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Clinical case report based study

Unusual presentation of a culture-positive right atrial mass

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ABSTRACT

We report a patient with a mass in the right atrium which led to pulmonary embolism. Postoperatively the mass was identified as a tuberculoma and it was culture-positive for *Mycobacterium tuberculosis*. Patient responded to modified antitubercular treatment and discharged from hospital in satisfactory condition.

1. Introduction

Myocardial tuberculosis (TB) is uncommon, with only a few reported cases in the world literature. We present a unique case of a right atrial mass with pedunculated cystic extension floating in the atrial cavity which later on embolized into the pulmonary circulation. Patient underwent pericardiectomy and excision of the tumor mass. Histopathology indicated chronic granulomatous lesion and culture was positive for *Mycobacterium tuberculosis*. Patient was successfully treated for tuberculosis.

2. Case report

A 19-year-old female presented with a history of fever, weakness and shortness of breath for one week. She had a history of weight loss of 1–2 kg over a period of two months. Echocardiography revealed a large solid mass (3 × 2 cm) attached to the lateral wall of the right atrium near the superior vena cava right atrial junction. An additional pedunculated cystic mass was floating in the right atrium attached to the above-mentioned mass [Fig. 1]. She did not have a past history of any surgical or medical (hypertension, diabetes, asthma, chronic obstructive pulmonary disease, tuberculosis or allergy) illness.

On examination the patient was febrile, pulse rate was 72/min, the blood pressure was 110/70 mmHg and respiratory rate was 22/min. Cardiovascular examination revealed mild tricuspid and mitral regurgitation. Rest of the systemic examination was within normal limits.

Laboratory investigations revealed normocytic normochromic anemia with a hemoglobin level of 9.8 g/dl. Total white blood cell counts were normal but differential leucocytic count revealed monocytosis (11%). The liver function tests were slightly deranged with a gamma GT of 142 U/L and an alkaline phosphatase of 291 U/L.

Computed tomography (CT) thorax and abdomen (contrast) showed a right atrial mass and hepatosplenomegaly of uncertain etiology. There was diffuse ground-glass attenuation at both lung bases indicating an infection or pulmonary edema. Carotid and peripheral Doppler were normal. A differential diagnosis of myxoma, thrombus and a hydatid cyst was made based on the above findings and echocardiography.

On the second day of admission her fever increased to 104 °F. She had palpitation and progressive orthopnea. On examination she had tachycardia, tachypnea and decreased oxygen saturation. A provisional diagnosis of pulmonary embolism from the right atrial mass was made. Trans-thoracic echocardiography could not identify the mobile right atrial mass. CT pulmonary angiography showed segmental thromboembolism to the right lower lobe

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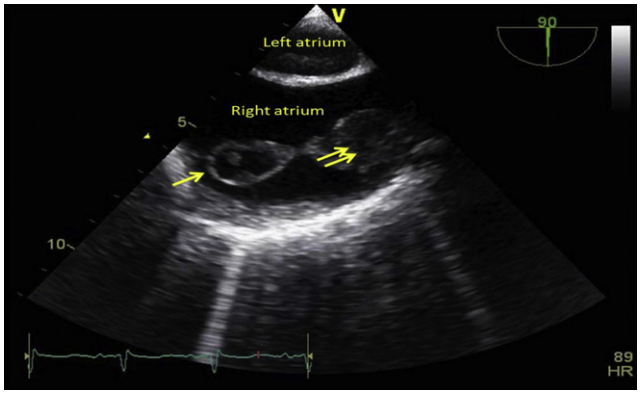

Fig. 1. Mid-esophageal bicaval view showing the right atrial mass. The mass had a pedunculated, oscillating component (single arrow) attached to a large, sessile component (double arrows).

anterior segment with pulmonary edema. The patient was started on bipap support, heparin infusion and antibiotics. There was symptomatic improvement and the patient was posted for surgery on the fifth day of admission. She underwent excision of the right atrial tumor along with pericardiectomy. The tumor mass and pericardial tissues were sent for histopathological examination and microbiological culture.

The patient again developed fever on the eighth postoperative day with difficulty in breathing. X-ray revealed pleural effusion with collapse. Intercostal thoracostomy was done and pleural fluid sent for culture. Liver function tests were highly altered with serum glutamic oxaloacetic transaminase of 1838 U/L, serum glutamic pyruvic transaminase of 800 U/L, γ-glutamyl transferase of 136 U/L, alkaline phosphatase of 358 U/L and active partial thromboplastin time was raised.

Aerobic culture of blood, urine, endotracheal secretion, pleural fluid and atrial tissue did not grow any microorganism but mycobacterial culture of the atrial mass grew *Mycobacterium tuberculosis complex* (using BacT/ALERT 3D system). Direct microscopic examination of the tissue was also positive for acid-fast bacilli [Fig. 2]. Hain's Line probe assay confirmed the isolate as *M. tuberculosis* with sensitivity to isoniazid, rifampicin, fluoroquinolones, aminoglycosides and etambutol [Fig. 3]. Histopathological examination of the

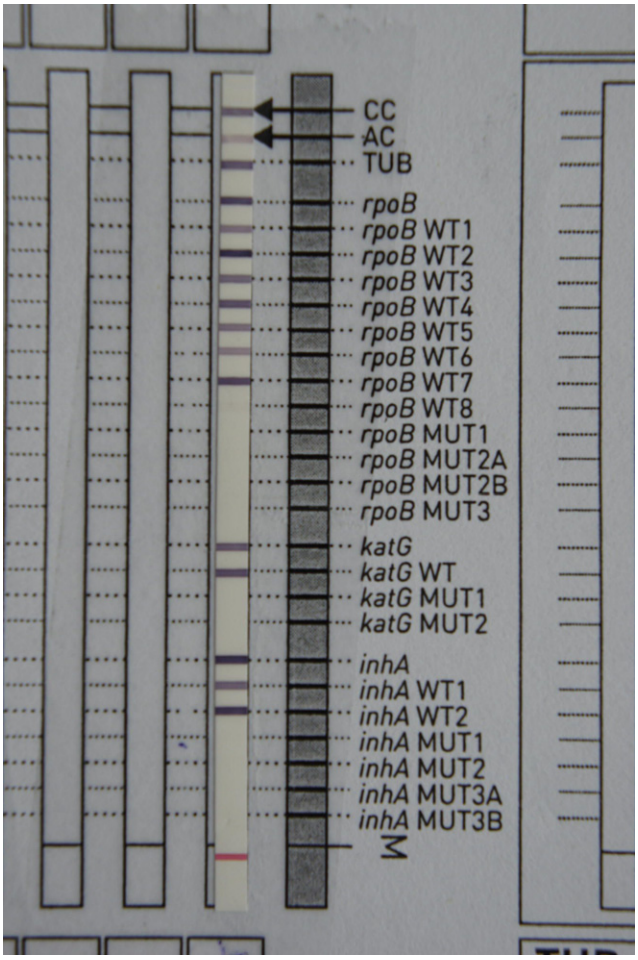

Fig. 3. Line probe assay showing *Mycobacterium tuberculosis* sensitive to rifampicin and isoniazid.

right atrial mass revealed a granulomatous lesion consistent with tuberculoma [Figs. 4 and 5].

The patient was started on modified antitubercular therapy with streptomycin, etambutol and levofloxacin due to deranged liver function tests. She was finally discharged on the 21st postoperative day.

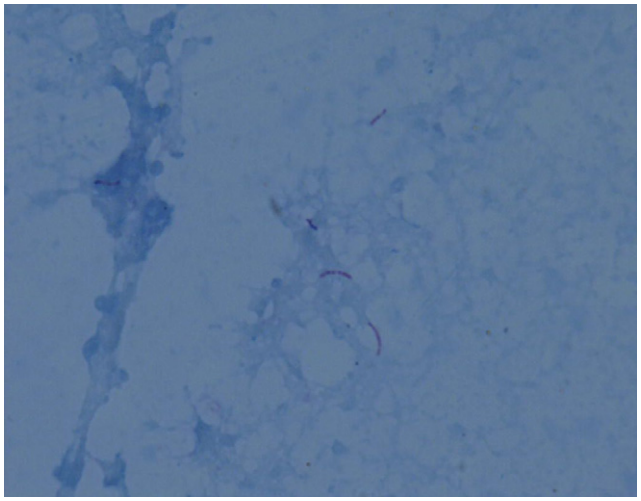

Fig. 2. Direct microscopic examination of tissue showing acid-fast bacilli on Ziehl–Neelsen staining.

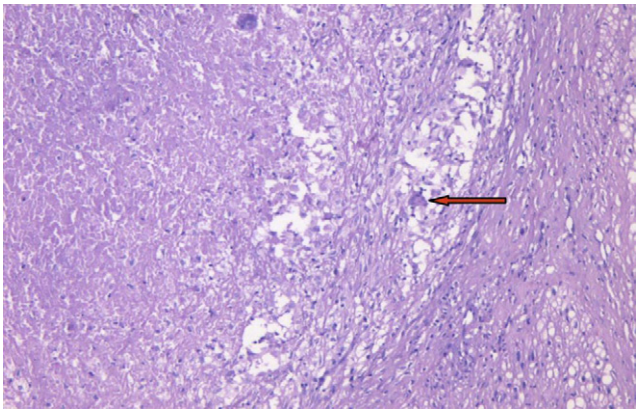

Fig. 4. HE staining of the mass showing epithelioid cells and a few Langerhan's giant cells (arrow).

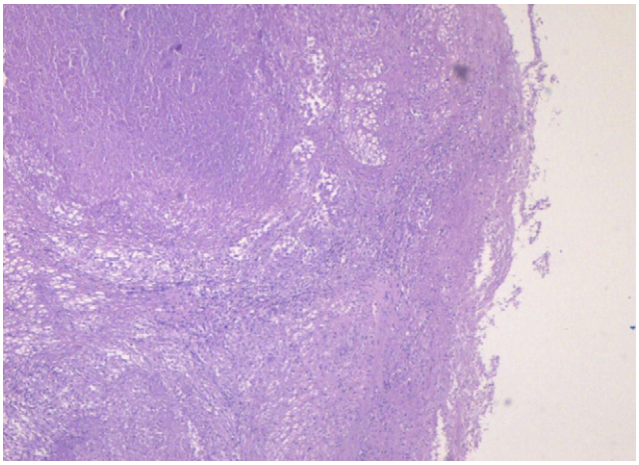

Fig. 5. HE staining of the mass showing a lesion with multiple coalescing granulomas with central areas of necrosis.

3. Discussion

Extrapulmonary tuberculosis accounts for 15–20% of all mycobacterial infections.[1] The commonest sites are the lymph nodes, abdomen and central nervous system. Tuberculosis is generally thought to spare the heart, thyroid, pancreas and skeletal muscle.[2]

Tuberculosis involving the heart is rare accounting for only 0.5% of extrapulmonary tuberculosis.[3] Laennec was the first to describe cardiac tuberculosis in 1826, assigning the heart as the 13th organ affected.[4] Cardiac tuberculoma is rare and usually involves the pericardium and cardiovascular manifestations are largely restricted to chronic pericardial inflammation. Patients may present with arrhythmias, superior vena cava obstruction, and right ventricular outflow tract obstruction. The complications leading to death include arrhythmias, impaired myocardial contractility, cardiac rupture, coronary occlusion and pulmonary blood flow obstruction leading to fatal hemorrhage.[2]

Our patient presented with a short history of fever and breathlessness. Similar modes of presentation have also been reported in many recent reports.[1,5,6] Myocardial tuberculosis is usually associated with other foci of tuberculosis. It usually spreads from mediastinal lymph nodes, tuberculous pericarditis or retrograde lymphatic and hematogenous spread.[2] Our case was unique because she was immunocompetent and had primary myocardial tuberculosis without any history of pulmonary or extrapulmonary involvement. Her echocardiographic findings were unusual as they showed a cystic mass attached to the right atrial mass which gave an impression of a hydatid cyst.

Pathological varieties of myocardial tuberculosis are nodular, miliary tubercles and diffuse infiltrative. They are usually sharply demarcated from the surrounding parenchyma and may be single or multiple.[1]

In the past, diagnosis of myocardial tuberculosis was mostly made postmortem but with the development of newer diagnostic modalities, patients are diagnosed and treated early with good clinical outcome. Antitubercular therapy has been shown to cause complete clinical and radiological resolution.[1,7] Surgical interventions are indicated in severe hemodynamic compromise, refractory arrhythmias and threatening thromboembolism.[1,8]

In conclusion, diagnosis of myocardial tuberculosis can be intangible and requires a high degree of clinical suspicion. Cardiac tuberculoma should always be included in the differential diagnosis of myocardial mass lesion even in patients with nonspecific clinical symptoms.

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Conflict of interest

All authors have none to declare.

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