

Left Ventricular Myxoma Producing Cardiac Failure

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ABSTRACT

Introduction: Seventy-five percent of primary cardiac tumors are benign, and most are myxomas. Seventy-five percent of myxomas originate from the left atrium, and 2.5% arise from the left ventricle. Heart failure is a rare complication of myxoma.

Case: A 54-year-old male patient with chronic obstructive pulmonary disease was admitted to the pulmonology department with a diagnosis of pneumonia and congestive heart failure during hospitalization. An echocardiography evaluation revealed a mobile mass (3.3 cm × 1.2 cm) in the left ventricle. The measured ejection fraction was 22%. Transthoracic and transesophageal echocardiography and magnetic resonance imaging examinations confirmed the presence of a myxoma in the left ventricle. The myxoma was a hanging mass with a stalk on the interventricular septum near the anterior mitral valve annulus. We visualized the gelatinous fragile mass on the septum; we then extracted the myxoma via a transaortic approach with the patient on cardiopulmonary bypass. The patient was discharged 10 days after surgery.

Discussion: Myxoma is treated by early surgical resection because of the potential for serious complications. Left ventricular myxomas have been reported to lead to a silent heart failure. This case is important because of its location and the patient's resultant heart failure.

INTRODUCTION

Primary cardiac tumors are extremely rare. The incidence is 0.0017% to 0.19% in autopsy series. Nearly 75% are benign, and most are myxomas [Robert 2009]. Approximately 75% of myxomas originate in the left atrium, and 15% to 20% arise from the right atrium. Most (90%) located in the

left atrium originate around the fossa ovalis. Only 2.5% to 4% of myxomas are found in the left ventricle, and the same percentages of myxomas are found in the right ventricle. The same frequency of all cases is also observed for biatrial tumors [Diaz 2011; Kumar 2011; Hassan 2012].

The clinical features of myxoma are determined by their location, size, and mobility. The most common symptoms include embolism and intracardiac obstruction [Kaplan 2002]. Ventricular myxomas may also co-occur with arrhythmias or conduction defects [Robert 2009].

The treatment is surgery and should not be delayed, even in asymptomatic patients, because of the tendency for embolism and hemodynamic instability [Diaz 2011].

CASE REPORT

A 54-year-old male patient with chronic obstructive pulmonary disease was admitted to the department of chest diseases with shortness of breath. During follow-up, the patient received a diagnosis of pneumonia and congestive heart failure. The patient's physical examination revealed inspiratory crackles in the lower zones bilaterally and pretibial edema in the lower extremities. No murmur was heard.

The transesophageal echocardiography examination revealed a mobile and stalked hanging mass of 3.3 cm × 1.2 cm on the interventricular septum in the left ventricle near the anterior mitral valve annulus (Figure 1). It did not create a gradient in left ventricular outflow tract. The measured ejection fraction was 22%.

The patient was evaluated for congestive heart failure, and the measured B-type natriuretic peptide concentration was 1300 pg/mL. Magnetic resonance imaging (MRI) revealed a mobile mass of 3 cm × 1.3 cm in the left ventricle near the interventricular septum with an intensity similar to that of myocardial tissue (Figure 2). The results of the coronary angiography examination were normal.

The electrocardiogram showed sinus rhythm with negative P waves. The patient was treated with parenteral antibiotics for the pneumonia and then was transferred to our clinic for intervention.

Because of the patient's depressed left ventricular function and the location of the mass, a transaortic approach was planned before the operation. Cardiopulmonary bypass was

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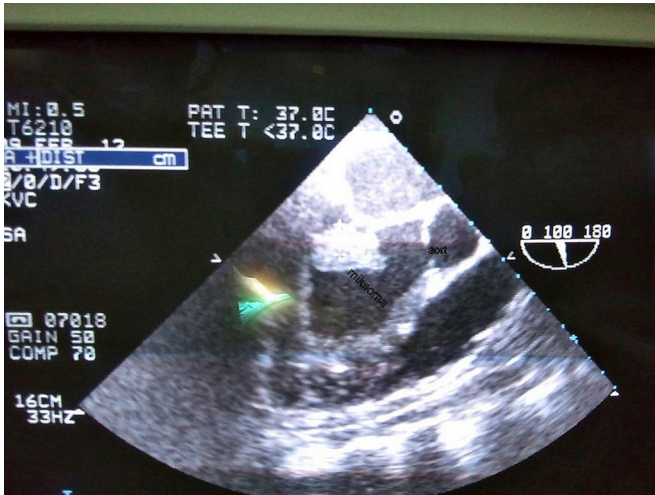


Figure 1. Myxoma image by transesophageal echocardiography.

started. After the aortotomy, we reached the gelatinous fragile mass on the septum by extracting the aortic leaflet. Pushing the diaphragmatic face of the right ventricle toward the aorta permitted clear visualization of the interventricular septum. This maneuver helped us see the entire mass and excise it completely (Figure 3). A low dose of an inotropic agent was needed to wean the patient off cardiopulmonary bypass. After surgery, the patient experienced a left branch blockage. A few days later, atrial fibrillation and flutter developed but disappeared after treatment with Cordarone (amiodarone) on

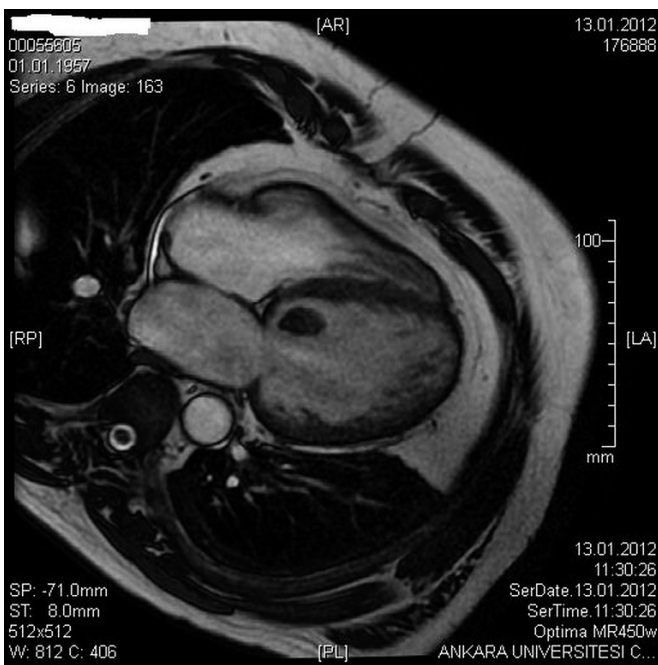


Figure 2. Myxoma image by magnetic resonance imaging.

the eighth postoperative day. The left bundle block and the inverse P wave also disappeared. The patient was discharged without any other complications 10 days after the surgery. During follow-up, transthoracic echocardiography examinations at 3, 6, and 12 months after surgery revealed an increase in the ejection fraction of the left ventricle up to 40%, and the patient's exercise capacity improved from class II to III to class I in the New York Heart Association classification.

DISCUSSION

Left atrial myxoma surgery was first performed by Crafoord in 1954 with the cardiopulmonary bypass technique [Chitwood 1992]. Myxoma is the most frequent primary cardiac tumor and is most commonly seen in female patients



Figure 3. View of the myxoma in the transaortic approach to the operation.

(female-to-male ratio, 3:1). Myxoma may occur after cardiac trauma and after atrial septal defect repair or transeptal mitral valve dilatation [Roldan 2000].

Eighty-six percent of myxomas are sporadic, and 7% are familial [Hassan 2012]. There is a familial tendency and a risk of recurrence after surgery in male patients [Van Gelder 1992]. Our patient does not have a history of familial disease.

Symptoms vary according to the myxoma's location in the heart. Symptoms of myxoma include hemodynamic disturbance (arrhythmias, valve failure, congestive heart failure, syncope, or sudden death), systemic embolization (64%), fatigue, and weakness. Myxomas of the right atrium have a risk of pulmonary artery emboli during the intervention, occasionally requiring a pulmonary artery embolectomy [Kaplan 2002]. Ventricular tumors located on the septum may produce complications of arrhythmia and syncope [Robert 2009]. Abnormal P waves can also be seen in electrocardiography examinations [Keçelgil 1999]. Our patient was in sinus rhythm with inverse P waves in all derivations. In some

cases, systemic symptoms such as fever, night sweating, and weight loss may be seen. In cases of a left-sided tumor, one can observe systemic emboli and syncope due to transient obstruction of the left ventricular outflow [Robert 2009]. Our patient experienced no symptoms besides weakness, fatigue, and dyspnea attributable to the heart failure.

The diagnosis of heart tumors can be done by echocardiography, computed tomography, or MRI. The most useful modality is echocardiography, because it is inexpensive and noninvasive. Transesophageal echocardiography is more specific and sensitive. Our patient had a transesophageal echocardiography examination that revealed a myxoma-like stalked mass hanging on the anterior mitral valve annulus on the ventricular outflow. The MRI showed a mobile mass of 3 × 1.3 cm near the interventricular septum that was isointense with the myocardium. The operation was indicated by the echocardiography findings. Cardiac tomography or MRI was not necessary for the diagnosis.

The treatment of myxoma is early surgical excision because of its potential for serious complications. Left ventricular myxomas are usually managed with aortotomy and displacement of the aortic valve [Keeling 2002]. Apical ventriculotomy may be needed for large tumors, but aortotomy is preferred because it does not affect the normal cardiac geometry and physiology. We had to delay the operation because of the patient's pneumonia. The transaortic approach was preferred because of the patient's depressed left ventricular function, heart failure, and the left ventricular location of the mass. The myxoma was excised via an aortotomy. Pushing the septum from the right ventricle helped us to see the entire mass.

The etiology is unclear, but left ventricular myxomas have been reported to lead to a silent heart failure [Süzer 1990]. This case is important because of its rare location and its presentation with heart failure. We arrived at the same conclusion with our patient because he was referred to the emergency unit with dyspnea, fatigue, and pretibial edema, and

was given a diagnosis of both pneumonia and heart failure. Of note is that left ventricular myxoma can occur even with heart failure alone.

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