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Rare Case of LV Mass Causing LV Inflow Obstruction and Heart Failure

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Authors' contributions

This work was carried out in collaboration among all authors. Authors GC and PG designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors AK and AN managed the analyses of the study. Author BD managed the literature searches. All authors read and approved the final manuscript.

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Case Study

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ABSTRACT

A 55-year-old man came with dyspnea on exertion NYHA class –II, for 4 months with orthopnea, and episodic-palpitations, 2 episodes of presyncope. On examination pulse was 110/minute irregular, blood pressure was 92/68mmHg and cardiovascular examination was remarkable with soft S1 sound and a soft mid-diastolic-rumbling murmur at apex. Transthoracic-echocardiography was done which showed a homogenous-mass occupying 2/3rd of left-ventricular cavity and causing LV-inflow obstruction. Unfortunately he had episode of VT degenerated into VF and patient died.

Keywords: Intra-cardiac mass; echocardiography; hemodynamic effect.

1. INTRODUCTION

Intracardiac masses are a very rare finding especially if it is in left ventricle. Echocardiography is the modality of choice for their detection. It will tell us the exact location, morphology and its relation to nearby structures and hemodynamic effect of the mass. Masses

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can be a tumours, thrombus or a vegetation (1). We report such an interesting case of intracardiac mass in the left ventricle attached to the lateral wall causing inflow obstruction and hemodynamically resembling a mitral stenosis.

2. CASE REPORT

A 55-year-old man presented to the emergency room with the complain of dyspnoea on exertion for last 4 months of NYHA class II, which has worsened over a period of 10 days with the complain of orthopnoea and swelling in both lower limb of pitting. On examination he has a low volume pulse with a rate of 110/min, blood pressure of 90/62mmHg, respiratory rate of 20/min. Jugular venous pulse distended up to angle of jaw. Bilateral pitting pedal oedema extending up to knee. On per abdomen examination he has right hypochondriac tenderness. Cardiovascular examination having soft S1, mid diastolic murmur at apex and a normal S2. Electrocardiogram showed sinus tachycardia with left atrial enlargement. Transthoracic echocardiogram demonstrated a 22 × 28 mm oval-shaped, homogeneous, echo dense mass attached to the lateral wall of left ventricular apex Figs 1 and 2. Concomitant findings were dilated left atrium without a significant mitral regurgitation, mild LV systolic dysfunction with an LVEF 35%. The intracardiac mass was sessile, attached to the lateral wall with a wide base regular borders and homogeneous texture similar to myocardium. The LV mass was just below the sub valvular apparatus and limiting the opening of mitral valve in diastole thereby causing a LV inflow obstruction mimicking physiologically as mitral stenosis with elevated LA pressure and pulmonary capillary wedge pressure which is explain his symptoms. He was immediately admitted in cardiac ICU and kept on diuretics, positive pressure ventilation and also required inotropic support. He was then planned for cardiac MRI followed by urgent surgery after medical stabilization however he rapidly deteriorated and succumb to dead before we could do anything.

3. DISCUSSION

LV mass is an unusual finding on echocardiogram most common cause of which is a apical clot in case of anterior wall MI [1]. Clinical context is totally different in case of a LV apical clot and tumours. Clot is usually a finding after an episode of myocardial infarction with stasis of blood in a aneurysmal segment whereas tumours usually presents with an history of weight loss, cachexia, malaise and along with the specific manifestation caused by location of tumours. Myxoma is the most common cardiac tumours which usually arises from atrial septum having heterogeneous echogenicity in transthoracic echocardiography. Intracardiac masses imposes a high risk for thromboembolic events and hemodynamic sequel of either inflow or outflow obstruction depending on its location and their removal although a high-risk surgery but has to be taken after detailed evaluation. [2]. Myxoma may be responsible for causing symptoms of low cardiac output like dizziness, syncope, easy fatigue. Similarly, another factor that could be responsible is a LV mass located at the LV Inflow causing obstruction at the mitral valve, mimicking mitral stenosis. A useful approach for differentiation and diagnosis is Transoesophageal echocardiography and it is used intraoperatively and provides a lot of information regarding the mass (morphology, margin and attachment). Like our case, which presented with symptoms mimicking left sided obstructive valvular lesion (mitral stenosis) with acute worsening over last 10 days. On Transoesophageal echocardiography the mass appeared as a homogenous, oval shaped mass, attached to the lateral wall of LV of size 28x22 mm without stalk. A study by Yoon et al reported that most important feature of cardiac myxoma is the presence of stalk which help to differentiate it form other masses and is useful for diagnostic confirmation [3], also myxoma appears as homogenous mass and may have a central echo lucent area suggesting haemorrhage and necrosis. Also, calcifications and echogenic foci may be seen with myxomas.

Another important differential diagnosis is the cardiac thrombi, which could be found in both atria or the ventricle in various clinical settings. And presence of cardiac thrombus is more common finding as compared to myxoma [4], sometimes elongated thrombus may mimic as stalk of myxoma and may lead to misdiagnosis [5], In general cardiac thrombus originates in presence of organic heart diseases [6], or in presence of hypercoagulable states .We considered this mass to be more likely a myxoma and planned for a cardiac MRI for better evaluation [7] and also endomyocardial biopsy was also planned for diagnostic evaluation, but unfortunately patient could not survive, and autopsy could not be done as attendants did not give consent for the same.

Patients with cardiac myxoma usually remain asymptomatic or have nonspecific symptoms, which are primarily dependent upon the location, size and friability of the mass. The patient presented with symptoms of heart failure with progressive worsening of dyspnoea from NYHA II → IV and complaints of pedal oedema and symptoms of heart failure. Cause of dyspnoea could be explained due to obstruction caused at the LV inflow level causing elevated LA pressure and PCWP leading to pulmonary congestion. The presence of LV Myxoma may also cause a functional LVOT obstruction and result into higher pressure of LV during systole increasing the risk of systemic embolization, while systolic prolapse of mass via the aortic valve could result into embolization, severe LVOT obstruction or even sudden death, thus, a cardiac myxoma arising form MV or LVOT should be removed immediately [8].

Apart form Transthoracic echocardiography, Transoesophageal echocardiography could be used to visualize the mass and it could help to differentiate and better define the surgical approach [9]. TEE is a more sensitive investigation as compared to TTE for obtaining more detailed information, including morphology and attachment site of the mass. Preoperative TEE is advisable when TTE was inconclusive. Positron emission tomography (PET) has been useful in identifying cardiac involvement in patients with metastatic tumors, but careful evaluation is required to differentiate malignant from benign causes of focal uptake [10].

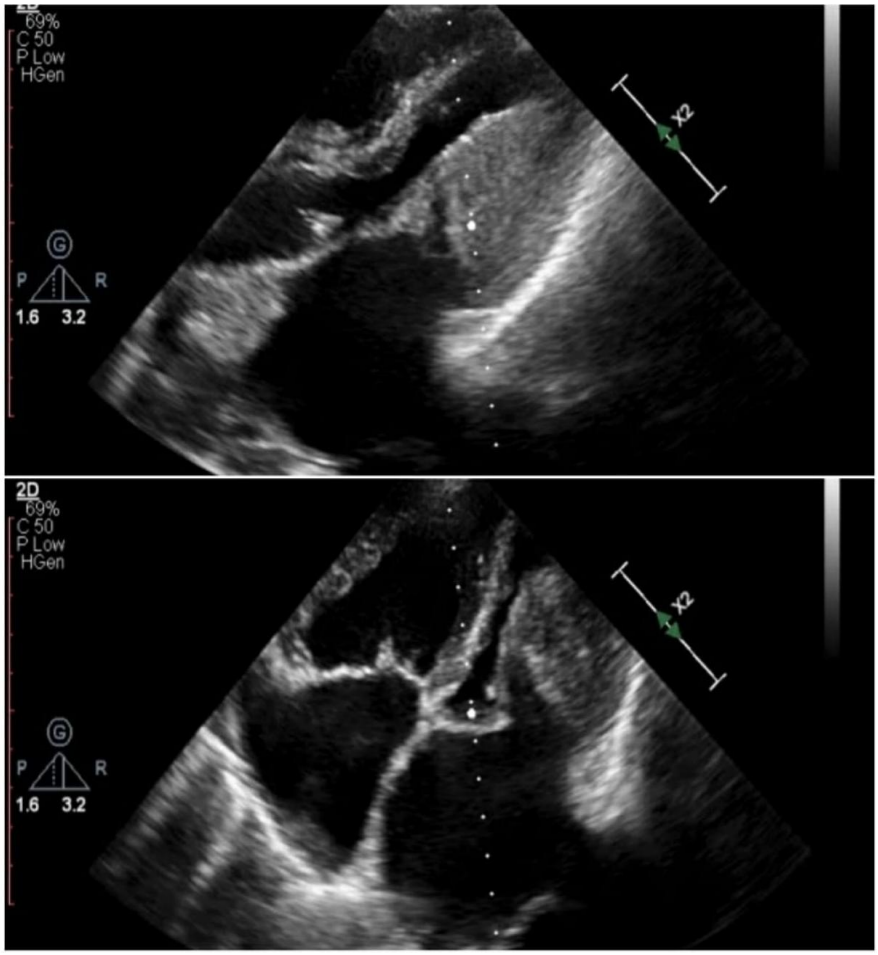

Fig. 1.(1 a.) transthoracic echocardiography modified apical 5-chamber view showing large homogenous mass of same echodensity as of surrounding endocardium attached to lateral wall of left ventricle, filling the lumen of left ventricle. (1 b.) apical 4 chamber view showing homogenous mass attached to lateral wall of left ventricle causing mitral inflow obstruction

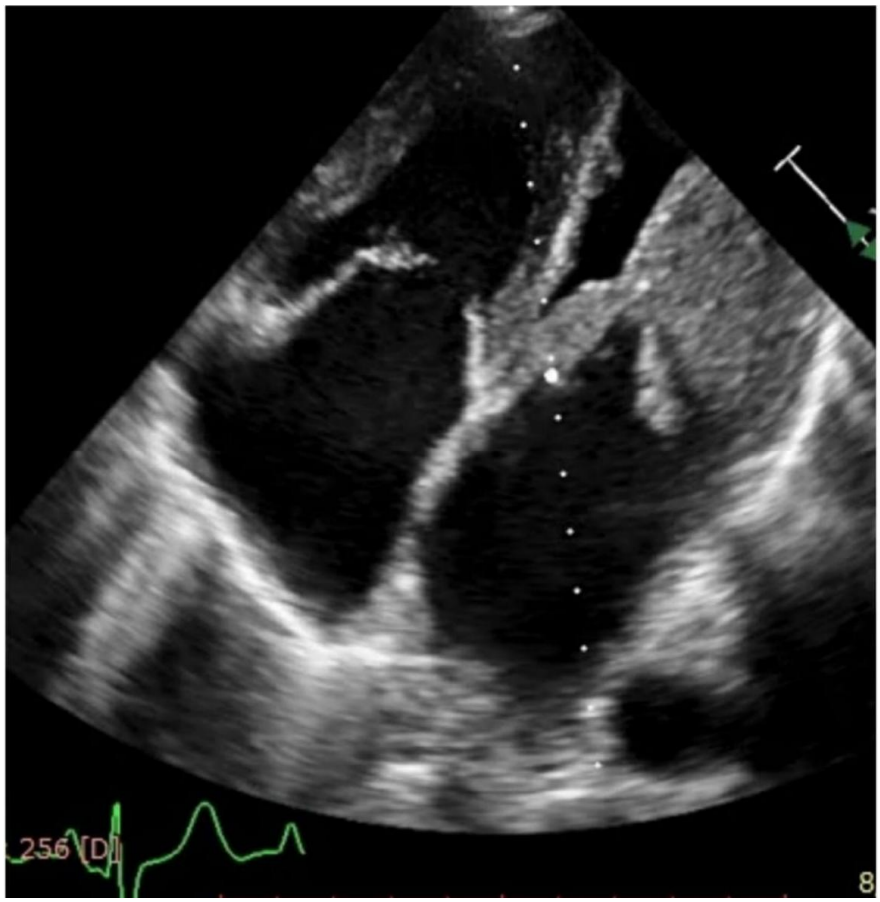

Fig. 2. Transthoracic echocardiography apical 4 chamber view showing homogenous mass attached to lateral wall of left ventricle

4. CONCLUSION

In conclusion, although it could be particularly difficult to find the difference between the causes of LV mass especially involving the mitral valves ,intraoperative TEE is a useful tool for distinguishing a myxoma form other cardiac masses such as thrombus, vegetation or an accessory mitral valve tissue.

CONSENT

As per international standard or university standard, patient's consent has been collected and preserved by the authors.

ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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