



A Rare Case of Sternal Koch's

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Abstract

Tuberculosis is one of the oldest diseases known to affect humans and a major cause of death worldwide. Even though tuberculosis mainly affects the lungs, it has various extrapulmonary manifestations, one of them being skeletal, affecting bones (most commonly vertebrae) and joints (most commonly hip and knee joints). Isolated sternal involvement in tuberculosis is uncommon. Very few case reports are available in literature even from the countries where tuberculosis is endemic.

Tuberculosis of bones and joints accounts for 1-3% of patients with the disease.

Tuberculosis of the sternum makes less than 1% of cases of tubercular osteomyelitis.

We present to you a case of a young girl with painful chest swelling, in whom extensive work up did not reveal any other foci of infection. Later investigation of Fine needle aspiration biopsy of sternum revealed Epithelioid granulomas, acid-fast bacilli and a positive culture for M.tuberculosis.

Introduction

Tuberculosis still remains a formidable challenge for health care providers in developing countries.

Skeletal tuberculosis is the result of haematogenous spread of mycobacteria following primary infection. Any bone in the body can be a site for infection.

A painless cold abscess may be the only clinical feature for a long time and hence might go undetected.

Sternal tuberculosis rare and often found to be associated with diabetes, disseminated tuberculosis and post coronary bypass surgery. A

painless chest swelling might be the presenting feature. Other constitutional symptoms are relatively uncommon.

The tuberculin skin test is positive in 95% cases, pulmonary involvement occurs in about 50%.

Computed tomography (CT), magnetic resonance imaging (MRI), and CT-guided fine needle aspiration biopsy are less invasive and more sophisticated investigations to diagnose extra pulmonary-skeletal Tuberculosis.

Around 28 cases of tubercular osteomyelitis have been reported in world literature, in the post anti-tubercular treatment time.

We report a case of tubercular osteomyelitis of manubrium sternii, which presented with a painless chest swelling.

Case Report

A 15-year-old girl presented with a 2-month history of pain and swelling of the anterior chest wall and manubrium sterni. She also had a history of weight loss, loss of appetite, night sweats, malaise, and fatigue. There was no history of trauma or any discharge from the swelling. She did not report any history of fever or cough. She denied a history of any major illness, injuries, or tuberculosis in the past.

Physical examination revealed a 10 x 15 cm, non-tender, firm and non-erythematous swelling that was palpable over the manubrium sterni. Systemic examination did not reveal any other abnormalities.

Contrast-enhanced computed tomography (CT) of the chest demonstrated a soft tissue mass in the anterior mediastinum, which had eroded the cortex of the manubrium, extending subcutaneously over the anterior aspect of the manubrium sterni

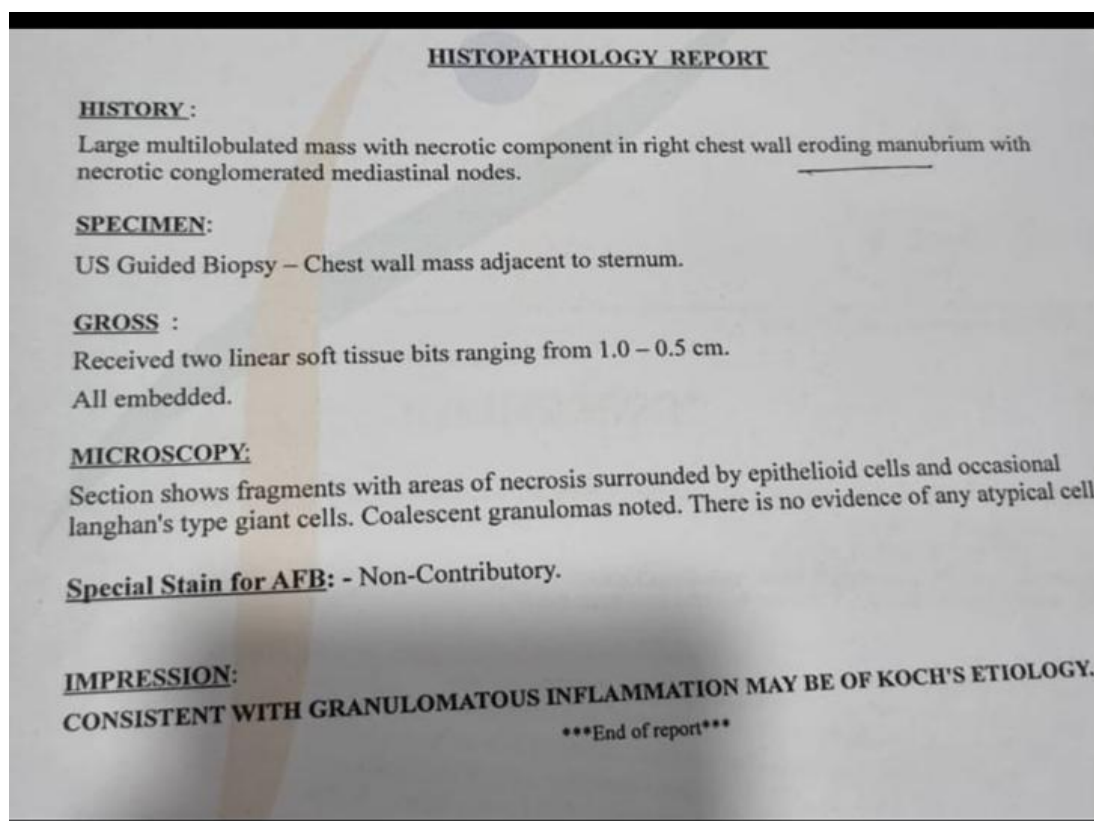
The lungs and pleura were normal and there was no hilar lymphadenopathy. Ultrasonography of the abdomen was reported normal.

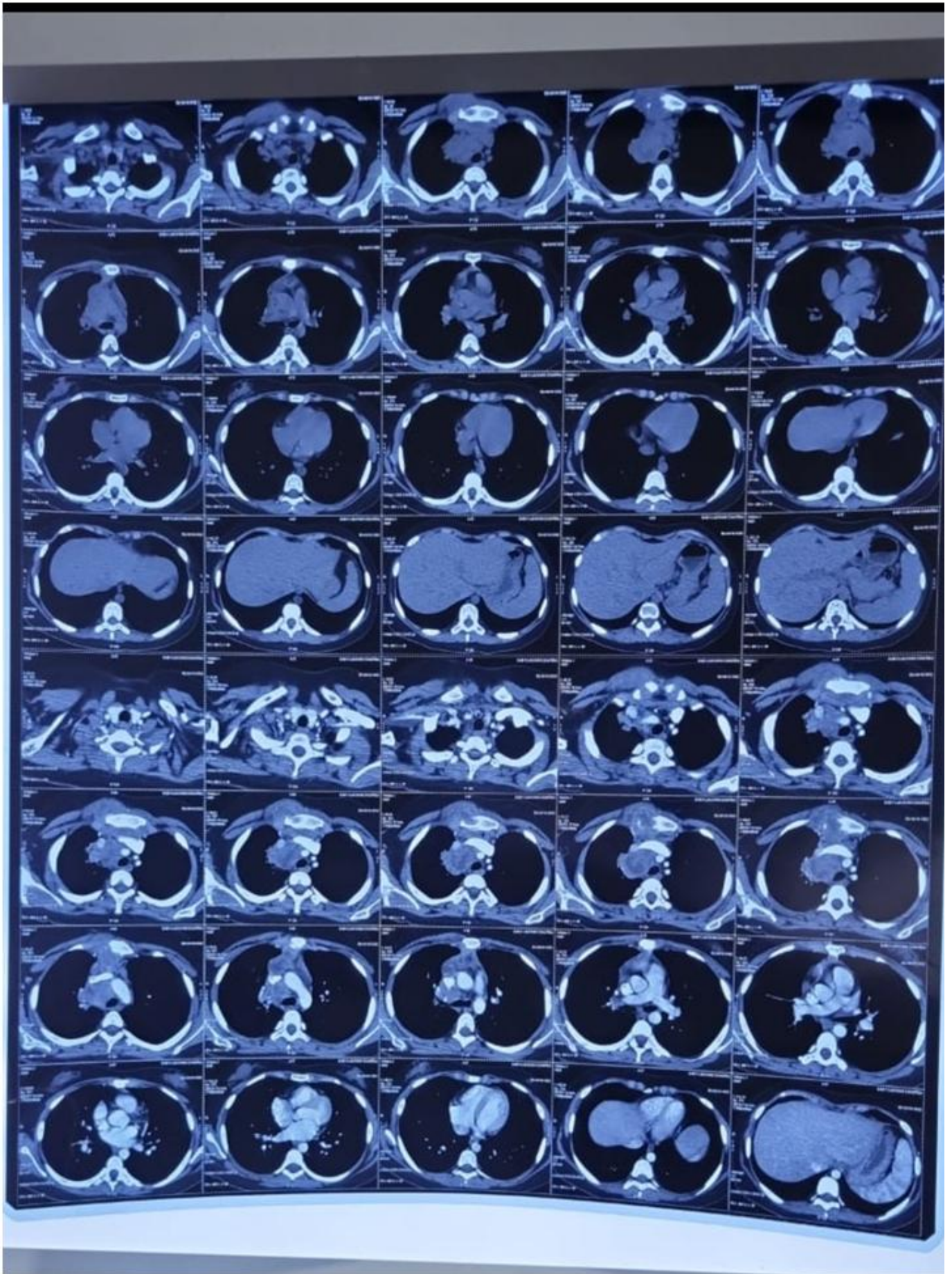
Fine needle aspiration cytology (FNAC) from the swelling revealed numerous epithelioid cell granulomas with mononuclear infiltrate and scattered giant cells. Acid-fast staining of the aspirate showed plenty of tuberculous bacilli.

HIV serology was negative.

The patient was started on anti-tubercular treatment (ATT) with isoniazid, rifampin, ethambutol, and pyrazinamide after sending the aspirate from the sternal swelling for mycobacterial culture.

Growth of *Mycobacterium tuberculosis* was noted in cultures by the fifth week. The isolates were susceptible to all the first-line anti-tuberculous drugs. After 2 months of treatment, the sternal swelling had reduced considerably in size, and her constitutional symptoms had disappeared. She was then switched over to the continuation phase of ATT with two drugs (isoniazid and rifampin) for the remaining 4 months, achieving a complete clinical recovery.





Discussion

Osteomyelitis of the sternum usually occurs as a complication of sternotomy, chest trauma, mediastinitis, or subclavian intravenous line insertion. The most common infecting organism in both primary and secondary sternal osteomyelitis is *Staphylococcus aureus*.

Tuberculosis of the sternum is rather uncommon, and when it occurs, usually results either as an extension from hilar lymph nodes³ or as part of hematogenous or lymphatic dissemination of the disease from other sites. Sternal tuberculosis has also been reported after BCG vaccination in the pediatric age group.^{7, 8, 9} Osteomyelitis secondary to the BCG vaccination is usually seen in the epiphysis of the long bones. Primary tubercular osteomyelitis of the sternum is a very rare manifestation of tuberculosis.¹

Most cases of tuberculous osteomyelitis have been reported in young males recently immigrated from tuberculous endemic areas.¹⁰ Clinical manifestations of sternal tuberculosis and pyogenic sternal infections are different. Sternal tuberculosis presents with an insidious swelling and pain over the sternum and constitutional symptoms are usually fewer,¹⁰ whereas patients with pyogenic sternal infections will have a fulminant clinical course with severe systemic upset.

FNAC or trephine biopsy with histological and microbiological examination of sternal tissue for caseating granulomas and acid-fast bacilli are the methods of choice for a definite diagnosis. CT scans can be used to determine anatomical localization, osseous destruction, and soft tissue abnormalities.¹¹ Magnetic resonance imaging (MRI) for detecting early marrow and soft tissue involvement in tuberculous sternal osteomyelitis has also been described.¹¹ Complications of tuberculous sternal osteomyelitis include secondary infection, fistula formation, spontaneous fractures of the sternum, erosion of the large blood vessels, compression of the trachea, and rupture of tuberculous abscess

into the mediastinum, pleural cavity, or subcutaneous tissues.

Aspiration and anti-tuberculous chemotherapy are the treatments of choice in sternal tuberculosis. In a recent series, 12 out of 14 patients with tuberculosis of the sternum who were initially treated with multi-drug anti-tubercular therapy, did not require any surgical interventions.¹² A close follow-up is essential to detect complications that may necessitate surgery in these patients. Surgical treatment is advised when there is need for removal of a large sequestrum, when the diagnosis is doubtful, and in nonresponding cases.

Early drainage and complete debridement of necrotic material from the lesions along with multi-drug antitubercular therapy hastens recovery. Rotational tissue flaps can be employed to cover the chest wall defect due to the extensive loss of soft tissue and bone integrity after debridement.¹³ Vacuum-assisted closure therapy has also been successfully employed in patients with tuberculous osteomyelitis of the sternum.¹⁴

Conflict of Interest: No conflict of interest to declare.

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