Case report of an asymptomatic Giant Left Atrial Appendage Aneurysm in an adult

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Abstract

Introduction: Left atrial appendage aneurysm (LAAA) is an extremely rare cardiac abnormality with potentially life-threatening risks. Most LAAA were detected because of the symptoms triggered by it, while asymptomatic LAAA were detected incidentally. Once LAAA is diagnosed, early surgical intervention is generally recommended. **Case presentation:** We reported a case of an 18-year-old female with giant congenital LAAA without any symptoms or surgical history. In an incidental transthoracic echocardiography (TTE) examination, a saccular structure adjacent to her left rear of the heart was encountered. Further CT and MRI examination established the diagnosis of LAAA. The LAAA was corrected via open heart surgery with cardiopulmonary bypass, and this patient recovered well and discharged uneventfully. **Conclusion:** TTE is the primary tool to diagnose LAAA. Transesophageal echocardiography (TEE), CT and MRI can be used for more accurate diagnosis. Early operation is a generally recommended and widely used intervention to prevent adverse events.

Introduction

Left atrial appendage aneurysm (LAAA) is an extremely rare cardiac abnormality, which may lead to fatal complications such as thrombotic events, atrial fibrillation, and cardiac function deterioration. Robust evidence recommends surgical correction for patients who were diagnosed with LAAA even without any symptoms[1]. In this case, we reported an 18-year-old female who suffered from a giant congenital LAAA but without any symptoms, which was incidental detected echocardiography.

Case presentation

An 18-year-old previously healthy female presented to our department for incidental detection of a giant cystic cavity on the left posterior part of the heart by transthoracic echocardiography (TTE). The patient was asymptomatic, laboratory tests were unremarkable, and physical examination only found that the cardiac boundary expanded to the left.

To further delineate the anatomy of this large cavity and its surrounding structure, this patient underwent contrasted CT and MRI. CT results revealed that left atrial appendage (LAA) was significantly enlarged, with a maximum cross-sectional length of 102mm and a width of 81mm (Figure 1). MRI results showed that the cystic structure with slightly long T1 and long T2 signal is connected with the left atrium, and the adjacent structure is compressed (Figure 2). Based on the patient's past health status and imaging findings, the patient was diagnosed with congenital LAAA.

Considering the size of the giant aneurysm and the potential risk of adverse events, the patient was suggested to take surgical removal of the aneurysm. Aneurysmectomy was performed through median sternotomy with cardiopulmonary bypass, which could provide us with a clear and still vision. Intraoperatively, a huge intrapericardial aneurysm (110mm * 100mm) at the left rear of the heart was visualized, which is connected

with the basal part of the LAA. The diameter of the neck between LAA and the aneurysm was about 20mm, and no mural thrombus was found in the aneurysm.

Discussion

LAAA is an extremely rare cardiac abnormality. Since its first report by Parmley in 1962, there have been no more than 200 cases reported so far. LAAA can be classified into congenital and postnatal according to the etiology, or intrapericardial and extrapericardial according to the presence or absence of pericardial defect. This case is a congenital and intrapericardial LAAA[2].

The etiology of LAAA remains unclear, although the anomaly is probably due to congenital dysplasia of the atrial pectinate muscles[3]. Acquired LAAA is often secondary to conditions that lead to chronically elevated left atrial pressures (such as mitral regurgitation or stenosis), or conditions that result in weakness of the left atrial wall (such as syphilitic or tuberculous myocarditis)[4]. Intrapericardial LAAA is hypothesized to be due to an inherent atrial wall weakness, while extrapericardial LAAA is associated with a secondary protrusion of the LA due to a congenital defect of the pericardium[5].

Based on previous case reports, only a small number of patients are incidentally diagnosed and remain asymptomatic. Most patients are diagnosed after symptoms, which mainly include palpitation, dyspnea and chest pain. The life-threatening complication is mural thrombosis caused by slow blood flow and vortex formation in LAAA, which can lead to systemic embolism once shedding off[3].

As a noninvasive examination, TTE is the most important screening tool for LAAA, but its value in diagnosis is limited. To clarify the relationship between the LAAA and the surrounding tissue structure, transesophageal echocardiography (TEE), CT and MRI can be performed, and cardiography can also be used to help make a clear diagnosis[5].

According to previous study by Aryal, the proposed definition of LAAA was a LAA which has dimensions at the diameter of the orifice, width of the body, and the length of the LAA larger than 27, 48, and 68 mm, respectively[6]. And the proposed imaging diagnostic criteria are: (1) origin from an otherwise normal LA, (2) clearly-defined communication with the LA, (3) location within the pericardium, and (4) distortion of the free wall of the LV by the aneurysm[5].

Once LAAA is diagnosed, surgical resection is always recommended even in asymptomatic patients to prevent fatal complications. In our patient, the large size of this LAAA made us choose resection via median sternotomy and cardiopulmonary bypass. Patients who undergo surgical resection usually have a great prognosis. To our knowledge, there are no reports of aneurysm or symptom recurrence.

Conclusion

In conclusion, LAAA is a rare cardiac anomaly. TTE is the primary tool to detect LAAA. TEE, CT and MRI can be used for further examination. When a saccular structure adjacent to the left heart border is encountered, LAAA should be considered. Once LAAA is diagnosed, early intervention is recommended to prevent life-threatening complications, even in asymptomatic patients. As seen in our case, the use of the cardiopulmonary bypass via median sternotomy is an accepted approach, generally believed safe and successful.

Patient consent

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Conflict of interests

The authors declare that there are no conflict of interests.

Clinical trial registration

Not applicable.

International Review Board approval

Not applicable.

Figures

Figure.1 Contrasted CT image of the heart. **(A)** CT scan showing the giant size of LAAA and the communication between LAAA and LA. **(B)** CT scan revealing that LAAA was much larger than the LV.

(LAAA: Left atrial appendage aneurysm; LA: Left atrium; LV: Left ventricular)

Figure.2 Contrasted MRI image of the heart. **(A)** MRI scan showing the giant size of LAAA and the communication between LAAA and LA. **(B)** MRI scan revealing that LAAA was much larger than the LA and LV.

(LAAA: Left atrial appendage aneurysm; LA: Left atrium; LV: Left ventricular)

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