



An Interesting Case Report on Calcaneal Tuberculosis as a Rare Presentation of Disseminated Tuberculosis

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Abstract

Despite the high prevalence rate of tuberculosis infection in Malaysia, calcaneal tuberculosis (TB) is rare. In this article, we present a case of a 53-year-old Malay female who initially presented with left calcaneal swelling for 3 months. Surgical drainage was performed and affected calcaneal was biopsied for histological examination which findings reported as consistent with tuberculosis infection. Further history revealed concomitant respiratory symptoms with the diagnosis of disseminated TB is supported by positive Mantoux test, detection of Acid-Fast bacilli in sputum and CT imaging showing lung and vertebral involvement. Anti-tuberculosis medication is the first line of treatment in calcaneal TB and surgery is usually reserved for patient with severe, intractable disease. [*Bangladesh Journal of Infectious Diseases, June 2023;10(1):52-55*]

Keywords: Calcaneal tuberculosis; disseminated tuberculosis; acid fast bacilli; *Mycobacterium tuberculosis*

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Introduction

Calcaneal tuberculosis, a form of tuberculosis (TB) affecting the heel bone, can present in two distinct ways: either as an isolated condition or as a particularly uncommon manifestation of disseminated tuberculosis. The significance of recognizing this unique presentation lies in the potential for diagnostic delays and the subsequent delay in initiating appropriate management. Failure to identify calcaneal tuberculosis within the context of disseminated TB can have serious consequences for the patient's health, as it necessitates a distinct approach to diagnosis and treatment. This case report sheds light on the diagnostic challenges

posed by this atypical form of TB and underscores the critical need for its early identification and tailored therapeutic interventions.

Case Presentation

A 53-year-old Malay female with no known medical illness was admitted to orthopaedic ward Sultan Ahmad Shah Medical Centre @ IIUM with a 3-month history of painless left heel swelling. Examination of the left foot revealed 4cm x 5cm swelling over the posteromedial aspect of heel which was fluctuant and non-tender. There was no pus discharge while the transillumination test was positive. Her total white cell was within normal

range. However, her blood CRP and ESR were high with 7.64 mg/dl (N: <0.5 mg/dl) and 120 mm/hr (N: <29mm/hr) respectively. Minimal sclerotic lesion was noted on the posterior aspect of calcaneal bone with adjacent soft tissue consolidation in the left foot X-ray.

A diagnosis of cold abscess was made, and she underwent incisional surgery under regional anaesthesia to drain the abscess. Calcaneal tissues were also biopsied and sent for histopathological examination (HPE). About a week later, the report came back as necrotizing granulomas comprising of aggregates of epithelioid histiocytes and lymphocytes. No atypical cells were seen. Ziehl-Neelsen stain demonstrated occasional acid-fast bacilli within the tissue. PAS and GMS stains did not demonstrate any fungal bodies. Tissue and fluid

sample sent for culture was reported as no growth. Viral screening for Hepatitis B, C and HIV were all non-reactive.



Figure I: Pictures showing the Lesion during Presentation and After Surgery

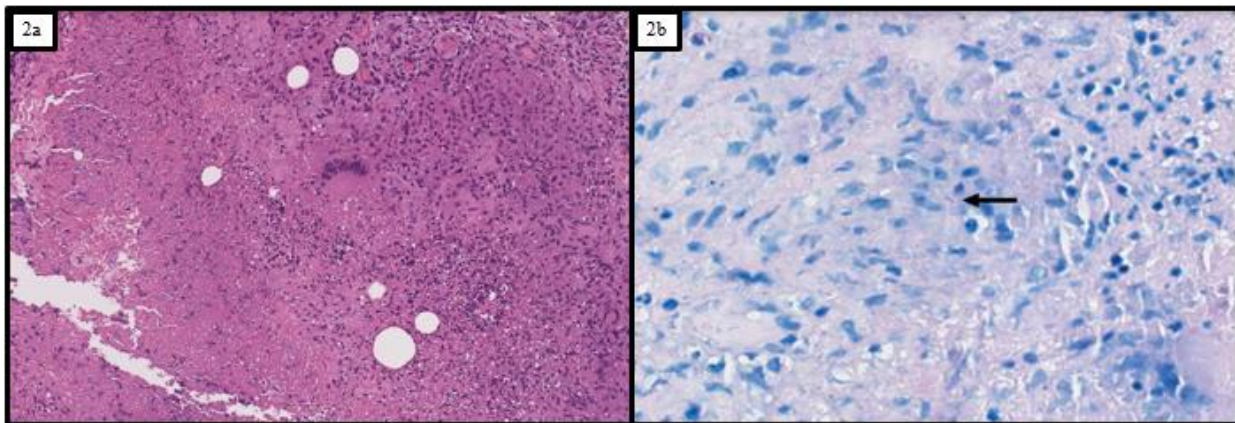


Figure II: a) Caseating granuloma comprising of epithelioid cells and multinucleated giant cells with central necrosis (H&E 100x) ; b) Acid fast bacilli (black arrow) are highlighted with Ziehl-Neelsen stain (400x)



Figure III: Radiograph Image Demonstrating Minimal Sclerotic Lesion over the Calcaneum

Upon further history-taking, patient had occasional, non-productive cough for the past 6 months associated with significant loss of weight. However she denied prolonged fever, night sweat, hemoptysis or back pain. Clinically, there were multiple palpable shotty lymph nodes in the cervical area. Auscultation of the lungs revealed reduced air entry on the right lower zone.

Further investigations revealed positive Mantoux test and scanty acid-fast bacilli were seen in the sputum sample. Chest Roentgenogram showed opacity at the right lower zone with a blunted right costophrenic angle. We proceeded with Contrast-Enhanced CT Thorax which revealed numerous scattered bilateral miliary lung nodules with widespread tree-in-bud changes. There was also vertebral involvement with lytic changes and paravertebral collection seen in T5, T6 and T7 with

complete disc disruption between T5 and T6. Diagnosis of disseminated tuberculosis with calcaneal involvement was made and she was started on anti-TB medications.

Discussion

Malaysia is one of TB endemic countries in which the estimated prevalence of TB in 2010 is 81.4 per 100 000 population.¹ Skeletal involvement is relatively rare and accounts for 3% of all extrapulmonary TB.⁽²⁾ TB of the foot and ankle make up 8-10% of all skeletal TB, mostly involving calcaneum followed by talus, first metatarsal, navicular, and medial intermediate cuneiforms.²

Patient typically presented with musculoskeletal symptoms such as pain, swelling and difficulty in ambulation. In an endemic region, respiratory system involvement must always be suspected as the lungs can become the primary foci, from which the Mycobacterium Tuberculosis disseminate to other parts of body. Patient must be screened for respiratory symptoms such as chronic cough or hemoptysis and appropriate measure should be taken to contain the airborne spread of the Mycobacterium.

Although changes appeared in X-ray studies usually denotes destructive phase of the disease, it still play an important role in the initial diagnosis of TB foot.³ Typical Pheister's triad of peripheral osseous erosion, juxta-articular osteopenia, and gradual narrowing of joint space are associated with tuberculosis infection.⁴ Nevertheless, TB foot can have a wide variety of other non-specific X-ray findings. MRI is helpful in detecting changes that cannot be appreciated in radiograph during the early stage of the disease. Subtle cortical breaks, intense marrow edema and bony cavitation may appear in MRI images 6-12 weeks after being infected with TB.⁵ Another advantage of MRI study is it can show the extent of the disease and can be helpful in guiding biopsy.

Almost all patient with tuberculosis had high ESR during diagnosis. Mantoux test would be positive in systemic involvement as the circulating antibodies react to the subcutaneous tuberculin trigger. Chest X-ray, as well as sputum and urine tests for Acid-Fast Bacilli should be considered to look for other possible source of seeding. Histopathological examination of the bone typically reveals necrotic tissue with caseating granuloma. Occasionally, the presence of Mycobacterium Tuberculosis can be detected with Ziehl- Neelsen stain. The gold standard in diagnosis of TB foot is still the growth

of Mycobacterium Tuberculosis cultured from the affected bone. However, waiting for the culture result will delay treatment as it usually takes 6-8 weeks before showing any growth. National Institute for Health and Care Excellence (NICE) addressed this issue in its guideline stating that anti-TB medication can be initiated if the HPE is suggestive and correlates with other clinical findings for TB.⁶

Medical therapy forms the basis of treatment for TB foot. The prescription regime is the same as that of pulmonary TB, but the recommended duration is protracted from 9 up to 18 months.⁶ ESR level can be used as a proxy for assessing treatment response. However, if symptoms persist and repeated radio-imaging procedure shows intractable damage, surgery may be indicated beyond the initial role during diagnostic phase where biopsy is required.³ In cortical bony involvement, patient may require debridement or curettage. Arthrodesis is offered to provide joint stability when there is severe joint destruction with persistent pain. Sequestrae is rarely resected as it will be gradually resorbed during medical therapy.³

Conclusion

TB foot involving calcaneum is rare and thorough investigations should be carried to look for—the primary source of TB infection. Anti-TB chemotherapy is still the mainstay of treatment for TB foot and should be initiated without having to wait for the definitive Mycobacterium Tuberculosis culture if the HPE is suggestive and consistent with other clinical features. Prompt medical therapy may avoid the need for surgical intervention and encourage a better outcome.

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Conflict of Interest

We declare that we have no conflict of interest.

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Data Availability

Not Applicable.

Consent for Publication

Written informed consent was obtained from the patient for publication of this case report and accompanying images.

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