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Case Report

Breast Abscess or Deeper Problem; A Unique Diagnostic Mystery of Sternal TB

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ABSTRACT

Introduction: Sternal tuberculosis represents an extremely rare form of extrapulmonary tuberculosis that physicians typically misdiagnose because its clinical signs match common conditions such as breast abscesses. Early detection of sternum tuberculosis proves difficult because this form of osteoarticular tuberculosis represents fewer than 1% of cases among patients who are young and immunocompetent and lack identified risk factors.

Case presentation: A 16-year-old female without tuberculosis history presented with a right parasternal mass along with low-grade fever and weight loss and malaise. The patient received a breast ultrasound diagnosis that indicated a breast abscess so medical staff began antibiotic treatment. The patient showed temporary improvement in general health indicators although the mass failed to disappear. The follow-up imaging revealed a hypoechoic lesion containing internal debris and cortical irregularity located at the sternum. CT imaging revealed both lytic and sclerotic changes in the lower portion of the sternum along with a cold abscess that penetrated into the right parasternal soft tissues. The pathologist confirmed the diagnosis of sternal tuberculosis after performing histopathological tests on tissue samples obtained after surgical debridement. The patient received standard four-drug anti-tubercular therapy afterwards consisting of isoniazid, rifampicin, pyrazinamide and ethambutol which led to the complete healing of clinical symptoms along with imaging results.

Conclusion: The case presentation demonstrates the necessity of treating atypical infections like sternal tuberculosis by being alert to its potential when dealing with unresolving chest wall lesions. Imaging tools including ultrasound and CT provide important diagnostic assistance when used at the beginning of the process. In regions with endemic TB cases patients without standard risk factors who are immunocompetent may develop unusual forms of TB. Immediate administration of anti-tubercular treatment produces exceptional treatment results that eliminate the need for complex surgical operations.

Keywords: Sternal tuberculosis; Chest wall abscess; Extrapulmonary TB; Breast abscess mimic; Adolescent female

Introduction

Breast abscesses frequently appear to clinicians and sonologists and radiologists because they develop from infectious mastitis complications in young lactating women mostly. The primary bacteria responsible for these infections are Staphylococcus aureus and Staphylococcus epidermidis.

Periductal mastitis together with idiopathic granulomatous mastitis represent the primary conditions that affect non-lactating women[1].

Standard antibiotic treatments effectively manage most breast abscesses but persistent or recurrent cases require further evaluation to rule out atypical or serious underlying conditions. The rare but crucial differential diagnosis includes sternal tuberculosis which represents a form of extrapulmonary tuberculosis that affects the sternum. The rare condition of sternal TB exists in fewer than 20 documented cases[2]. because it presents with nonspecific symptoms that resemble benign or malignant conditions thus leading to delayed diagnosis. The development of sternal TB is linked to three main factors which include sternotomy procedures and BCG vaccination and HIV infection and immunosuppression[3].

The identification of sternal bone destruction together with soft tissue changes in sternal tuberculosis requires advanced imaging techniques like CT but Mycobacterium tuberculosis diagnosis depends on microbiological or histopathological confirmation[4].

We present a case of a young woman who developed a persistent para-sternal abscess which was treated as mastitis for three months before doctors diagnosed it as sternal tuberculosis. The case demonstrates why healthcare providers and radiologists need to conduct thorough medical histories and use correct imaging tests and maintain strong suspicions for unusual causes in breast and chest wall infections that do not improve.

Case Presentation

A 16-year-old patient who had no previous medical conditions or tuberculosis exposure visited her primary care physician due to persistent lethargy alongside low-grade fever and unintended weight loss and an enlarging right parasternal chest wall mass. The initial clinical evaluation using breast ultrasound detected a hypoechoic lesion with internal echogenicity in the right breast which indicated the presence of a breast abscess. The doctor gave the patient a two-week course of oral anti-inflammatory agents and antibiotics **(Figure 1)**.

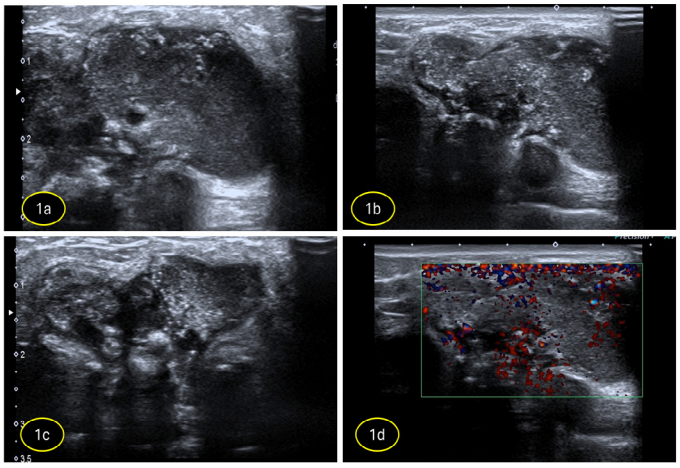

Figure 1: Ultrasound images gray scale (a,b,c) and Color Doppler (1d) of chest wall abscess showing intra-lesional echogenic foci and underlying bone discontinuity as well as peri-lesional vascularity signifying inflammatory process

The patient experienced slight improvement of her general health symptoms yet the chest wall mass did not disappear. A repeat breast ultrasound examination one month later showed that the breast abscess remained unresolved. The patient received intravenous antibiotic treatment from a breast surgeon after receiving the referral.

The patient received a referral to our radiology department for second follow-up ultrasound. The high-resolution ultrasound showed a hypoechoic lesion with echogenic debris inside a well-defined border that extended to the sternum with visible bony irregularity and cortical destruction at its posterior margin. A mixed osseous and soft tissue process was visible on imaging as the lower half of the sternal body presented lytic-sclerotic changes along with a heterogeneous soft tissue component that invaded the right parasternal chest wall. The sonographic findings together with the patient's treatment failure made a more complex underlying disease likely.

The CT scan without contrast was performed after the unusual imaging results and unresponsive clinical condition. The CT results showed the lower half of the sternal body presented mixed lytic and sclerotic changes which suggested osteomyelitis. The CT scan showed a small involucrum and a cold abscess that originated from the sternum and progressed into the right parasternal soft tissues above it with internal involucrum formation. The thoracic cavity remained unaffected by the condition **(Figure 2)**.

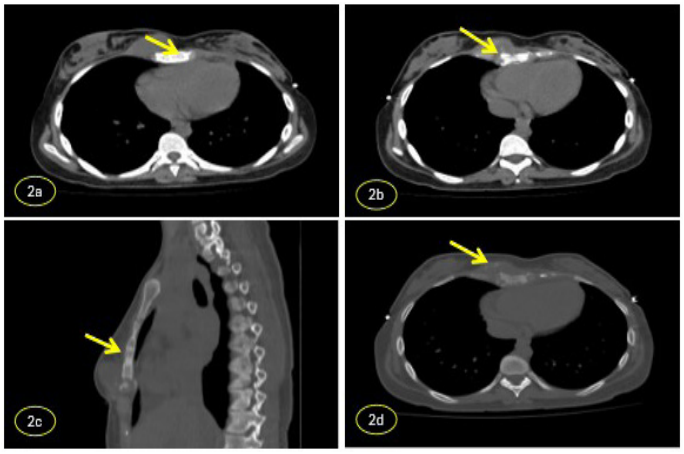

Figure 2: Non-contrast CT chest in soft tissue (2a, 2b) and bone window settings (2c, 2d), axial and sagittal views. The scans demonstrate a well-defined hypodense collection arising from the sternum, extending into the right parasternal soft tissues, consistent with a cold abscess. Associated cortical destruction of the sternum with internal involucrum formation is evident, indicating underlying sternal osteomyelitis.

Sternal tuberculosis became the tentative diagnosis because of the lesion's clinical presentation and radiologic findings that developed over time, further confirmed via histopathological examination after surgical debridement Standard first-line anti-tuberculosis treatment started with isoniazid, rifampicin, pyrazinamide and ethambutol for the patient. The four-drug regimen stands as the primary treatment approach for tuberculosis cases especially those with extrapulmonary manifestations because it delivers broad-spectrum protection and resistance prevention.

The patient showed good treatment response through the reduction of abscess and systemic symptoms. Medical therapy with surgical debridement proved sufficient for this case but extensive surgical treatment remains an option for patients with extensive necrotic bone or when medical treatment fails.

Discussion

Osteoarticular tuberculosis accounts for approximately 1–3% of all cases of tuberculosis, with the spine (Pott's disease) being the most frequently involved site. Isolated involvement of the sternum is extremely rare, comprising less than 1% of tuberculous osteomyelitis cases and only 0.3% to 1.8% of all osteoarticular tuberculosis cases[5,6]. Sternal tuberculosis is most often secondary to risk factors such as previous sternotomy (particularly for open-heart surgery), Bacillus Calmette-Guérin (BCG) vaccination and immunosuppressive states-most notably, human immunodeficiency virus (HIV) infection[7,8]. In up to 83% of cases, a history of tuberculosis is present, whether pleural, pulmonary or mediastinal in origin[9,10].

Sternal TB presents a diagnostic challenge due to its insidious onset and nonspecific clinical symptoms such as localized swelling, pain and constitutional features. Radiological imaging plays a key role in its diagnosis. On three-phase technetium-99m bone scintigraphy, affected areas typically demonstrate increased radiotracer uptake in early phases with a photopenic center on delayed imaging, suggestive of central necrosis. MRI often shows a hypointense signal on T1-weighted images and a hyperintense signal on T2-weighted sequences in both bone marrow and associated soft tissue collections, with post-gadolinium images demonstrating marked enhancement of active inflammatory regions[11].

Confirmation of the diagnosis relies on microbiological or histopathological examination. Biopsy-either percutaneously under CT guidance or via surgical intervention—is critical for isolating Mycobacterium tuberculosis, typically using Lowenstein-Jensen culture or PCR-based assays, alongside histological evaluation for caseating granulomas[11].

Sternal tuberculosis resembles other skeletal forms of TB, such as spondylodiscitis, but the anatomical features of the sternum predispose it to complications like cutaneous fistula formation and mediastinitis more frequently. Management strategies are not yet standardized. Some clinicians advocate for a combination of medical therapy and surgical debridement, especially in cases with abscess formation or sequestrum, while others support conservative treatment with antitubercular therapy (ATT) alone.

Standard ATT regimens, similar to those used for pulmonary TB, are applied, typically extended to a minimum duration of 12 months in cases of bone involvement. Surgical intervention, when required, may involve resection of necrotic bone and soft tissue. In cases of extensive debridement, chest wall reconstruction using muscle flaps (e.g., pectoralis major or rectus abdominis) has been reported to restore structural integrity and minimize morbidity[12].

This case reinforces the importance of considering sternal TB in the differential diagnosis of persistent or atypical chest wall masses, especially in endemic regions or in patients unresponsive to conventional treatments for breast or soft tissue abscesses.

Conclusion

This case highlights the importance of maintaining a high index of suspicion for atypical infections such as tuberculosis in patients with persistent or unresponsive chest wall abscesses, particularly when radiological features suggest underlying osseous involvement. Sternal tuberculosis, though exceedingly rare, should be considered in the differential diagnosis of non-resolving breast or chest wall lesions, especially in endemic regions. Early radiologic evaluation using ultrasound and CT, coupled with timely initiation of anti-tubercular therapy, is critical for optimal outcomes.

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Conflict of Interest

The authors declare no conflicts of interest related to this publication.

Strengths and Limitations

- The study presents an unusual case of sternal tuberculosis which expands the scarce global medical literature on this condition.
- The study demonstrates how ultrasound and CT imaging serve as essential diagnostic tools for detecting unusual chest wall lesions.
- The case demonstrates how anti-tubercular therapy led to successful treatment without requiring major surgical procedures.
- The study relies on data from one patient which makes it impossible to apply the results to other cases. Additional case series research should be conducted to develop clinical guidelines.
- The study fails to include microbiological information and extended patient follow-up data and patient feedback about their treatment experience.

Informed Consent

Verbal and written informed consent were obtained from the patient prior to the preparation of this manuscript.

Ethical Considerations

Ethical approval for this case report was obtained from the Institutional Review Board (IRB) of the reporting institution.

References

1. Angelopoulou A, Field D, Ryan CA, Stanton C, Hill C, Ross RP. The microbiology and treatment of human mastitis. Med Microbiol Immunol 2018;207(2):83-94.
2. Hengster P, Solder B, Fritsch P, Menardi G. Cold abscess of the chest wall as an unusual complication of BCG revaccination. Eur J Cardiothorac Surg 2002;21(2):352-354.
3. Mofredj A, Guerin JM, Leibinger F, Cadranel J, Mayaud C, Dombret MC. Primary sternal osteomyelitis and septicaemia due to Staphylococcus aureus. Scand J Infect Dis 1999;31(1):98-100.
4. Benramdane H, Nasri S, Kamaoui I, Skiker I. Sternal tuberculosis: A rare manifestation of extrapulmonary disease. Radiol Case Rep 2025;20(1):15-17.

5. Ouarssani A, Atoini F, Ait Lhou F, Idrissi Rguibi M. La tuberculose sternale: à propos de 2 cas. Pan Afr Med J 2012;11:33.

6. Anupam P, Hira HS. Tuberculous osteomyelitis of sternum in a diabetic. Indian J Tuberc 2001;48:35-36.

7. Jetley S, Puri P, Jetley V, Mehta SR. Paroxysmal nocturnal hemoglobulinuria. J Assoc Physicians India 1993;41(7):472-473.

8. Ashour M, Pandya L. Tuberculosis of the sternum. Ann Saudi Med 1990;10(1):57-59.

9. Hantous-Zannad S, Zidi A, Néji H, Attia M, Baccouche I, Ben Miled-M'rad K. Contribution of imaging in thoracic tuberculosis. Rev Pneumol Clin 2015;71(2-3):93-109.

10. El Kharras A, Benjelloun H, El Ouali Lalami M, El Kettani N. Isolated sternal tuberculosis: two observations. Presse Med 2004;33(17):1171-1173.

11. Atasoy C, Oztekin PS, Ozdemir N, Dizbay Sak S, Erden I, Akyar S. CT and MRI in tuberculous sternal osteomyelitis: A case report. Clin Imaging 2002;26(2):112-115.

12. Allali N, Dafiri R. Tuberculosis of the sternum. J Radiol 2005;86(6):655-656.