



Case Report of Tuberculous Anterior Chest Wall Abscess

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Abstract: In developing nations such as India, tuberculosis is a problem for public health. Chest wall tuberculosis is uncommon and frequently manifests as a cold abscess or pseudo tumoral mass necessitating surgical biopsy. One to three percent of individuals with TB develop musculoskeletal tuberculosis (TB), and one to five percent of cases with musculoskeletal TB involve the chest wall. A 38-year-old female presented with anterior chest wall swelling. The patient reported history of pulmonary tuberculosis in childhood for which she was treated with anti-tuberculous drugs for a duration of six months. Examination revealed swelling, which was smooth, fluctuant with well-defined borders along with palpable axillary lymph nodes. Investigations revealed a thick-walled cystic lesion for which she was proceeded with incision and drainage. Caseous pus which was drained was positive for tuberculosis. The patient was started on anti-tuberculous treatment and continued for 6 months. Extrapulmonary TB is currently less common in immunocompetent patients than in non-immunocompetent ones. The location of the tuberculous abscess and the patient's immunocompetence both contribute to the rarity of the present instance. Clinicians still struggle to make the correct diagnosis of musculoskeletal tuberculous infection, which calls for a high degree of suspicion. The diagnosis is highly supported by the slow development of symptoms, positive tuberculin skin test, and congruent radiographic findings. However, TB must be shown by a positive culture or histological evidence. To avoid catastrophic bone and joint destruction, prompt diagnosis and therapy are crucial.

Keywords: Anterior chest wall abscess, chest wall tuberculosis, musculoskeletal TB, Tuberculosis, cold abscess

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I. INTRODUCTION

In spite of excellent antituberculosis medications, the incidence of tuberculosis is still high in developing nations. *Mycobacterium tuberculosis* (MTB) is an airborne pathogen that causes the infectious disease tuberculosis (TB), which typically affects the lungs. While lung infection is the most typical symptom of tuberculosis, it can also affect the pleura, central nervous system, lymphatic system, genitourinary system, and musculoskeletal system. Although the lungs are the major site of infection in primary tuberculosis, 15-20% of cases are reportedly extrapulmonary. Tuberculosis (TB) that affects the bones and/or joints is referred to as skeletal tuberculosis. Around the world, 10 to 35 percent of extrapulmonary TB cases are caused by skeletal TB. There are reports of a higher occurrence in endemic countries like India. Comparable to the proportion of skeletal TB among people who do not have HIV infection, skeletal TB occurs more frequently in people with HIV infection¹⁻⁴. Pott disease, a spinal condition, is the most prevalent type of skeletal TB and accounts for around half of all cases of musculoskeletal TB. After extraspinal tuberculous osteomyelitis, tuberculous arthritis is the most prevalent kind of musculoskeletal TB. Being rare, chest wall tuberculosis remains difficult to diagnose and treat. The typical appearance of chest wall TB is a cold abscess, which denotes oedema without inflammation. It may appear as a single lesion with no main foci in the ribcage or lung parenchyma. Various indications and symptoms manifest depending on the location of the lesion. Tuberculosis of the chest wall typically manifests as an abscess, which is frequently cystic, doughy, or mushy.⁵⁻⁷. The pathophysiology of a chest wall abscess is explained by three different mechanisms: lymphadenitis of the chest walls, hematogenous dissemination of a latent tuberculous centre, and direct extension from pleural or pulmonary parenchymal illness. Primary tuberculosis of the chest wall is uncommon, and diagnosis is frequently difficult and time-consuming since the lesions superficially resemble pyogenic abscesses or tumours.⁸⁻¹⁰ The sites of extrapulmonary TB lesions are dispersed, and *Mycobacterium tuberculosis* is rarely seen there. Because of this, extrapulmonary TB patients' conditions are complicated and frequently overshadowed by other illnesses, which has a significant impact on diagnosis and therapy. Due to missing diagnoses, incorrect diagnoses, and the absence of normative

information on recommended treatment regimens, functional lesions in local organs frequently result in disabilities and even put lives in jeopardy. Chest wall TB, a frequent type of TB that affects the skin of the body, involves lesions that develop as a result of pulmonary or pleural TB infection and are located in the ribs, sternum, and soft tissue of the chest wall. The bulk of the lesions eventually manifest as cold abscesses and ulcers, which result in sinus tract or ulcer-induced fistulas. The lesions have a sizable surface area. Treatment options include oral anti-TB medicine combined with surgery when a diagnosis is clinically established, the abscesses have already developed and may have even ruptured, or the sinuses have formed.^{11,12}. Here, we show a case of a tuberculous ulcer over the chest wall without any lungs or bones, including the ribs, being affected.

2. CASE REPORT

A 38-year-old female presented with chief complaints of a swelling over the left chest wall. The mass had been present for 2 months. The swelling was insidious onset, had a slow progressive nature. She did have any history of trauma, fever, cough, or breathlessness, onset of the swelling was insidious while the progress was slow. She reported of childhood pulmonary tuberculosis for which she was treated with anti-tuberculous treatment for a duration of 6 months. The patient had a significant past history of cervical tuberculous lymphadenitis excision done 10 years back. There is no history of contact with tuberculosis. On examination the patient was afebrile and well nourished. A single 4 x 4 cm swelling was noted over left anterior chest wall, below the left clavicle (FIGURE 1). The surface of the swelling was smooth, non-tender, with no warmth, fluctuant, with well-defined borders, and not fixed to the chest wall. A 2 x 2 cm axillary lymph node was noted on the ipsilateral side which was non-tender. Both the breast was normal with no palpable mass, warmth, or tenderness. No palpable lymph nodes were found on the contralateral side. The white blood cell count was normal. All other investigations including erythrocyte sedimentation rate was normal. Chest X-ray revealed calcification in bilateral lung fields (FIGURE 2). Ultrasound of bilateral breasts showed a thick walled cystic lesion measuring 4.9 x 2.2 cm with echogenic components in the left upper inner quadrant, suggestive of abscess or hematoma with a BIRADS II. Two lymph nodes of size 3.0 x 1.8 cm and 1.0 x 0.8 cm noted in the left axilla.

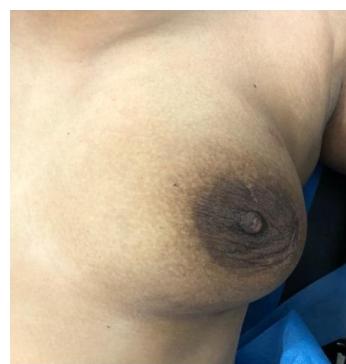


Fig 1: Left anterior chest wall showing a swelling of size 4 x 4cm

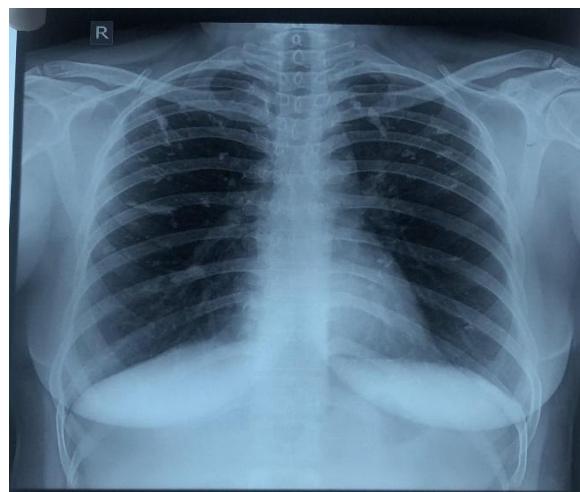


Fig 2: Chest X-Ray – Showing Bilateral Calcification

The patient underwent Incision and Drainage of the swelling of Left Anterior Chest Wall under General Anesthesia. The mass was found anterior to the second rib. Caseous material was drained and sent for AFB staining, culture and CBNAAT. CBNAAT was found to be positive. The patient's Pus and Tissue for AFB were negative, and the HPE did not show any

organisms. Post-operative period was uneventful. The patient was registered and started on anti-tuberculous regimen for a period of 6 months consisting of isoniazid 300mg, rifampicin 600mg, pyrazinamide 2 grams and pyridoxine 50mg. Post-operative wound healing was good.



Fig 3: Intraoperative Finding Showing Caseous Material

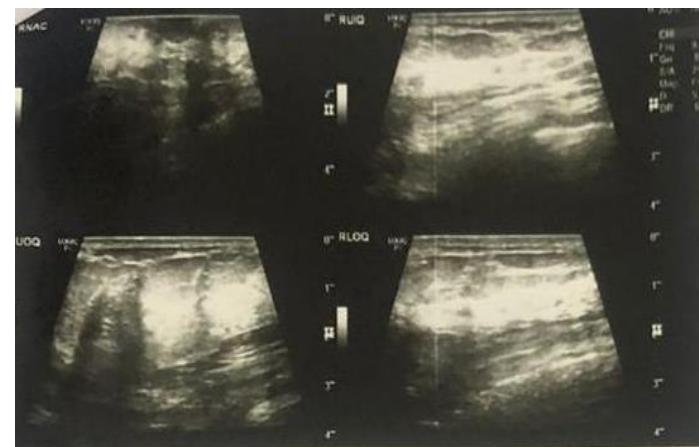




Fig 4: Ultrasound

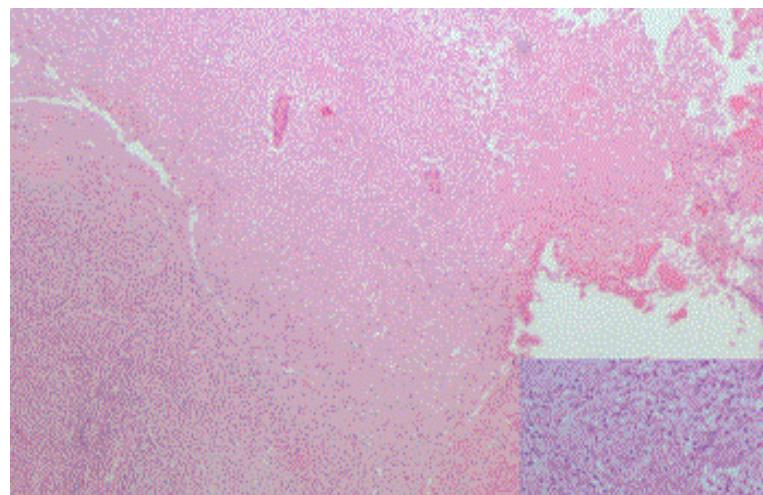


Fig 5: Histopathology

3. DISCUSSION

TB of the chest wall is a rare condition. It is typically a chronic infection, and chronic infections of the chest wall can occur in soft tissues, cartilage, and bones^{13,14}. It is related to the growth of a localised lesion on the chest wall that is restricted to the soft tissues in this case study. It accounts for 10% of all extrapulmonary TB cases and 1% to 5% of all musculoskeletal TB cases.^{15,16}. Consideration should be given to it in immunocompetent patients^{17,18}. The primary risk factor is a history of tuberculosis, which is reported in 70-80% of cases. Active TB has been reported in 20-60% of patients with TB of the chest wall. On this occasion, the patient presented with no history of exposure to individuals with pulmonary or extrapulmonary tuberculosis. The only relevant fact is that the patient had past history of pulmonary tuberculosis.^{19,20}. There are three pathophysiological mechanisms that may lead to the development of a chest wall abscess: the first is direct extension from a pleural or pulmonary condition. The second is a hematogenous spread in a substantial proportion of extrapulmonary TB, and the third is direct extension due to tuberculous mediastinal lymphadenitis²¹. In soft tissues of the chest wall, TB can manifest as an abscess or a tuberculoma. Infected muscles are described as follows: brachial biceps, right femoral rectum, psoas, rectus abdominis, gluteus maximus, and sub masseteric space^{22,23}. Infections in these structures are uncommon due to the high lactic acid content of the muscles, the absence of lymphatic tissue, the high blood flow, and the high proportion of muscle differentiation²⁴. Therefore, it is important to highlight the case presented here, which

involved only a chest wall soft-tissue lesion with pectoralis major permeation, ruling out any respiratory symptoms. The histopathology studies of the case revealed granuloma with caseous necrosis. Epithelioid granuloma with central caseation necrosis was also observed and is similar to the other reported studies³³. The presence of a single palpable mass is a common symptom of TB of the chest wall. The tuberculous abscess has a strong preference for the margins of the sternum. Infection of the internal mammary lymph nodes as a result of primary pulmonary disease has been hypothesised. The abscess may have a slow and generally asymptomatic evolution that can resemble a tumour because it is initially painless and becomes painful within two months, which is similar to the presentation of the case described in this study^{25,26}. CT scans and excisional biopsies aid in early diagnosis and treatment efficacy. The nature and extent of soft-tissue collections, as well as any intrathoracic lymphadenopathy and bone erosions, are revealed by CT scans. Typically, it is observed as a juxtacortical mass in soft tissues with low central attenuation and peripheral enhancement^{27,28}. With the use of MRI²⁹, soft tissues and intramuscular abscesses are more visible. In our case, ultrasound demonstrated that the lesion was limited to soft tissues; however, these studies not only provided the diagnosis, but also served as a guide for assessing the lesion's location and ruling out other associated lesions in lung and ganglion tissue. Molecular techniques with the polymerase chain reaction (PCR) enable a more rapid diagnosis of *M. tuberculosis* than conventional methods (staining for acid-resistant bacilli and the same culture)³⁰⁻³². PCR has also

demonstrated greater specificity and sensitivity than conventional methods. Therefore, in our case, PCR for TB was utilised, which provided us with a definitive diagnosis of the lesion's nature. The initial recommended medical treatment is a combination of rifampicin, isoniazid, pyrazinamide, and ethambutol for two months followed by rifampicin and isoniazid for 6 months. This treatment was administered to our patient over a six-month period, with complete regression of the lesion at six-month follow-up.³²

4. CONCLUSION

It is extremely uncommon for the anterior chest wall to be involved in the granulomatous inflammation of tuberculosis, which often affects the lungs and hilar lymph nodes. Additionally, immunocompetent people are now less likely than non-immunocompetent patients to have extra pulmonary TB. Clinicians still struggle to make the correct diagnosis of musculoskeletal tuberculous infection, which calls for a high degree of suspicion. The diagnosis is highly supported by the slow development of symptoms, positive tuberculin skin test,

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and congruent radiographic findings. If the clinical suspicion is high, TB therapy is frequently started right away after the required microbiological and histological samples have been collected. However, TB must be shown by a positive culture or histological evidence. To avoid catastrophic bone and joint destruction, prompt diagnosis and therapy are crucial. With complete surgical resection of the abscess and multidrug therapy lasting an average of 6 months, the prognosis is typically better, lowering complications and recurrences.

5. AUTHORS CONTRIBUTION STATEMENT

Dr. Suprajaa Desingu proposed the concept, interpreted the data, and critically edited the article. Dr Karthikeyan Selvaraj and Dr. Ravishankar interpreted the data and reviewed the literature.

6. CONFLICT OF INTEREST

Conflict of interest declared none.

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