

# Cardiac Myxoma With Unusual Obstructive and Embolic Presentations

## *Concurrent Stroke and Angiography-Negative Myocardial Infarction—A Case Report*

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**Abstract:** We present a case of cardiac myxoma with atypical presentations of concurrent stroke and angiography-negative myocardial infarction. The case emphasizes the importance of basic echocardiography and timely surgery in the management of cardiac myxoma.

An elderly woman presented to the emergency department in an unconscious state. Electrocardiogram and elevated cardiac enzymes suggested acute myocardial infarction; however, immediate coronary angiography proved patency. Basic echocardiography revealed an oscillating left atrial myxoma obstructing inflow through the mitral valve. After regaining consciousness while in the intensive care unit, the patient developed respiratory distress and shock, and emergent en bloc resection was performed. Ataxia was noted in her postoperative course and multiple small cerebellar infarcts were found on magnetic resonance imaging. After a 1-month period of rehabilitation, the patient recovered well and continues to be followed as an outpatient.

Cardiac myxoma requires timely management and may be missed if not included in the differential diagnoses. Basic echocardiography, also called focused cardiac ultrasound, may aid in the diagnosing of perplexing cardiac cases.

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### INTRODUCTION

In clinical practice, paradoxical clinical results that require alternative strategies may be encountered. Here we present a case of a patient with results of cardiac catheterization that are incompatible with ST segment elevation and elevated cardiac

enzymes. Although technologically advanced diagnostic examinations are becoming increasingly available, noninvasive bedside ultrasound examination remains to be indispensable.<sup>1</sup> Although cardiac myxomas are relatively uncommon compared with coronary and valve lesions in the elderly, they are easily diagnosed by basic echocardiography; this diagnostic test may be the key to solving puzzling presentations and should a part of most cardiac workups.<sup>1–5</sup>

Stroke is a complication in 10% to 30% of cardiac myxoma patients as found in a case series spanning 20 years in Belgium<sup>3</sup> and a 11-year series conducted at the Mayo Clinic<sup>4</sup>; no cases of cardiac myxoma in either study had concurrent myocardial infarction.<sup>3</sup> Forty cases of myxoma-related myocardial infarction were recorded in a systematic review of published data spanning 32 years.<sup>5</sup> This case report shares our experience with a rare case of cardiac myxoma with concurrent stroke and ST-elevation myocardial infarction with normal coronary angiography.

### CASE REPORT

Signed consent from the patient was obtained, and approval was granted by the Institutional Review Board of Taipei Tzuchi Hospital for this case report.

A 67-year-old unconscious woman presented to the emergency department of our hospital within 30 minutes of collapsing at an outdoor market. She was afebrile with blood pressure of 100/80 mm Hg, heart rate of 90 beats per minute, and respiratory rate of 26 breaths per minute on mask oxygen. Her underlying comorbidities included regularly treated diabetes mellitus, hyperlipidemia, and hypertension. On physical examination, the patient displayed grimace in response to painful stimuli, pupils were equal and reactive to light, heart beats were regular without obvious murmurs, breath sounds were coarse without wheezing, abdomen was soft and nontender, urine was clear with adequate output into a Foley bag, and legs were warm and nonedematous; examination was otherwise unremarkable. Electrocardiogram showed significant ST elevation in the inferior and lateral leads (Figure 1). Laboratory values were all within normal limits with the exception of elevated cardiac enzymes. Chest x-ray showed lung congestion, minimal effusion in the pericardial and pleural spaces, and a narrow mediastinum. Computed tomography of the brain showed no hemorrhage or detectable ischemia. Although awaiting cardiac catheterization, she regained consciousness and was able to follow commands and move all extremities. However, severe orthopnea with respiratory distress developed, and she was endotracheally intubated.

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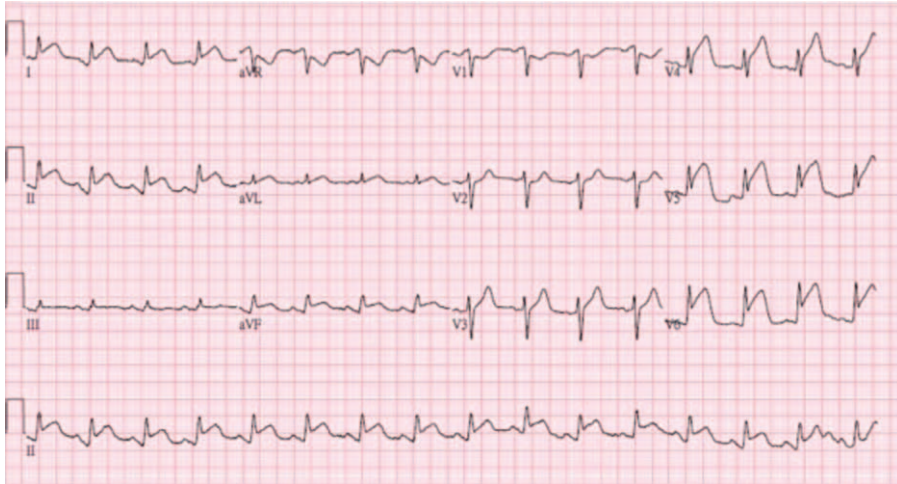


FIGURE 1. Electrocardiogram of the acute myocardial infarction.

Surprisingly, coronary angiography showed patent and lesion-free coronary arteries. We then performed echocardiography, which revealed an oscillating round mass measuring 3 × 3 cm inside the left atrium attached by a pedicle to the interatrial septum that was obstructing inflow through the mitral valve during diastole (Figure 2). Although in the intensive care unit, the patient's lung edema deteriorated rapidly, resulting in cardiogenic shock that required increased inotropic support and high-setting ventilator support. Consequently, cardiothoracic surgeons decided to perform emergent tumor resection.

The myxoma was resected en bloc with its pedicle and adjacent interatrial septum (Figure 2). Her postoperative course of approximately 1 month was relatively uneventful. Ataxia was noted during rehabilitation, and magnetic resonance imaging of

the brain revealed left cerebellar infarction. Pathology report confirmed the diagnosis of atrial myxoma. After several weeks of rehabilitation, the patient was able to resume daily activities.

## DISCUSSION

We present a unique case of cardiac atrial myxoma with unusual presentations. Cardiac atrial myxoma is uncommon, with an estimated incidence of <0.1% by autopsy series.<sup>3,5</sup> Often initially asymptomatic, symptoms arise because of obstructive, embolic, or constitutional events.<sup>2-4,6</sup> Symptomatic cardiac myxomas often mandate surgery.<sup>3,6</sup> Echocardiography could facilitate the challenging diagnosis of this disorder and expedite its timely treatment.<sup>1-3,6</sup> A 20-year surgical cohort of cardiac myxoma cases in Belgium estimated 65.6% of

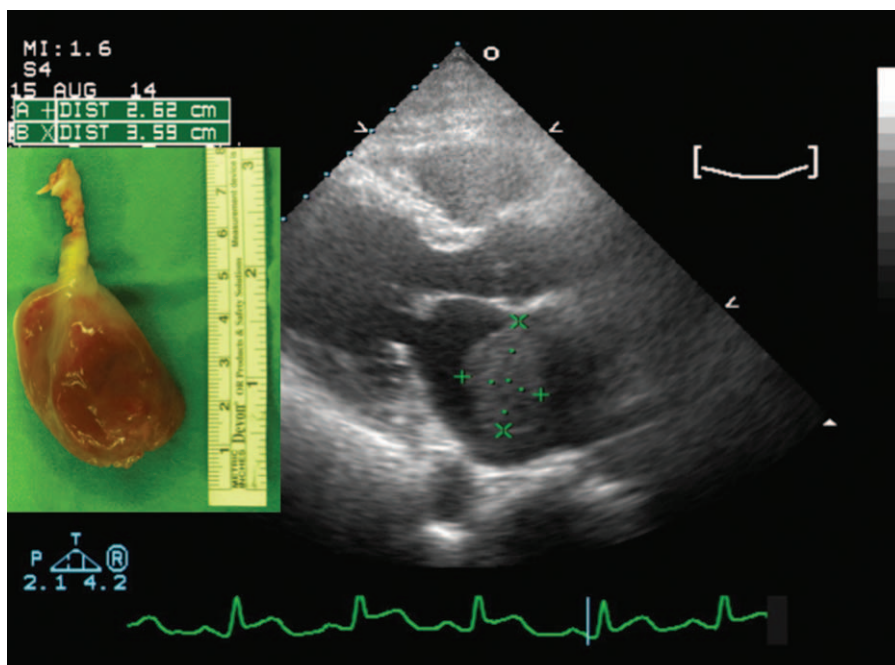


FIGURE 2. Echocardiograph of the oscillating left atrial myxoma; surgical specimen of the completely resected atrial myxoma.

presenting symptoms to be obstructive and 15.6% to be embolic.<sup>5</sup> As in our case, emergent resection may be necessary if cardiogenic shock develops because of mitral valve obstruction.<sup>3,6</sup> Echocardiography can readily reveal obstruction by a cardiac myxoma, usually of mitral valve inflow, allowing timely determination of severity and necessity for emergent surgical resection.<sup>3,6</sup>

Myxoma-related stroke is relatively more common than myxoma-related myocardial infarction for myxoma-related embolic events.<sup>3&dash;5</sup> In the aforementioned 20-year myxoma surgical series, brain ischemia was involved in 15.6% of cases, brain and peripheral artery embolic ischemia in 6.2%, and angina in 3.1%, whereas no cases involved myocardial infarction.<sup>3</sup> Myxoma-related coronary artery embolism is rare and much less common than brain embolism.<sup>2,4</sup> Estimated incidence of myocardial infarction in cardiac myxoma ranges from close to 0% to as high as 10% if coronary emboli is included.<sup>5</sup> A review of cardiac myxoma cases spanning 11 years conducted by the Mayo Clinic found that 12% of cases had image-evident stroke.<sup>4</sup> The estimated incidence of stroke in cardiac myxoma ranges from 10% to 30%.<sup>3,4</sup> Therefore, coexisting stroke and myocardial infarction, as in our case, are exceedingly unusual.

Myocardial infarction with normal immediate angiography is rare for cardiac myxoma. In a systematic review of published data from 1970 to 2002, 40 cases of myxoma-related myocardial infarction were recorded.<sup>5</sup> Only 6 of these cases underwent immediate coronary angiography, all showing positive lesions.<sup>5</sup> Patent coronary arteries were found only on latent angiography (performed more than 2 weeks after the initial event), but not on immediate angiography.<sup>5</sup> Negative latent angiography may be explained by recanalization performed days or weeks after the initial coronary events.<sup>5</sup> However, our case had normal immediate coronary angiography, which is highly unusual. Possible explanations may include rapid and spontaneous recanalization, a washout effect of embolic myxoma fragments or induced thrombi,<sup>5</sup> or compromised hemodynamics because of mitral valve obstruction.<sup>6</sup>

Echocardiography, a noninvasive and portable examination, is often critical for properly identifying the etiology of cardiac conditions such as acute heart failure.<sup>1</sup> Basic echocardiography, or focused cardiac ultrasound, is easily learned and often sufficient for detecting intracardiac masses or intrathoracic effusion.<sup>1</sup> Our case demonstrates the importance of basic

echocardiography for optimizing the management of cardiac cases, and supports the recommendation that basic echocardiography be readily available for most cardiac teams or acute care centers.<sup>1</sup>

Our atypical case of normal immediate coronary angiography in myxoma-related myocardial infarction with mitral valve obstruction and multisystem embolism (heart and brain) deserves attention because of the rarity of this combination of presentations.<sup>2–5</sup> The case stresses the value of basic echocardiography in the efficient and effective management of the patient<sup>1</sup> and the importance of including it in most cardiac workups. In addition, this experience is a reminder for clinicians to include cardiac myxoma in the differential diagnosis list and to manage it timely if found.

## CONCLUSION

Although cardiac myxoma may have unexpected presentations, it can be easily diagnosed by basic echocardiography and should not be missed. Basic echocardiography is easily learned and should be readily available for every cardiac team.<sup>1</sup> Once diagnosed, cardiac myxoma requires timely surgical en bloc resection to avoid deterioration resulting from worsening embolism or obstruction.<sup>3,6</sup>

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