Mycobacterial Diseases
ISSN: 2161-1068

Gupta et al., Mycobact Dis 2015, 5:4
DOI: 10.4172/2161-1068.1000188

Case Report Open Access

Primary Tubercular Osteomyelitis of Manubrio Sternal Joint: A Case Report

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Received date: June 15, 2015; **Accepted date:** July 17, 2015; **Published date:** July 23, 2015

Abstract

Primary tubercular osteomyelitis of sternum is a rare clinical entity and involvement of manubrio-sternal joint is even rarer, with only few cases reported in the literature. Tuberculous sternal involvement is seen in approximately 1% of all skeletal TB cases. We report an unusual case of primary manubrio-sternal joint tuberculosis presenting as vague anterior chest wall swelling and pain. ESR and CRP were elevated, Montoux was positive and PCR for tuberculosis was positive. Computed tomography of chest done after giving intravenous contrast showed erosion at manubrio-sternal joint with minimal soft tissue component. The patient is put on anti-tubercular drugs and is responding well with regular follow-up.

Keywords: Sternal tuberculosis; Manubrio-sternal joint tuberculosis

Introduction

In India, pulmonary tuberculosis accounts for 85 percent of cases and extrapulmonary tuberculosis accounts for 15 percent of cases with bone and joint involvement seen in 1 to 3 percent cases [1]. 'Primary tubercular osteomyelitis' of sternum is a rare form of extrapulmonary tuberculosis in which tuberculosis is primarily affecting the sternum. It is very rare form of presentation even in the developing countries, where tuberculosis is endemic, with only few cases reported in the literature. Tuberculous sternal involvement is seen in approximately 1% of all skeletal TB cases and approximately 0.3% of all types of osteomyelitis [2]. We report an unusual case of primary manubrio-sternal joint tuberculosis presenting as vague anterior chest wall swelling and pain.

Case Report

A 45-year-old man presented with 9 months' history of pain over the center of the anterior aspect of upper chest wall. Pain was insidious in onset. It was localized and used to subside by taking analgesics. It was aggravated by physical activity and coughing. A history of loss of appetite and weight was present. He also had a history of malaise, fatigue, and evening rise of temperature. There was no history of cough or shortness of breath. Physical examination showed that the patient was moderately built, nourished, and afebrile at the time of examination, pulse rate of 84/min, blood pressure 110/70 mm of Hg and respiratory rate of 22/min. On his chest examination, no swelling was present but middle of upper chest was tender on deep palpation, the local temperature was not raised. No axillary or cervical lymphadenopathy was found. There was no tenderness over the spine. Abdominal examination showed no organomegaly or any ascitis. Laboratory investigations showed Hb 10 g% and total leukocyte count (TLC) 8100/mm^3 (Neutrophils 75%, lymphocytes 20%, monocytes 3% and eosinophils 2%). Erythrocyte sedimentation rate (ESR) was 60 mm in the first hour. C-reactive protein (CRP) was 120. A Monteux tuberculin skin test (purified protein derivative 5 tuberculin unit) was positive (20-22 mm) after 48 hours of test dose. He was investigated for any immunodeficiency and found to be negative. Polymerase chain reaction (PCR) for TB was positive. Chest radiograph was normal. Computed tomography (CT) scan of the chest wall revealed an erosive lesion involving the manubrio-sternal joint and body of sternum with minimal soft tissue (Figure 1). The rest of the lung parenchyma was normal (Figure 2). Based on the radiological findings differential diagnosis of tuberculosis was suspected and the patient was advised to go for fine needle aspiration cytology (FNAC). Patient refused to go for any invasive test and rather opted to go for therapeutic trial of anti tuberculous treatment (ATT).

Figure 1: Saggital CT image (bone window) showing erosion at manubrio-sternal joint with minimal soft tissue.

The patient was started on standard anti tuberculous treatment (3HRZE/4HRE/6HR). The dosage was rifampicin 600 mg/day, pyrazinamide 1500 mg/day, ethambutol 800 mg/day and isoniazid 300 mg/day. His fever subsided after 2 months of treatment and his appetite also improved. The patient responded very well to ATT. At follow-up three and six months later, the patient had significant improvement in his sternal pain. He noted significant improvement in constitutional symptoms as well and his blood parameters (CBC, ESR and CRP) returned to normal. Patient was regularly investigated for any side effects of ATT. Patient recovered well at the end of the ATT course without any complication.

Discussion

Tuberculosis is known to mankind since time immemorial. India shoulders the burden of approximately 30 percent of world's patient load of tuberculosis [3]. The incidence of tuberculosis is rising both in developed as well as in developing countries in recent times. This upward trend in number of patients with tuberculosis could be attributed to increase in number of HIV positive patients, immunosuppressant patients, drug resistant strains of mycobacterium, immigration from endemic regions [4,5].

Tuberculosis of sternum is a rare clinical entity with only few cases reported in literature [6-9]. Tuli and Sinha reported 14 (1.5%) cases of sternal tuberculosis out of total 980 cases of osteoarticular tuberculosis [10]. In a study by Davies et al out of 4000 cases only two cases with sternal tuberculosis were reported [11]. Sternal tuberculosis maybe caused as a late complication of pulmonary tuberculosis [12], reactivation of latent foci formed during hematogenous or lymphatic dissemination of primary tuberculosis [13] or as direct extension from mediastinal lymph nodes [14].

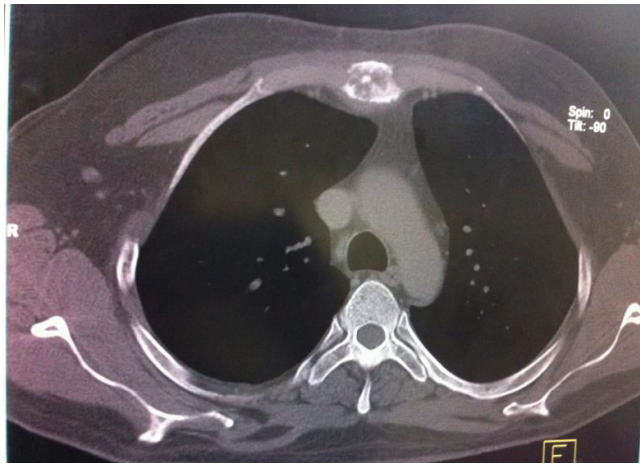

Figure 2: Axial CT image showing erosion at manubrio-sternal joint. The lung parenchyma is clear bilaterally.

Sternal tuberculosis usually affects the margins of sternum, however, in our case there was involvement of manubrio-sternal joint. Sternal tuberculosis has a more insidious onset with sternal pain, swelling, abscess or parasternal sinus being the usual presentations. Constitutional symptoms like evening rise of temperature, night sweats or loss of appetite are uncommon. The clinical features are subtle and difficult to detect in early stages. According to Tuli and Sinha [10], radiological signs occur much later than the presenting clinical features, and abscesses or sinuses are present much before the focus is detected radiologically.

Tuberculin test is positive in 70% cases. Zeil Neelsen staining for acid fast bacilli may be done. The DNA –PCR is an accurate test for exclusion of non tuberculous mycobacteria. The DNA-PCR test was positive in our case. The gold standard test for accurate diagnosis of tuberculosis is culture of Mycobacterium tuberculosis using needle aspiration or biopsy. Radiologically, computed tomography (CT) scan is helpful in anatomical localization, bone and joint involvement and soft tissue abnormalities. Khalil et al suggested the utility of CT in the diagnosis of chest wall TB and described ring enhancing hypodense soft tissue lesion [15]. Magnetic Resonance Imaging (MRI) holds good in places for detection of early marrow and soft tissue involvement due to high contrast resolution of MRI. MRI is also helpful in differentiating between an abscess and granulation tissue. Atasoy et al. also reviewed the utility of MRI in cases of tuberculous osteomyelitis.

Complications of sternal TB are superimposed pyogenic infection, sinus/fistula formation, erosion and sternal fracture, compression and erosion of large thoracic blood vessels, trachea, and migration of tuberculous abscess into the mediastinum, pleural cavity, or subcutaneous tissues and rarely it can spread to bone marrow [16]. There are no guidelines or common consensus on the optimal therapy for sternal tuberculosis. Some experts favour surgical debridement to prevent recurrence or the formation of a draining sinus [7,17,18]. Some advocate treatment using anti-tubercular drugs. Current recommendations for the treatment of sternal tuberculosis include a two month initial phase of isoniazid, rifampicin, ethambutol, pyrazinamide followed by a six to twelve months regimen of isoniazid and rifampicin. The surgical options include thorough debridement followed by pectoralis major, rectus abdominis, latissimus dorsi or omental flap closure, with or without chest wall reconstruction or vacuum-assisted closure [19,20]. Pyogenic abscess of the chest wall, bone destruction due to lymphomas or metastases of breast or lung cancer are the differential diagnoses for TB of the sternum [21].

Our patient refused to go for FNAC or biopsy and based on the clinical suspicion ATT was started which he responded very well. However, close follow up is needed in these patients to determine whether surgical treatment will ultimately be needed. A proper history, physical examination and high index of suspicion are the keys to forming an appropriate differential diagnosis. Despite sternal TB's long, indolent course and potential to cause other complications, our patient healed well on ATT without requiring any surgical intervention.

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