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Case Report

A mitral valve's blood cyst as a rare cause of syncope

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Blood cysts of the heart are considered rare benign tumors that usually involve the valves. They typically present in childhood and are infrequently seen in adults. Here we report a case of a cardiac blood cyst of the mitral valve which was associated with frequent attacks of loss of consciousness in a 25-year-old female.

Keywords: Blood cyst; mitral valve; syncope; loss of consciousness

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Introduction

Blood cysts of the cardiac valves are relatively common in newborns and postmortem infants, [1] but tend to regress spontaneously when the child advances in age in most cases. Finding a blood cyst on the mitral valve's anterior leaflet that was associated with syncope in an older adult prompted this case report

Case report

A 25-year-old female presented to Al-Yarmouk Teaching Hospital in Baghdad complaining from frequent intermittent episodes of loss of consciousness in April 2017. She visited a neurologist and was advised to do an Electroencephalography (EEG). The EEG study was done and showed abnormal spike waves that could also be seen in normal patients and are unrelated to epileptic causes. [2] However, the EEG finding was interpreted as an epileptic fit (atonic epilepsy). The neurologist treated her with antiepileptic medications at the maximum dose; but, the patient was not improved. She was then referred to the cardiac unit, where general investigations were done. Her blood pressure was normal, there were no significant changes in general blood or cardiac tests, with the exception of a chest x-Ray that found slight cardiomegaly. Electrocardiogram (ECG) was also done that showed QRS and ST segment criteria of left ventricular hypertrophy but no arrhythmia.

Echocardiography

An echocardiogram was performed which revealed concentric left ventricular hypertrophy and a spherical, poorly reflecting mobile mass of approximately 2 cm in diameter in the left ventricle. The mass was adherent to the anterior mitral valve leaflet with a systolic motion towards the aorta (video.1). Because of limited hospital facilities, cardiac magnetic resonance imaging (MRI) and cardiac computed tomography (CT) could not be performed

Management

The patient was referred for surgical resection of the cardiac cyst in June 2017, and the operation was done in a cardiac surgery unit in India. The cystic mass was successfully resected, they also did mitral Valvuloplasty with Neochordae formation, using a Carpentier-Edwards Physio Annuloplasty ring. We were not able to have the microscopic and pathological finding of the mass after being surgically removed in outside country. have Post-operatively the patient returned to Iraq, where she was followed for 4 months with no evidence of further reported syncopal attacks.

Discussion

Blood cysts are rare, round masses, normally less than 1 to 2 mm in diameter that are usually lined by flat

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endothelial cells, filled with blood and fibrin, and frequently involve the atrioventricular valves in infants with rare presentation after the age of 2 years. [1] Cardiac magnetic resonance imaging (MRI) is considered to be the optimal tool for the assessment of intra-cardiac masses and for differentiating their causes, such as fibroelastoma, cardiac metastasis or valve vegetation. [3]

Intra-cardiac blood cysts are usually asymptomatic; however, shortness of breath, fatigue and chest pain can occur and they are usually due to mechanical involvement of cardiac haemodynamics and valvular function with the ability to cause ventricular outflow obstruction. [4] Cysts can also be a potential source of cerebrovascular embolism. [5] There are several hypotheses to explain the development of blood cysts. [1,5,6] The first hypothesis is that blood cysts are formed during embryological stages of valve development when blood is pressed into crevices of the cusps that are later sealed off. This hypothesis may serve as a possible explanation for the presentation of these cysts in infants. The second hypothesis is that inflammation, vagal stimulation, anoxia, or hemorrhagic events can cause occlusion of small vascular branches of end arteries, giving rise to hematoma formation in the sub-valvular region that consequently result in blood cyst formation. The third hypothesis is that heteroplastic changes in the tissue that comes from primitive pericardial mesothelium might be involved in blood cyst formation. The fourth and fifth hypotheses are that these blood cysts simply represent ectatic or dilated blood vessels in the valve, or that they represent angiomas or myxomatous degeneration.

The association of syncope with left ventricle outflow obstruction has been reported in the literature. [4,7] In our case, on echocardiography, the cardiac blood cyst showed motion towards the aorta during systole reducing the stroke volume and cardiac output that hampers blood supply to the brain which explains the syncope in a mechanism similar to left ventricle outflow tract obstruction. After the surgery the patient was followed for 4 months; but, she did not report recurrence of syncopal attacks.

There are no consensus guidelines for the optimal management of these cases; however, there is suggestion to maintain conservative management of asymptomatic patients with minor cysts and reserve surgical resection for symptomatic cases or if the cysts cause any cardiac dysfunction. [8]

Conclusion

Intra-cardiac blood cysts should be included in the differential diagnosis of intra-cardiac mass found in patients complaining from frequent attacks of loss of consciousness. Although there are no specific guidelines for treatment of intra-cardiac cysts, in our case, surgical resection of the cyst resolved the patient's syncopal attacks.

Competing interests

The authors declare that they have no competing interests.

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