CASE REPORT

Sternal tuberculosis in an immunocompetent adult

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SUMMARY

Skeletal tuberculosis accounts for 1–3% of patients with mycobacterial infection. Any bone can be a site for tuberculosis, but sternum involvement is quite rare. We report the case of a 37-year-old woman admitted because of chest pain and increased swelling over the anterior chest. She was immunocompetent and had no systemic features. She was diagnosed with tuberculosis of the sternum without active pulmonary disease. Conservative management with oral multidrug antituberculous therapy completely cured the patient.

BACKGROUND

Sternal infection occurs more frequently as a complication of median sternotomy, chest trauma or mediastinitis.¹ Primary sternal osteomyelitis is a rare entity, characterised by haematogenous spread of a causative organism. Predisposing factors include antecedent focus of infection, diabetes mellitus, immunosuppressive states and poor nutrition. Identification of the aetiological organism by culture studies is a key to the optimal treatment. Most sternal infections are caused by staphylococci, followed by Gram-negative bacteria.² Mycobacterial sternal infection is quite rare.³ This case is being reported to make clinicians aware of this rare cause of sternal infection.

CASE PRESENTATION

A 37-year-old woman was admitted to the medical department because of chest pain and increased swelling over the anterior chest, with no fever, dyspnoea or night sweats. She had weight loss and loss of appetite. There was no history of chest surgery or trauma. The mass had been steadily enlarging for 2 months before presentation and had become increasingly tender and painful. The pain increased with movement and deep inspiration. Medical history was negative for diabetes mellitus, alcoholism, steroid use, renal failure and systemic diseases. On physical examination, the patient was afebrile, vital signs were stable and she was in no apparent distress. A tender 8.0×8.0 cm laterosternal firm mass was palpable. No erythema was evident. No evidence of external trauma or any other focus of infection was noted. The remainder of the physical examination was unremarkable.

INVESTIGATIONS

Initial blood investigations showed a normal white cell count. The erythrocyte sedimentation rate was elevated at 150 mm/h. C reactive protein was negative. Anteroposterior radiograph of the chest was normal; however, the lateral radiograph of the sternum revealed a soft tissue swelling overlying the sternum. Contrast-enhanced CT of the chest

revealed a lysis of lateral side of the sternum and the third costal arches with a peripheral-enhancing fluid collection extending into the left laterosternal region (figure 1). This abscess was extending the pectoral muscle and is going even retrosternally. Multiple mediastinal lymph nodes were suggestive of associated tuberculous lymphadenitis. The lungs and heart were radiographically normal. Needle aspiration of the swelling revealed frank pus. Aspiration Gram's stain and acid-fast bacillus stain were negative. After 3 weeks, *Mycobacterium tuberculosis* grew in cultures of aspiration fluid.

TREATMENT

Four-drug antituberculosis treatment (ie, isoniazide, pyrazinamide, ethambutol and rifampicin) was started.

OUTCOME AND FOLLOW-UP

The patient steadily improved and the sternal swelling had reduced considerably in size. Our patient received 9 months of antituberculous treatment and showed no evidence of relapse.

DISCUSSION

Tuberculosis remains one of the leading killer diseases in countries where it is endemic. Bone and joint involvement accounts for 1–3% of tuberculosis cases.⁴ Sternal osteomyelitis caused by *M tuberculosis* is a rare entity, accounting for less than 1% of all cases of osteoarticular tuberculosis.^{4–5} While there are examples of direct extension from contiguous mediastinal lymph nodes, tuberculous sternal osteomyelitis is usually caused by reactivation of latent foci formed during haematogenous or lymphatic dissemination of primary tuberculosis from other sites. Bone lesions begin

Figure 1 CT of thorax shows collection in sternal region with adjacent sternal erosion. Note multiple mediastinal lymph nodes.

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with the formation of bone marrow tubercles. Caseification and liquefaction create an abscessed cavity.^{6 7} The plausible pathogenesis of sternal tuberculosis in our patient is the dissemination from mediastinal lymph nodes tuberculosis.

The presentation of sternal tuberculosis is insidious, delaying diagnosis and leading to a protracted clinical course. Unlike pyogenic sternal infections characterised by a more rapid and fulminant course, tuberculous sternal osteomyelitis usually presents as swelling and pain over the sternum in middle-aged adults. A painless cold abscess may be the only presenting clinical feature for a prolonged period. Constitutional symptoms are relatively uncommon.⁸ 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.⁹

Definitive diagnosis for tuberculous sternal infection is difficult because of the rarity of the condition and lack of overt signs and symptoms of tuberculosis. Chest radiography is usually insufficient, but can reveal increased soft tissue density anterior to the body of the sternum. Further imaging in the form of CT or MRI is usually required.¹⁰ CT demonstrates osteolytic lesions; periosteal reaction and enhancing hypodense soft tissue masses surrounding the sternum. It evaluates also mediastinal and pulmonary involvement. MRI is a good option for the evaluation of soft tissues and bone lesions, revealing early alterations in the bone marrow, especially at early stages with normal x-ray findings.¹¹ But, this clinicoradiological picture needs to be differentiated from chronic pyogenic osteomyelitis, tumours, sarcoidosis, actinomycosis and fungal infections.¹² Thus, diagnosis relies largely on the results of histological and microbiological examinations of infected tissues.⁵ This can be accomplished easily by needle aspiration of the swelling with little discomfort to the patient and much less invasive procedures than open biopsy.¹² Some patients may require needle biopsy or open biopsy of the mass. In our patient's case, the diagnosis of *M tuberculosis* was made with a positive culture for tubercle bacilli from the aspirate taken from the abscess. There is no consensus on the treatment of chest wall tuberculosis. The optimal approach in uncomplicated cases may be a combination of aspiration for diagnostic purposes and four antituberculosis drugs for 6–9 months.^{9 12} Surgical

drainage of abscesses should be undertaken only if it cannot be controlled by aspiration and chemotherapy alone.^{5 7}

Learning point

Tuberculosis can present in any form or organ of the human body and continues to baffle clinicians with its varied presentations. Therefore, it is essential for all physicians to keep tuberculosis in the differential diagnosis of patients with sternal osteomyelitis, thus enabling its early diagnosis and better treatment.

Competing interests None.

Patient consent Obtained.

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