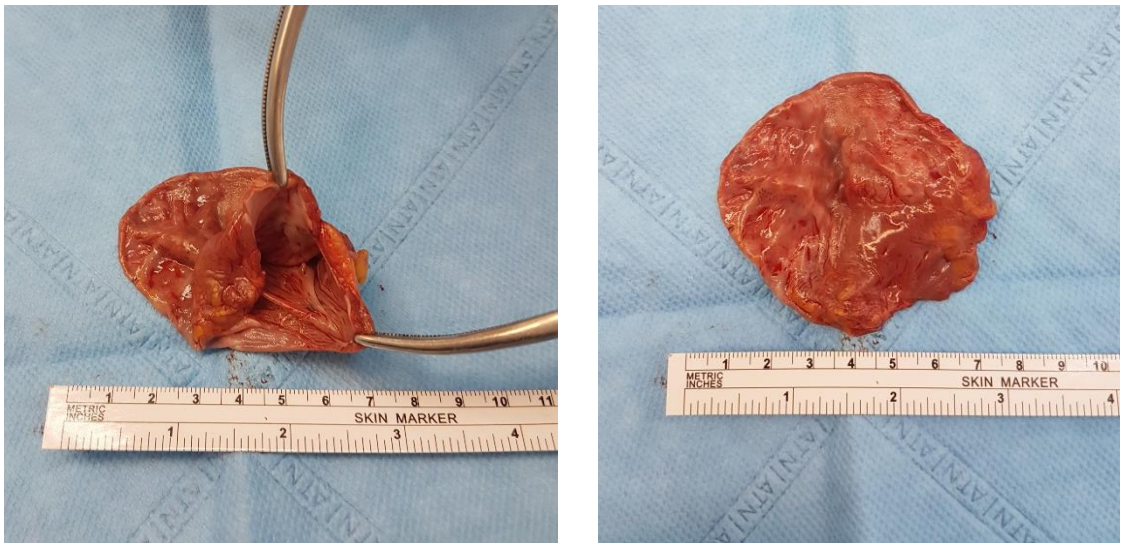

Figure 4: The images show the excised large left atrial appendage aneurysm.

DISCUSSION

LAAAs constitute an extremely rare anomaly found at any age but predominantly in the second to fourth decades of life.[7,8] The case presented herein is the second case of LAAAs that we have come across in a 6-month interval.[10] The first was a 68-year-old woman and the current case was a 35-year-old man. Previous studies have reported either asymptomatic patients or symptomatic ones presenting with palpitations, chest pain due to the compression of the coronary arteries, stenosis, tamponade, thromboembolic events, supraventricular arrhythmias (mostly AF), dyspnea on exertion, and heart failure because of pulmonary venous stenosis.[1,9,11] According to a literature review in our previous study, among 132 reported cases, 45 patients showed palpitations, 36 patients presented with dyspnea, and 17 patients developed thromboembolic events. In addition, 41.6% of the patients showed AF, whereas 34.8% were asymptomatic.[10] The patient in the present case report also demonstrated chest discomfort, dyspnea, AF rhythm, and systolic dysfunction in the left and right ventricles. Aneurysmal formation should be suspected when an abnormal cardiac contour is seen on the chest roentgenogram and confirmed via cardiac angiography and other noninvasive imaging modalities, which is what we did for our patient via transesophageal echocardiography and CMR. These are promising methods for the visualization of aneurysms and their connections to the other cardiac structures, as well as the assessment of their compressive effects on the cardiac and extracardiac structures.

Given the satisfactory results of the surgical repair performed on our previous patient, and since aneurysmectomy is the most commonly used method in such cases, we did the surgical resection of the large LAAA in our current case to prevent thrombus formation and persistent AF and to control the episodes of palpitations. As we expected, the postoperative evaluation of the patient revealed the conversion of the rhythm to normal sinus rhythm. Notably, there are reports of the use of ablation along with aneurysmectomy to restore the sinus rhythm.[12,13] The overall outcome of such efforts is superb, and general recovery is exceptional; nevertheless, the prognosis may worsen because of the related abnormalities and left ventricular dysfunction.[10]

In summary, we herein described the diagnosis techniques of an LAAA in a 35-year-old man, in addition to its surgical resection and follow-up. Early diagnosis and treatment of LAAAs can prevent their potential deleterious effects. We recommend that even asymptomatic cases undergo surgical resection given the low operation-related complications compared with the sequelae.

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