

# A rare cause of an ST-elevation myocardial infarction

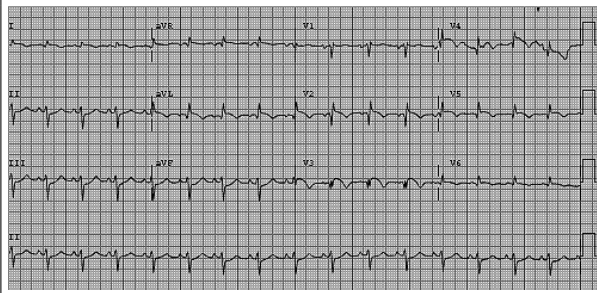
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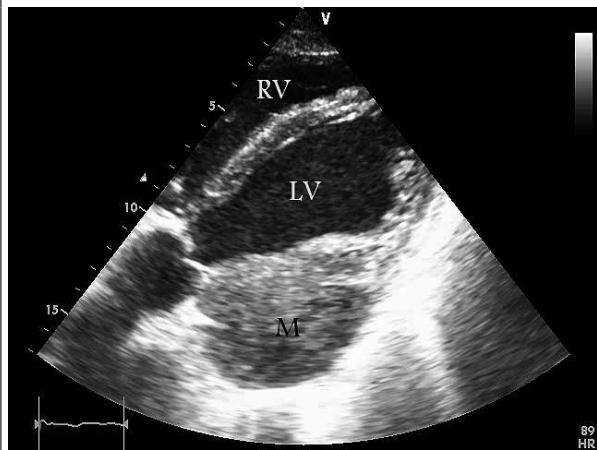
## CASE REPORT

A 49-year-old man was successfully resuscitated by terminating ventricular fibrillation with an electric shock. He was mechanically ventilated. The ECG showed that he had suffered from a semi-recent anterolateral myocardial infarction (figure 1).

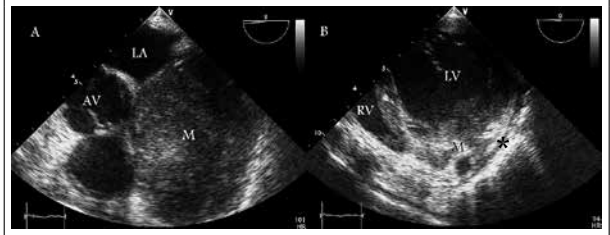
**Figure 1.** The ECG reveals a recent anterior STEMI with Q waves, ST elevations and negative T waves from V1 to V5



**Figure 2.** TTE view demonstrates a large intrapericardial mass at the free left ventricular wall. The mass extends into the left atrium. The mass cannot be well delineated from the myocardium. LV = left ventricle; RV = right ventricle; M = mass



**Figure 3.** Panel A: TEE image at 8° demonstrates the giant intrapericardial mass (M). Panel B: TEE transgastric view at 0° shows the giant mass (M) at the anterior free left ventricular wall. Note its inhomogeneous nature and a small amount of pericardial effusion (\*). These findings are suggestive of a malignant intracardiac process. LV = left ventricle; RV = right ventricle; M = mass



Laboratory results were as follows: haemoglobin 7.6 mmol/l, leucocytes  $27.4 \times 10^9/l$ , creatinine  $64 \mu\text{mol/l}$ , electrolytes within normal limits, troponin I  $0.84/\mu\text{g/l}$  and C-reactive protein 17 mg/l.

When his wife arrived at the Emergency Department a medical history was taken. There was no cardiac history. He had a history of nicotine and alcohol abuse. There was a weight loss of 7 kg over the last six months. He was fatigued but had never consulted his general physician. He was not taking any medication.

However, this information from the patient's wife could not be well integrated into the clinical history of a recent myocardial infarction. The echocardiography study revealed a giant mass at the left side of the heart (figures 2 and 3). The free left ventricular wall could not be well delineated from the intracardiac mass. His left ventricular function was severely diminished. There was a small pericardial effusion. What would be the cause of the myocardial infarction?

## WHAT IS YOUR DIAGNOSIS ?

See page 155 for the answer to this photo quiz.

## DIAGNOSIS

Given the history of loss of weight, fatigue and an inhomogeneous intracardiac mass, suspicion of a malignant tumour, with dismal prognosis, arose. An axial computed tomography scan of the chest, abdomen and brain confirmed the intracardiac mass and was unable to detect other tumorous masses. Nonetheless, it was thought to be good clinical practice to obtain histology of the lesion to establish a diagnosis in order to determine the treatment options. He was subsequently transferred to a university hospital.

Coronary angiography demonstrated severe obstruction of the entire left anterior descending artery due to external compression. A needle biopsy was performed. The histopathology diagnosed a malignant poorly differentiated tumour. Unfortunately, the aspirated specimen contained too much necrotic tissue to allow an adequate immunohistochemical typing and identification. Once the diagnosis of a giant malignant intracardiac tumour was made, the patient was considered incurable as complete surgical resection of the mass was impossible. The needle biopsy was not repeated because there were no further therapeutic consequences. He died at day 10 due to heart failure and untreatable ventricular arrhythmias. The family refused an autopsy.

The differential diagnosis of an intracardiac mass in this case was challenging and included benign and malignant primary cardiac tumours, metastatic tumours, intracavitary thrombus, chronic infective or systemic inflammatory processes and a pseudoaneurysm with cloth formation in its cavity. This last diagnosis was rejected because echocardiography was unable to detect discontinuity of the free left atrial wall.

In differentiating the nature of an intracardiac mass, echocardiographic features may be helpful. The inhomogeneous consistency was in favour of a malignant

process and there was a small pericardial effusion to support this diagnosis. The location of the mass at the free lateral ventricular wall was not typical for a thrombus.

The reported incidence of primary cardiac tumours among the general population varies between 0.001% and 0.03% in most autopsy series and 25% of these tumours are malignant. Malignant tumours metastasised to the heart outnumber primary malignant cardiac tumours by at least a 30-to-1 ratio.<sup>1,2</sup>

To the best of our knowledge, only three previous reports have described a myocardial infarction caused by a cardiac sarcoma – the most common primary malignant cardiac tumour – as the first clinical presentation. A case of a fatal cardiac infarction caused by an intimal sarcoma originating from a coronary artery has been reported.<sup>3</sup> Myocardial infarction due to an embolic event as consequence of the presence of an atrial sarcoma has been described twice.<sup>4,5</sup>

## REFERENCES

1. Lam KY, Dickens P, Chan AC. Tumors of the heart. A 20-year experience with a review of 12,485 consecutive autopsies. *Arch Pathol Lab Med.* 1993;117:1027-31.
2. Reynen K. Frequency of primary tumors of the heart. *Am J Cardiol.* 1996;77:107.
3. Jiang WX, Gao CR, Sun JH, Bunai Y. Sudden cardiac death caused by a primary intimal sarcoma of the left coronary artery. *Int J Legal Med.* 2009;123:503-6.
4. Orban M, Tousek P, Becker I, Augustin N, Firschke C. Cardiac malignant tumor as a rare cause of acute myocardial infarction. *Int J Cardiovasc Imaging.* 2004;20:47-51.
5. Vallakati A, Shetty V, Shani J. Acute myocardial infarction as a complication of cardiac sarcoma: a rare presentation. *J Invasive Cardiol.* 2012;24:E209-11.