Case Report

Point-of-care Ultrasound: A Window into the Diagnosis of Atrial Myxoma in Stroke-like Patient

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Abstract

Cardiac myxoma, the most common primary cardiac tumor, is indeed rare, with an estimated incidence of 0.03% in the general population. Despite its rarity, it can lead to severe complications such as intracardiac obstruction, emboli, and constitutional symptoms. Surgical excision of myxomas is associated with excellent outcomes and low rate of recurrence. Herein, we will report a case where the lesion was discovered early by point-of-care ultrasound (POCUS), allowing for the quickest possible prompt intervention. A 45-year-old man presented with a 1-day history of dizziness, right-sided body weakness, and facial asymmetry, which led to a motorbike fall. POCUS performed noted mass-like lesions measuring 7 cm by 6 cm, moving freely in the left atrium and prolapsing through the mitral valve during each cardiac cycle. The lesion appears to originate from the septal rather than the atrial appendage, which gives rise to a higher suspicion toward the left atrial myxoma than the left atrial thrombus. Besides, there are areas of liquefaction seen within the mass. He underwent a sternotomy and excision of the left atrial myxoma within the same hospitalization. Histopathology examination of the excised lesion confirmed the diagnosis of atrial myxoma. Early detection and surgical intervention result in a favorable prognosis. Upon discharge, he was stable, ambulating independently with minimal residual facial asymmetry.

Keywords: Atrial myxoma, cardiac myxoma, case report, point-of-care ultrasound, stroke

Introduction

Cardiac myxoma, the most common primary cardiac tumor, is indeed rare, with an estimated incidence of 0.03% in the general population.[1] Despite its rarity, it can lead to severe complications such as intracardiac obstruction, emboli, and constitutional symptoms. Surgical excision of myxomas is associated with excellent outcomes in terms of short- and long-term mortality, as well as a low rate of recurrence.[2] Early detection, timely intervention, and postoperative monitoring are crucial for ensuring a positive prognosis for patients with this condition. Herein, we will report a case where the lesion was discovered early by point-of-care ultrasound (POCUS), allowing for the quickest possible prompt intervention.

Case Report

A 45-year-old man presented with a history of falling off his motorcycle 1 day before admission due to a sudden onset of dizziness, unsteady gait, and right-sided body weakness. He was then brought to the hospital because the symptoms persisted for more than 24 h, and family members noticed that there was facial asymmetry. On arrival to emergency departments, his heart rate was 40–50 beats/min with blood pressure of 110/65 mmHg. His oxygen saturation was 100% under room air. Electrocardiogram showed sinus bradycardia [Figure 1].

On examination, his Glasgow–Coma score was full 15/15, orientated to time, place, and person. Neurological examination reveals partial ptosis of the left eye along with left internuclear ophthalmoplegia. In addition, there was right upper motor neurone grade II facial palsy. The assessment of the other cranial nerves was normal. Muscle power for all four limbs was full 5/5. He had a broad-based gait. Fasting lipid profile

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screening showed normal results with total cholesterol of 3.67 mmol/L, low-density lipoprotein of 2.09 mmol/L, and high-density lipoprotein of 1.33 mmol/L. Besides, his fasting blood glucose level (4.7 mmol/L) was normal. Further history, he is a nonsmoker and nonalcoholic drinker.

Magnetic resonance imaging (MRI) brain revealed multifocal infarction areas over the bilateral centrum semiovale, bilateral posterior parietal, bilateral frontal, left cerebellum, left paramedian midbrain, and thalamus [Figure 2].

POCUS performed noted mass-like lesions measuring 7 cm by 6 cm [Figure 3], moving freely in the left atrium and prolapsing through the mitral valve during each cardiac cycle [Figure 4]. In the apical 2 chambers view, the lesion appears to originate from the septal rather than the atrial appendage, which gives rise to a higher suspicion toward the left atrial myxoma than the left atrial thrombus [Figure 5]. Besides, there are areas of liquefaction seen within the mass [Figure 6]. Urgent formal transthoracic echocardiography was done and findings favorable of the left atrial myxoma.

He underwent a sternotomy and excision of the left atrial myxoma by cardiothoracic surgical team within the same hospitalization. Histopathology examination of the excised lesion confirmed the diagnosis of atrial myxoma. Postoperative rehabilitation was done, and ultimately, he was discharged in a stable condition, ambulating independently with minimal residual facial asymmetry. Echocardiography postoperative revealed good left ventricular ejection with all chambers in size.

Discussion

Cardiac myxoma is the most common cardiac tumor in adults and usually occurs in the third to sixth decade of life, with female predominance at a ratio of 2:1.[3] Though they can affect any chamber of the heart, cardiac myxomas most frequently affect the left atrium constitutes for 75% of the cases. About 10%–20% of the cases, the cardiac myxoma arising from the right atrium.[4] In general, patients with atrial myxoma are asymptomatic. Larger lesions, however, might cause intracardiac obstruction and unexpected cardiac death. Besides, rupture of the tumor or even small fragments of the tumor can result in a lethal embolus that is associated with acute stroke or limb ischemia. A transthoracic echocardiogram is a useful

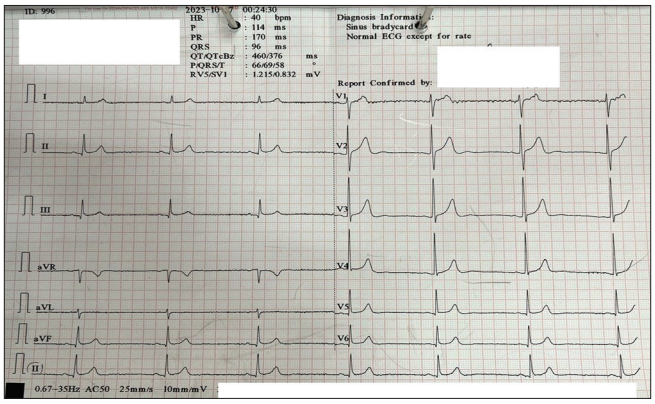

Figure 1: Electrocardiogram showed sinus bradycardia with ventricular rate of 40 bpm

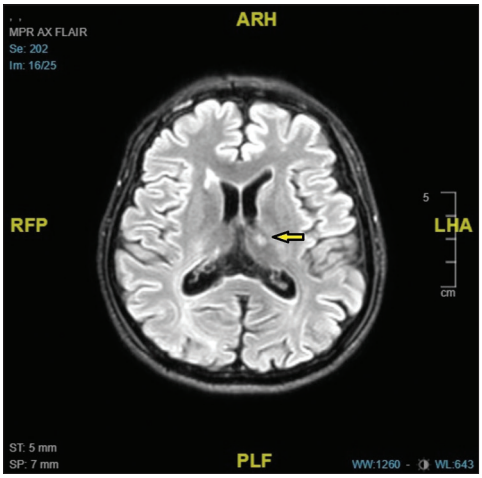

Figure 2: Magnetic resonance imaging of brain showed T2 hyperintense lesion at the left thalamus (depicted by yellow arrow)

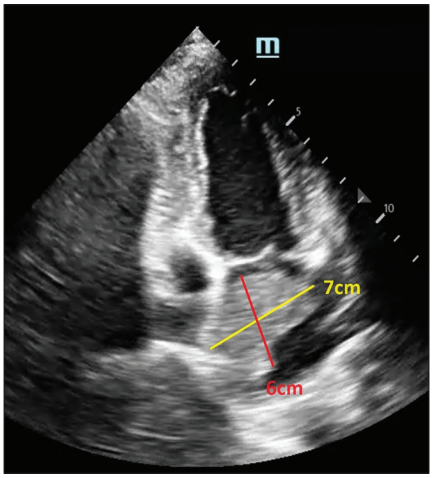

Figure 3: Well-defined margin solitary lesion measuring 7 cm by 6 cm in the left atrium

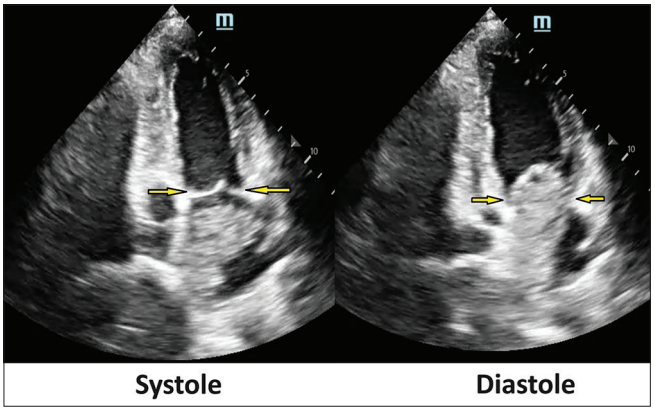

Figure 4: Left atrial mass prolapsing through mitral valve during each cardiac cycle. Mitral valves are indicated by the yellow arrows

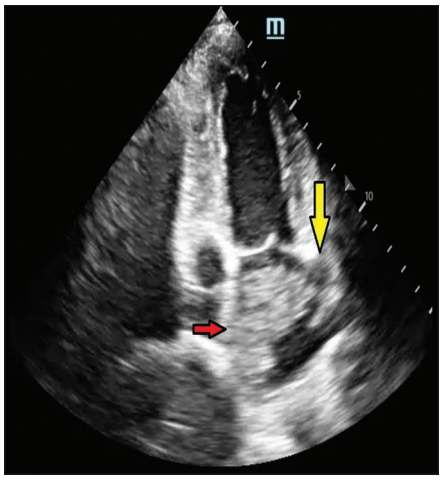

Figure 5: The left atrial mass originated in the fossa ovalis rather than the left atrial appendages. Fossa ovalis is indicated by the red arrow while left atrial appendage is indicated by the yellow arrow

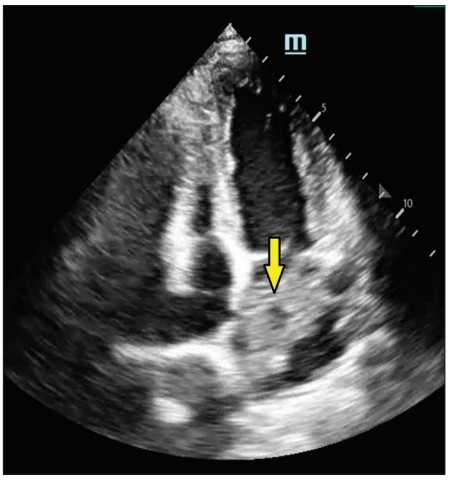

Figure 6: There is area of liquefaction within the left atrial mass indicated by the yellow arrow

diagnostic tool for atrial myxoma; sometimes, transesophageal echocardiography, cardiac computed tomography, or MRI may be required.[5]

Echocardiography's typical characteristics of an atrial myxoma include a polypoid or papillary mass that is attached to the interatrial septum by a stalk, moves back and forth inside the cavity, and occasionally protrudes beyond the atrioventricular valve into the corresponding ventricular cavity. At times, the tumor mass may get areas of liquefaction or calcification.[1] Cardiac myxoma can be differentiated from a cardiac thrombus by some echocardiography features. The left atrial myxoma commonly originates from either the mitral annulus or the fossa ovalis border of the interatrial septum, while left atrial thrombus tends to originate from the left atrial appendage. The fossa ovalis, a depressed structure of varying shapes at the inferior aspect of the right interatrial septum, forms by fusion of the septum primum and septum secundum; it is a remnant of an interatrial opening, the foramen ovale, which has a significant role in fetal circulation.[6] Moreover, the base of the cardiac myxoma tends to be narrow and often pedunculated, while the atrial thrombus tends to have a broad base. In contrast to atrial thrombus, which are less mobile, atrial myxomas are often extremely mobile and typically prolapse through the atrioventricular valve.

As previously stated, the typical problems of atrial myxoma include intracardiac obstruction, embolism, and constitutional symptoms. Embolization affects approximately 30%–40% of individuals, primarily affecting the cerebral arteries, retinal arteries, and coronary arteries, as the majority of myxoma originates from the left side of the heart.[7] In addition, embolisms can also occur in peripheral arteries, leading to acute limb ischemia; visceral arteries, resulting in acute mesenteric ischemia; splenic infarcts; liver infarcts; and renal arteries, causing renal infarcts.[8] Clinically and radiologically, blood-clot-related thromboembolism and tumor embolism may be indistinguishable, and confirmation is only possible through histology or postmortem analysis. In the end, the decision will hinge on the clinical assessment of risk factors and a case-by-case analysis. However, a patient with a known cardiac myxoma with no to low-risk factors for venous thromboembolism might lead the clinician to preclude the use of thrombolysis. Early cardiac myxoma resection is the mainstay of treatment to prevent recurrent embolism, and mechanical thrombectomy may be one of the ways to treat an acute cerebral infarction in some cases.[9]

Bedside POCUS is an invaluable tool that can provide immediate and crucial information in the initial assessment of patients, allowing for early diagnosis and intervention even in asymptomatic cases. Clinicians who are familiar with the echocardiography features of cardiac myxomas and maintain a high index of suspicion can expedite diagnosis and management, potentially preventing complications and improving patient outcomes. Surgery is the mainstay of treatment with an excellent prognosis, and surgical intervention should be implemented before severe complications such as heart failure, intracardiac obstruction, or embolic events arise.

Ethics statement

This study was conducted in accordance with the ethical principles outlined in the Declaration of Helsinki and its amendments. The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his consent for his images and other clinical information to be reported in the journal. The patient understands that his name and initials will not be published and due efforts will be made to conceal identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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