

“Left Atrial Myxoma - A Tumor in Transit”

Abstract

Cardiac myxoma is the most common type of primary cardiac neoplasm. Over 70% of all cardiac myxomas originate from the left atrium (LA) and 18% from the right atrium (RA). Most myxomas present with constitutional, embolic, and obstructive manifestations. We are presenting a case where a part of myxoma got embolized intra-operatively. Using trans-oesophageal echocardiography, we were able to diagnose and image the transit of the tumor from the left ventricle to the left atrium. We removed the embolized tumor from the left atrium and prevented a dreaded complication like stroke, mesenteric ischemia, renal infarct or limb ischemia, which would have resulted in increased morbidity or mortality of the patient.

Keywords: *Left atrial mass, left atrial myxoma, thrombus*

Introduction

Cardiac myxoma is the most common type of primary cardiac neoplasm and accounts for 30%–50% of all primary tumors of the heart with an annual incidence of 0.5 per million populations. Over 70% of all cardiac myxomas originate from the left atrium (LA) and 18% from the right atrium (RA). Biatrial myxomas account for less than 2.5% of all cardiac myxomas. Most myxomas present with one or more of the constituents, embolic or obstructive manifestations. We are presenting a case where a part of myxoma got embolized while it was being excised intraoperatively. Using transesophageal echocardiography (TEE), we were able to diagnose and image the transit of the tumor from the left ventricle to the LA. We removed the embolized tumor from the LA and prevented dreaded complication such as stroke, mesenteric ischemia, renal infarct, or limb ischemia, which would have resulted in increased morbidity or mortality of the patient.

Case Presentation

A 65-year-old gentleman presented with angina and breathlessness New York Heart Association class II–III of acute onset. There was no history of any comorbid illness. On examination, pulse rate was regular (88/min), blood pressure was

114/70 mm Hg in the right arm, and cardiovascular system S1 and S2 were well heard with mid-diastolic murmur in the mitral area. Routine laboratory investigations were normal. Transthoracic echo showed dilated LA (48 mm) with large, mobile echodense mass attached to interatrial septum measuring 76 × 40 mm, obstructing the mitral valve. Left ventricular ejection fraction was 35% with global hypokinesia. Coronary angiogram revealed normal coronaries. The patient was referred to cardiothoracic and vascular surgery department for excision of the LA mass. Intraoperative TEE mid-esophageal four-chamber view showed a large LA mass measuring 89 × 43 mm attached to the interatrial septum and obstructing the mitral valve in diastole [Figure 1]. It was mobile, echodense, homogeneous, non-calcified or non-cavitary lesion with well-demarcated borders. LA was dilated, color Doppler showed mild mitral and tricuspid regurgitation, and LV function was normal. Surgical approach was through a midline sternotomy on cardiopulmonary bypass (CPB) with standard ascending aortic and bicaval venous cannulation, and the minimum temperature was 32°C. Using transeptal and left atrial approach, the mass was excised. Iatrogenic atrial septal defect was closed through the RA. CPB time was 127 min, and aortic cross-clamp time was 62 min. Immediately after the cross-clamp was removed and as the heart started beating, TEE showed a small

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residue attached to the interatrial septum, no residual ASD or mitral regurgitation, and good ventricular function. Mid-esophageal four-chamber view showed a mobile homogeneous echodense mass in the left ventricle; probably a small piece of tumor had embolized and it was seen in the left ventricle [Figure 2 and Video 1]. We informed the surgeon immediately, and he reestablished the CPB and cross-clamped the aorta. As the aorta was occluded, the embolized tumor moved into the LA which was well seen on TEE [Figure 3 and Video 2]. The surgeon after giving cardioplegia reopened the LA and removed the embolized tumor, which was on the anterior mitral leaflet [Figure 4]. Postoperative histopathological examination was suggestive of myxoma. He was discharged on the sixth postoperative day. This case shows the importance of perioperative TEE imaging. Using TEE, we could diagnose and trace the embolized tumor from the LV to LA and inform the surgeon where exactly it was located which facilitated the removal of this tumor. If this embolized tumor was not noticed, the patient would have ended up with stroke, mesenteric ischemia, renal infarct, or acute limb ischemia, which would have resulted in increased morbidity and mortality risk of this patient.

Discussion

Echocardiography is an invaluable tool in the evaluation of intracardiac mass and can reliably identify mass location, attachment, shape, size, and mobility, while defining the presence and extent of any consequent hemodynamic derangement.^[1] The most common causes of left atrial mass are thrombus, tumor, and vegetation. Cardiac myxoma is the most common type of primary cardiac neoplasm and accounts for 30%–50% of all primary tumors of the heart.^[2] Over 70% of all cardiac myxomas originate from the LA and 18% from the RA. Biatrial myxomas account for <2.5% of all cardiac myxomas.^[3] Myxomas are particularly frequent from the third to the sixth decades of life and show a 2:1 female predominance. Although the occurrence of atrial myxoma is normally sporadic, as many as 7% of cases are familial, with the most notable condition being Carney's syndrome, an autosomal dominant complex of cutaneous and cardiac myxomas, pigmentation, and endocrine abnormalities.^[4] Most myxomas arise from the interatrial septum at the border of the fossa ovalis, but they can also originate in descending order of frequency

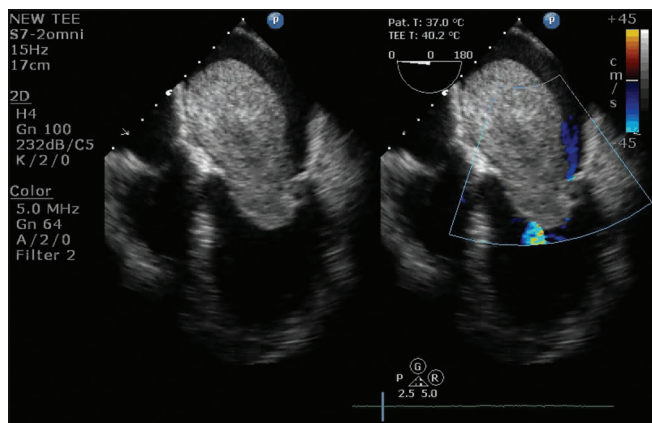


Figure 1: Mid-esophageal four-chamber view with color Doppler showing left atrial myxoma

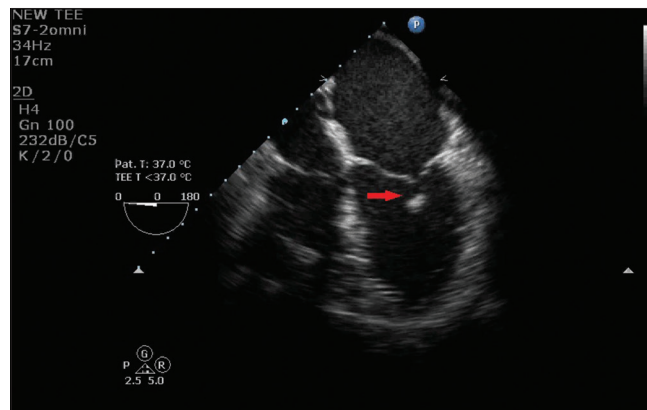


Figure 2: Mid-esophageal four-chamber view showing a homogeneous echodense mass in the left ventricle

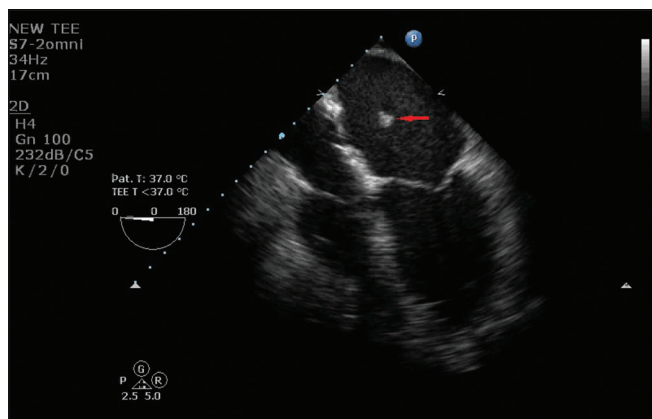


Figure 3: Mid-esophageal four-chamber view showing a homogeneous echodense mass in the left atrium

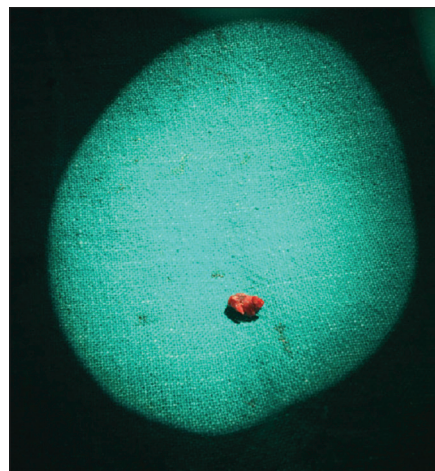


Figure 4: Gross appearance of the embolized tumor bit removed from the left atrium

from the posterior atrial wall, anterior atrial wall, and the atrial appendage. Myxomas typically appear as a mobile mass attached to the endocardial surface by a stalk, usually arising from the fossa ovalis. It has well-defined borders and echodense, non-calcified and non-cavitary lesion. The embolization of tumor particles or thrombotic material mixed with tumor cells occurs in 30%–40% of patients with myxoma.^[5] Left atrial myxoma is generally curable if surgically excised and the prognosis is excellent. The outcome after cardiac myxoma resection is favorable, with a 20-year survival rate of 85%, and the recurrence rate of atrial myxoma after resection is low (5%).

The thrombus is commonly seen in the left atrial appendage or attached to the left atrial roof. It is usually associated with atrial fibrillation, either due to valvular heart disease or organic heart disease. It is echodense, well-demarcated, homogeneous, and may be associated with spontaneous echocontrast. It should be visualized both in systole and diastole, as well as in more than one view.

Infective endocarditis can also present as an LA mass. Vegetation appears as echodense, discrete, lobulated, or amorphous chaotically mobile mass adherent to the upstream surface of valvular leaflets or mural endocardium, usually associated with diseased native or prosthetic valves. It is seen on the atrial side of the mitral valve. There may be associated perivalvular abscess or aneurysm. The patient may have constitutional symptoms and an associated organic valvular heart disease.

If a similar scenario arises, one should immediately communicate with the surgeon so that aorta would be cross-clamped to prevent systemic embolization. On second run of bypass, the embolized tumor should be removed.

Conclusion

This case demonstrates the importance and utility of TEE perioperatively in patients undergoing excision of the intracardiac mass. It is not only helpful in confirming diagnosis but also is useful in monitoring and guiding

during the procedure. Identification of an LA mass may result in alteration of surgical procedure to minimize manipulation during surgery or until the removal of the mass. The echocardiographer must image the mass during the procedure, particularly at times of cardiac manipulation and before the release of the aortic cross-clamp. Manipulation or instrumentation of the LA, including placement of an LV vent, should be limited and avoided when possible.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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