Case Report

Sternoclavicular Tuberculosis: An Unusual Presentation

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Abstract

Extra pulmonary tuberculosis is on the rise worldwide, and younger patients, are females. And people from Asia and Africa are at high risk. Sternoclavicular TB is extremely rare, even in countries that have a high prevalence of TB. It can be in the absence of pulmonary TB. It has a varied clinical presentation. Painless chest wall swelling can be the presenting symptom of sternoclavicular diagnosis. Ultrasonography and high-resolution computed tomography can identify the nature of the lesion and the extent of bone involvement. Aspiration from the swelling or histopathology examination is mandatory for diagnosis. Caseous necrosis is diagnostic of TB. Detection of acid-fast bacilli in smears or tissue or molecular methods is required for definitive diagnosis. A high degree of clinical suspicion is required for early diagnosis. The treatment of thoracic TB is the subject of controversy. Anti-tubercular drugs are the mainstay of treatment. Surgical intervention is basically for flattening cold abscesses and removing infected tissue, including affected bones and cartilage.

Keywords: Aspiration, clavicle, sternum, tuberculosis

Introduction

Tuberculosis (TB) is often called a great imitator as it is a common disease with unusual presentation. The estimated global fatality rate of TB is around 13%.[1] The estimated 10.6 million people (95% uncertainty interval [UI]: 9.9–11 million) fell ill with TB worldwide in 2021, an increase of 4.5% from 10.1 million (95% UI: 9.5–10.7 million) in 2020. The global TB incidence rate has increased by 3.6% between 2020 and 2021, reversing declines of about 2%/year for most of the previous two decades. The 30 high TB-burden countries accounted for 87% of all estimated incident cases worldwide, of which eight countries accounted for more than two-thirds of the global total, with India capturing the majority (28%) of the total TB burden.[2] Extrapulmonary TB (EPTB) is on the rise worldwide and it is about 10%–15%. Younger patients, females. Moreover, people from Asia and Africa are at high risk.[2] Musculoskeletal TB accounts for 1%–3% of these cases. The most common musculoskeletal sites include the spine, followed by hip, knee and ankle and foot.[3,4] TB of sternum and clavicle is very rare TB of flat bones and accounts for approximately 0.3%.[5] Primary sternoclavicular TB is extremely rare, even in high-prevalence areas of TB like India. We report one such case of primary sternoclavicular TB, who presented with a small swelling on the left anterior chest wall.

Access this article online

Quick Response Code:

Website: www.jgid.org

DOI: 10.4103/jgid.jgid_64_23

Case Report

A 48-year-old woman came to the surgical outpatient unit complaining of painless swelling on the left anterior chest wall below the medial end of the clavicle for 45 days. She gave history of an increase in swelling size, pain, and difficulty in swallowing for 15 days. She is a known case of Sjogren syndrome and hypothyroidism. She had no history of fever, cough, or loss of appetite. No significant family history was present. On physical examination, the swelling was 3 cm × 3 cm, and the overlying skin and temperature were normal [Figure 1a arrow]. She had no history of trauma. A clinical diagnosis of a cold abscess was suspected.

Initial laboratory investigations revealed hemoglobin of 9.8 g/dL, elevated erythrocyte sedimentation rate of 80 mm and C-reactive protein of 37 mg/L. Serology for human immunodeficiency virus was negative. She was mildly anemic.

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How to cite this article: Chandanwale SS, Raj A, Singh M, Kundlia A. Sternoclavicular tuberculosis: An unusual presentation. J Global Infect Dis 2024;16:33-5.

Received: 31 March 2023 **Revised:** 26 April 2023
Accepted: 09 May 2023 **Published:** 11 August 2023

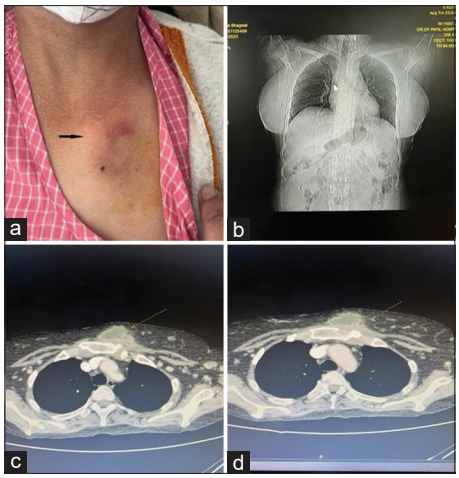

Figure 1: (a) Swelling on left chest (arrow), (b) Chest X-ray show necrosis of left sternum (arrow), (c and d) High resolution computed tomography show abscess and lysis of sternum and clavicle

Ultrasonography (USG) of swelling revealed a well-defined heterogeneous hypoechoic lesion measuring 2.7 cm × 2.8 cm in the subcutaneous plane on the left side below medial end of the clavicle. Bone destruction was noted at the anterior cortex of the clavicle, with surrounding fat inflamed and hyperechoic. A diagnosis of early abscess was suggested. X-ray chest revealed focal cortical destruction in the left side of the sternum. No obvious opacities were seen in both lungs [Figure 1b arrow].

High resolution computed tomography (HRCT) thorax and abdomen scans showed focal bone destruction with the erosion of the anterior cortex on the left side of the manubrium sternum and the anterior cortex of the medial end of left clavicle. A well-defined hypodense collection with peripheral rim enhancement was noted in the subcutaneous region of the anterior chest wall. It was located anterior to the manubrium sternum on the left side, extending into the left sternoclavicular joint with the destruction of the anterior wall of clavicle [Figure 1c and d arrow]. Heterogeneously enhancing nonnecrotic left axillary and anterior chest wall lymph nodes were noted. No obvious enhancing lesions were seen in bilateral lungs, pleura, and other organs. A diagnosis of abscess with underlying osteomyelitis was suggested.

USG-guided aspiration was done from the swelling with aseptic precautions. Yellow white material was aspirated. Out of three smears, two smears were stained with hematoxylin and eosin (H and E) and one smear was stained with Ziehl–Neelsen (ZN) stain. The remaining material was sent for molecular studies. H and E stained smears showed amorphous to granular eosinophilic material (caseous necrosis) with many viable polymorphs, red blood cells, and lymphocytes [Figure 2a arrow]. ZN stain showed many acid-fast bacilli [Figure 2b arrow]. A diagnosis of tubercular abscess was made.

Cartridge-based nucleic acid amplification test was positive for *Mycobacterium tuberculosis* and susceptible to rifampicin.

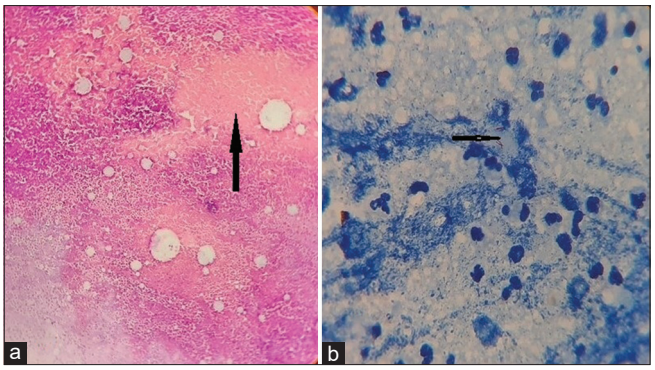

Figure 2: (a) Aspiration smears show amorphous to granular caseous necrosis and polymorphs (H and E, ×100), (b) ZN stain show acid fast bacilli (ZN, ×400 arrow). ZN: Ziehl–Neelsen, H and E: Hematoxylin and eosin

Culture for acid-fast bacteria (AFB) was positive. The diagnosis of TB was confirmed. Sputum for AFB was negative. Intensive anti-tubercular regime of rifampicin, isoniazid, pyrazinamide, and ethambutol was started for 2 months and will be followed by maintenance therapy for 6–9 months depending on clinical response. The patient is on treatment for 2 months, and swelling appears to be slightly reduced clinically.

Discussion

TB is still a major global public health issue with high morbidity and mortality if treated inadequately. The increase in the number of cases can be attributed to immunocompromised patients, large-scale population migration, and reactivation of TB in the migrant population.

TB of the chest wall is an extrapulmonary form that represents 1% to 5% of all musculoskeletal TB.[4-6] Due to the varied clinical presentation of EPTB, a high degree of clinical suspicion is required for early diagnosis.

TB of the sternum is a rare finding, even in countries where TB is more prevalent. Sternoclavicular TB is extremely rare. Three pathogenic mechanisms have been described: (1) Contiguous extension of pulmonary or pleural involvement, (2) Hematogenous dissemination, (3) Direct transcutaneous inoculation or extension from adenitis of the chest wall.[4,6,7] The primary source of sternoclavicular TB in our case could not be detected radiologically in our case. There was no history of trauma. Both the lungs on imaging did not show consolidation or cavities. Bone involvement is often secondary to subcutaneous abscess. Reactivation of latent foci formed during hematogenous or lymphatic dissemination of primary TB can be the possible cause of sternoclavicular TB in our case.

Clinical presentation of EPTB is often varied depending on the site involved. X-ray chest findings may be normal or may show pleural effusion, pleural thickening, or partial opacities. USG is useful for specifying the echogenicity of the lesion. HRCT specifies the nature and extent of the lesions. It also reveals

the presence of bone lysis, intra-thoracic lymphadenopathy, and pleuropulmonary lesions.[6,8]

TB of the chest wall can affect all anatomical structures. Clinically it may have the appearance of an abscess or soft-tissue mass. Incidence of chest wall TB increased because of multi-drug resistant forms and increase of immunocompromised patients[6,8] Some authors emphasize that sternoclavicular TB can be isolated or it is often the sign of severe disseminated TB.[5,8] In our patient, there was no sign of disseminated TB clinically or radiologically.

Thoracic TB disease most commonly involves the shafts of ribs or costovertebral or cost chondral junctions. Whereas lesions of the sternum have been found more commonly in the manubrium (70%) than ribs.

Surgical options are generally not needed for routine cases, but if required, it comprises complete drainage, thorough debridement, and sternectomy with or without muscle flap, along with a drug regimen of anti-tubercular treatment. Surgical intervention is basically for flattening cold abscesses and removing infected tissue, including affected bones and cartilage.[1] Anti-tubercular drugs are the mainstay of treatment for sterna TB osteomyelitis currently. It is generally treated with 9–12 months' regime of first line drugs unless organisms are resistant. Regime consists of rifampicin, isoniazid, pyrazinamide, ethambutol for the first 2 months as intensive therapy followed by maintenance therapy of 9–12 months depending on patient's response.[9]

Conclusion

TB is still a major global public health issue. Isolated sternoclavicular TB is extremely rare even in countries where TB is more prevalent. It can occur even in the absence of pulmonary or EPTB. It has varied clinical presentation and can be in the form of chest wall swelling due to subcutaneous abscess. A high degree of clinical suspicion is required for early diagnosis. Needle aspiration or histopathology diagnosis is mandatory for diagnosis. Caseous necrosis along with epithelioid cell granulomas is diagnostic of TB. The presence of AFB in aspiration smears or molecular studies is essential for definitive diagnosis.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given her consent for her images and other clinical information to be reported in the journal. The patient understands that her name and initials will not be published and due efforts will be made to conceal her identity, but anonymity cannot be guaranteed.

Research quality and ethics statement

The authors followed applicable EQUATOR Network guidelines (http://www.equator-network.org/), notably the CARE guideline, during the conduct of this report.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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