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A Rare Case of Mitral Valve Myxoma Presenting with ST-elevation Myocardial Infarct

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Abstract

The differential diagnosis of a mitral valve mass includes infectious vegetation, papillary fibroelastoma, and, rarely, cardiac myxoma. Distinguishing these masses from other valvular lesions is crucial, as the management strategies can differ significantly. We present a case of a 69-year-old man admitted to the cardiac emergency unit with chest pain. Further investigations revealed ST-elevation myocardial infarction affecting both the anteroseptal and inferior walls, along with pulmonary edema. Transthoracic echocardiography revealed severe mitral regurgitation associated with an oscillating mass originating from the anterior mitral leaflet, measuring 13 mm x 10 mm. Despite negative blood cultures, the mitral valve mass was initially managed as infective endocarditis. However, the patient failed to demonstrate any significant clinical improvement. Subsequent coronary angiography identified two-vessel coronary artery disease with a SYNTAX II score of 22. Given these findings, the decision was made to proceed with coronary artery bypass grafting in conjunction with resection of the mitral valve mass and mitral valve replacement. Histopathological analysis of the excised tissue ultimately revealed the characteristics of a cardiac myxoma.

Keywords: Myxoma, valvular mass, ST-elevation myocardial infarction, valve surgery

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Introduction

Approximately 75% of primary cardiac tumors are benign, with myxomas being the most prevalent type[1]. Most cardiac myxomas arise from the fossa ovalis, while those originating from the heart valves are rare. We present a rare case of a cardiac myxoma originating from the mitral valve that presented with ST-elevation myocardial infarction (STEMI).

Case Presentation

A 69-year-old male presented to the cardiac emergency unit with typical chest pain of 26 hours' duration. He had a history of milder chest pain 5 months earlier and intermittent shortness of breath for 3 months, which worsened the day before admission. The patient has a 25-year history of uncontrolled hypertension, is an active smoker, and has diabetes requiring insulin. On examination, he had stage I hypertension, an elevated respiratory rate, and a 3/6 apical systolic murmur. No other abnormalities were noted.

The electrocardiogram revealed an STEMI involving the anteroseptal and inferior walls. Transthoracic echocardiography demonstrated severe mitral regurgitation with an oscillating mass originating from the anterior mitral leaflet, measuring 13 mm x 10 mm, suggestive of infective endocarditis (Figure 1). However, blood cultures were negative. Despite treatment for infective endocarditis, the patient showed no clinical improvement.

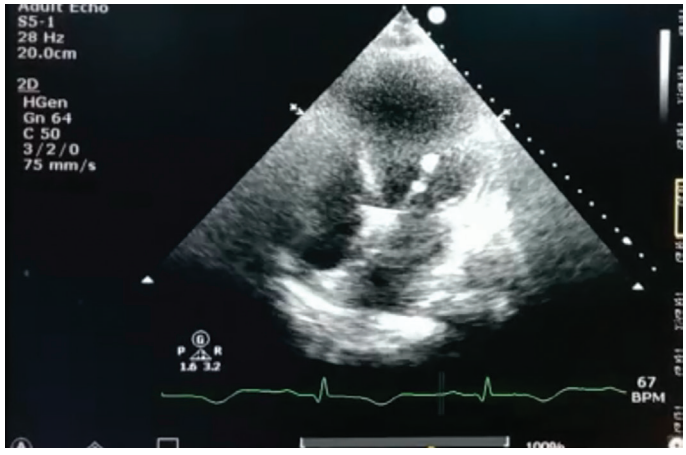

Figure 1. Transthoracic echocardiography showing a regular mass measuring 13 mm x 10 mm located on the anterior mitral leaflet

Coronary angiography revealed 80-90% diffuse stenosis of the mid-distal left anterior descending (LAD) artery with calcification, 80% stenosis of the proximal right coronary artery (RCA), and 70-80% diffuse stenosis of the proximal-mid RCA.

The patient underwent coronary artery bypass grafting (CABG) combined with mitral valve replacement and mass resection. After full cardiopulmonary bypass was established and the ascending aorta was cross-clamped, antegrade cardioplegia (approximately 2,000 mL of Custodiol) was administered to achieve diastolic arrest. The LAD and distal RCA arteries were prepared, and bypass grafts were fashioned from the great saphenous vein using 7-0 Prolene sutures for anastomoses. Runoff was adequate. Venous cannulation of the superior and inferior venae cavae was performed to complete bypass.

The right atrium was opened, and an incision was made in the atrial septum through the fossa ovalis. The mitral valve, showing anterior leaflet prolapse and annular dilatation, was exposed. The anterior and posterior leaflets were excised (Figure 2), and a mechanical mitral valve was implanted. Following rewarming, the interatrial septum and right atrial wall were sutured, and the heart was de-aired. The aortic cross-clamp time was 114 minutes.

Histological examination revealed stellate cells within myxomatous mitral tissue. Other areas of the tissue showed fibrosis, necrosis, and calcification. These findings were consistent with a diagnosis of myxoma with associated calcification.

Postoperatively, the patient demonstrated clinical improvement and was discharged 10 days after surgery. At a 30-day follow-up, the patient reported minimal exertional dyspnea and no chest pain.

Discussion

Most primary cardiac tumors are benign, with myxomas representing approximately 50% of cases[1,2]. They are typically pedunculated and intra-cavitary, arising most often from the left atrium (≈75 %), followed by the

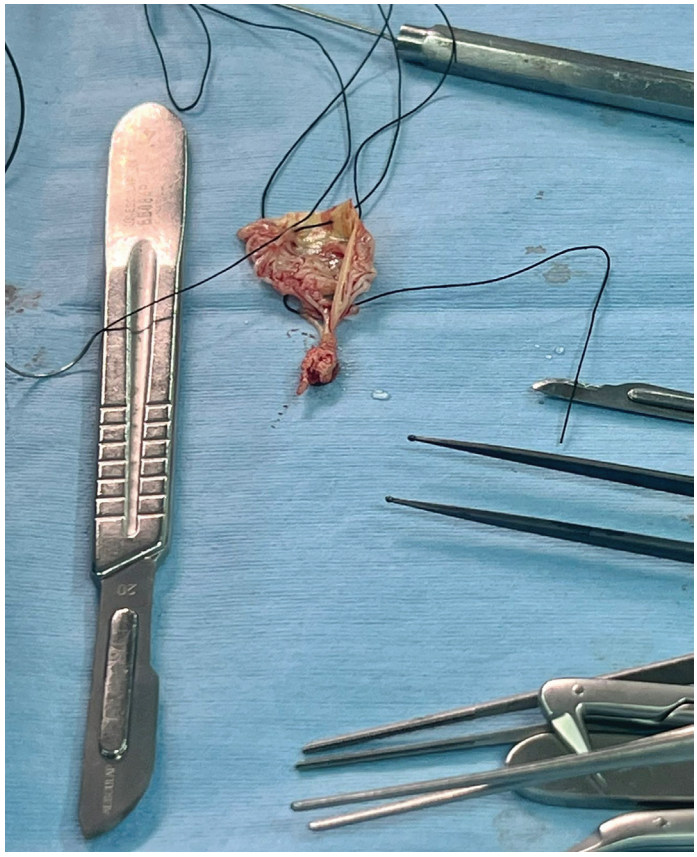

Figure 2. Macroscopic view of the operative specimen. A round and firm mass attached to the anterior mitral leaflet

right atrium (≈18 %) and, less commonly, the ventricles (≈4 %)[1,3]. Valve-origin myxomas are exceedingly rare, and the true incidence of myxomas arising from the mitral valve remains uncertain[1,4].

Clinical manifestations depend on tumor size, location, and mobility. Classic features include (1) systemic embolization, (2) intracardiac obstruction causing exertional dyspnea or pulmonary edema, and (3) constitutional symptoms such as fever or weight loss[5]. Coronary artery embolism leading to acute coronary syndrome is rare, occurring in only ~0.06% of cases[6]. Several recent case reports describe STEMI caused by embolization from cardiac myxomas, including those originating from the mitral valve[7-10].

Our patient illustrates this rare scenario. He presented with STEMI in the setting of diffuse atherosclerotic coronary disease, which made it challenging to distinguish plaque rupture from tumor embolism. Both mechanisms likely contributed to his presentation. Surgical management, consisting of median sternotomy, CABG, mitral valve replacement, and tumor excision, achieved complete resection. Surgery is considered curative, with reported myxoma recurrence rates of 5-14%[1,5].

Ethics

Informed Consent: Written informed consent was obtained from the patient for publication of this case report and accompanying images.

Footnotes

Authorship Contributions

Surgical and Medical Practices: Imanullah P, Taim AI, Patandianan FD, Tandean P, Kusumanegara J, Concept: Imanullah P, Taim AI, Patandianan FD, Design: Imanullah P, Taim AI, Patandianan FD, Data Collection and/or Processing: Imanullah P, Taim AI, Patandianan FD, Analysis and/or Interpretation: Patandianan FD, Tandean P, Kusumanegara J, Literature Search: Imanullah P, Taim AI, Writing: Taim AI, Patandianan FD.

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