



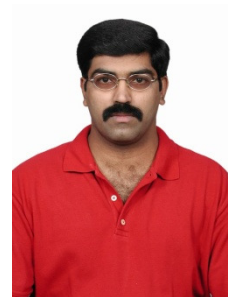
## Unusual Left Ventricular Mass detected after Myocardial Infarction-A Case Report

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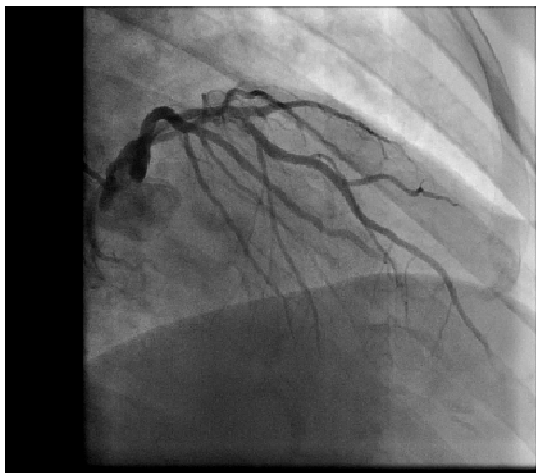


**Abstract:** Any major cardiac mass, by virtue of their anatomic location, is capable of producing a myriad of cardiac, embolic and systemic symptoms, sometimes with fatal consequences. A 37 year old male patient was referred to our hospital with chief complaints of chest pain radiating to both hands, sweating and giddiness. He was diagnosed as having the anterior wall myocardial infarction. Echocardiogram showed severely hypokinetic left ventricle apex, with ejection fraction of 40%, and a large linear mass attached to apex (6.1×1.7cm) in the left ventricular cavity accelerating across LVOT with a mean gradient of 10 and a peak gradient of 16. Cardiac magnetic resonance imaging showed mildly dilated left ventricle, reduced ejection fraction, akinesia of left ventricular apex, hypokinesia of mid cavity, a elongated lesion (6.0×2.7cm) in left ventricular cavity and infarcts involving left ventricular walls and the apical, mid cavity and basal levels with transmural extension. Coronary artery bypass grafting with left ventricular mass excision was done. The patient was discharged on sixth postoperative day.

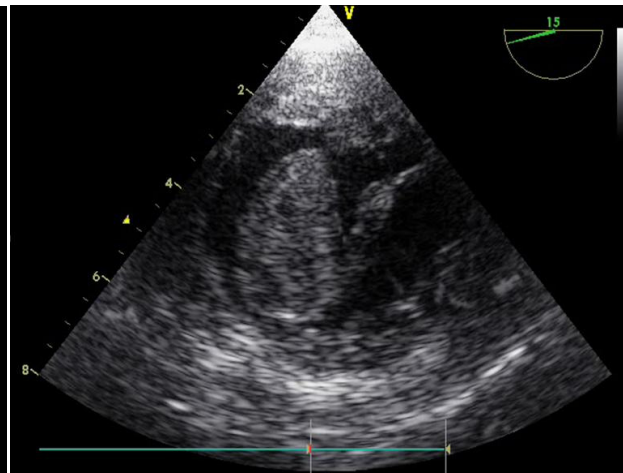
The two major common cardiac masses inside the heart are myxomas and thrombus. They may cause a number of cardiac, embolic and systemic symptoms, which could have fatal consequences. The majority of these tumours are benign atrial myxomas, which can be successfully managed by surgical excision<sup>1</sup>. Left ventricular thrombus (LVT) formation is a frequent complication in patients with acute anterior myocardial infarction (MI). Left ventricular thrombus is associated with increased risk of embolism. Higher mortality rates have been reported in patients with left ventricular thrombus after acute myocardial infarction, especially when these develop within the

first 48 hours after infarction<sup>2,3</sup>. Here we present a case of left ventricular myxoma incidentally diagnosed following anterior myocardial infarction.

**Case Report:** A 37 year old male patient was referred to our hospital with chief complaints of chest pain radiating to both hands, sweating and giddiness. He was diagnosed anterior wall myocardial infarction. Electrocardiogram revealed antero-septal myocardial infarction. Coronary angiogram revealed severe triple vessel disease (Figure 1). Echocardiogram showed mildly dilated left atrium, mild mitral regurgitation, mildly hypokinetic apical and anterior interventricular septum, trivial tricuspid regurgitation, normal pulmonary artery pressures, severely hypo kinetic left ventricle apex, with ejection fraction of 40% and a large linear mass attached to apex (6.1×1.7cm) in the left ventricular cavity accelerating across LVOT with a mean gradient of 10 mm of Hg and a peak gradient of 16mm of Hg (Fig 2).



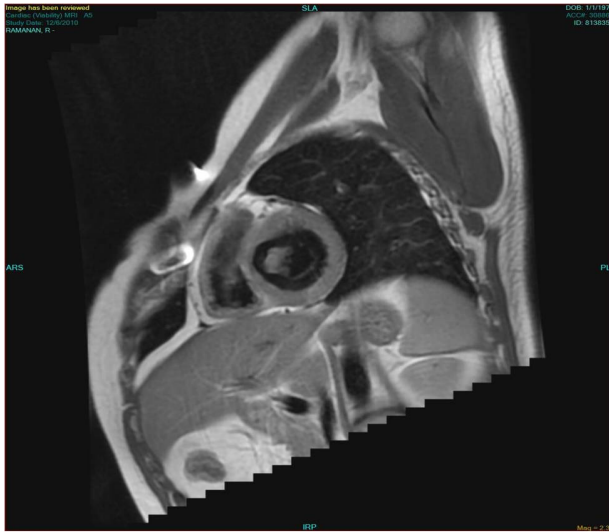
**Figure 1** Coronary angiogram showing the left sided lesions



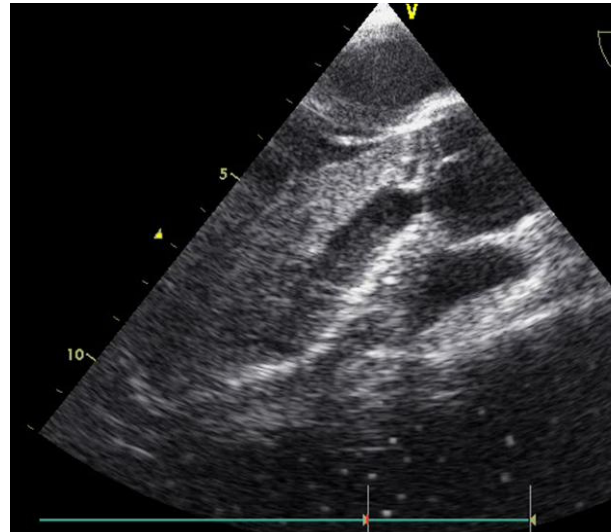
**Figure 2** Transthoracic echocardiogram showing the left ventricular mass

Cardiac magnetic resonance imaging showed mildly dilated left ventricle, reduced ejection fraction, akinesia of left ventricular apex, hypokinesia of mid cavity, a elongated lesion (6.0×2.7cm) in left ventricular cavity and infarcts involving left ventricular walls and the apical, mid cavity and basal levels with transmural extension (Figure 3). He was planned for coronary artery bypass grafting with left ventricular mass excision.

Pre induction monitoring included electrocardiogram, pulse oximetry, end tidal carbon dioxide, invasive blood pressure, pulmonary artery pressure and bispectral index. The patient was induced with midazolam 2mg, fentanyl 200mcg, etomidate 20mg and paralysed with vecuronium. Intubation was done with 8.5 mm ID cuffed endotracheal tube. Post induction monitoring included urine output, temperature and transoesophageal echocardiogram (Figure 4).



**Figure 3** Cardiac MRI showing the mass



**Figure 4** Transthoracic echocardiogram showing the mass moving across LVOT

Patient's chest was opened through median sternotomy. After adequate heparinisation, cardiopulmonary bypass was initiated with aortic bicaval cannulation. To minimize systemic embolization of the tumour fragments, electrically induced ventricular fibrillation was used to prevent ejection of the blood after initiation of the CPB. Left ventricular mass was removed by opening the left ventricle on left side of left anterior descending artery. Ventriculotomy closure was done after removing the mass. Grafting done to left anterior descending artery & posterior descending artery with saphenous vein. Cardiopulmonary bypass time was 98 minutes and cross clamp time was 62 minutes. Patient was weaned off cardiopulmonary bypass with stable hemodynamics. Chest was closed after adequate hemostasis. Patient shifted to intensive care unit with nitroglycerin and dobutamine infusion.

The patient was extubated after six hours and shifted out of the intensive care after 36 hours. Biopsy showed predominantly acellular eosinophilic fibrinous areas with focal viable areas composed of spindle shaped cells in a hyalinised background and the fibrocollagenous area showing myxoid changes, suggestive of myxoma. Post operative echocardiogram showed normal chamber dimensions, structurally normal valves, trivial mitral & tricuspid regurgitation with normal pulmonary artery pressures. Mid anteroseptum, apical anterior wall and left ventricle apex was akinetic. Rest of left ventricle was contracting well. The patient was discharged on sixth postoperative day.

**Discussion:** The types of clinical manifestations that are produced by cardiac mass can be divided into four general mechanistic categories-systemic manifestations, embolic manifestations, cardiac manifestations and phenomena secondary to metastatic diseases. The majority of the patients present with at least one of the classic triad of obstructive cardiac, embolic, and constitutional/systemic signs<sup>1</sup>. Cardiac manifestations encompass a multitude of abnormalities that include mechanical interference with myocardial function/valvular function/coronary blood flow,



conduction disturbances and pericardial fluid accumulation<sup>4</sup>. Our patient had severe triple vessel disease although its relevance to cardiac mass could not be established. The cardiac mass produced LVOT gradient of 10 mm of Hg which was insignificant to produce symptoms.

Systemic manifestations refer to the constitutional symptoms and paraneoplastic syndromes that can be associated with some primary cardiac tumours. Constitutional and non-embolic systemic findings secondary to cardiac myxoma include several nonspecific symptoms such as fever, weight loss, fatigue, myalgia, arthralgia, muscle weakness, and Raynaud Phenomenon<sup>5</sup>. In our patient fatigue giddiness & malaise were the constitutional symptoms present. This symptomatology was mainly due to acute myocardial infarction and left ventricular mass per-se did not contribute to any symptoms.

Differentiating myxoma from thrombus sometimes requires histology inspite of all imaging modality<sup>6</sup>. In our case we thought the mass was a thrombus following acute myocardial infarction but the biopsy proved it to be a myxoma. Embolic manifestations refer to the phenomenon of pulmonary and systemic embolism caused by tumour emboli themselves and/or tumour-associated thromboemboli<sup>7</sup>. Most cardiac tumours are localized in left atrium (75%), followed by right atrium (18%) and the remaining in the ventricles<sup>8</sup>. In our patient no embolic manifestations were noted although a stalk like clot was noticed and the location was left ventricular cavity.

The typical imaging modalities used for diagnostic and preoperative assessment purposes include computed tomographic scan, CMR, and echocardiography. Contrast-enhanced computed tomographic scan reveals that most myxomas have an overall attenuation lower than that of myocardium, few such tumours have equivalent attenuation, but in no instance have the tumours showed higher attenuation<sup>1</sup>. Cardiac MRI shows heterogeneous signal intensity in 90 percent of cardiac myxomas, with the T1-weighted images showing isointense signal in 79 percent and hyperintense signal in 14 percent of the cases. Cine gradient-echo CMR is a new modality that appears to be superior to other imaging modalities in the assessment of cardiac tumours because it allows for better visualization of the size, location, and point of attachment of the tumor<sup>4</sup>. Surgical approaches include left ventricular outflow tract, atrium and ventriculotomy depending on the location of the mass. In our patient we had the option of going through left ventricular outflow or ventriculotomy. We preferred ventriculotomy so that the mass could be excised completely under vision. The point against ventriculotomy was acute myocardial infarction. Complete excision was the goal, although it may not be plausible in all instances. Ventricle is opened directly when atrial approach is inadequate for tumour removal<sup>9,10</sup>. The treatment for cardiac mass is prompt surgical resection of the mass with the patients placed on cardiopulmonary bypass. Immediate postoperative mortality in most series ranges from 0 to 7.5 percent<sup>11</sup>.

Common postoperative complications include arrhythmias, which may require long-term medication. The patient did not have any complication and the post operative course in intensive care unit was uneventful. Recurrence of tumour occurs in about 3 percent cases, although the rate is higher with familial cardiac myxomas and can occur anywhere from 3 months up to 14 years postoperatively<sup>1</sup>. Recurrences can be local or in extra cardiac locations such as the brain, lung,



skeletal muscle, bone, kidney, gastrointestinal tract, skin, and other soft tissue sites. A particularly rare but potentially life-threatening complication is the development of cerebral aneurysm secondary to embolic tumour fragments<sup>1</sup>. Long-term follow-up of such patients with cardiac myxoma is highly recommended. We have to follow this case in future for any recurrences.

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