



RESEARCH ARTICLE

OSTEOARTICULAR TUBERCULOSIS OF THE PROXIMAL TIBIA: A RARE LOCALIZATION

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ABSTRACT

Osteoarticular tuberculosis (OAT) is a clinical condition characterized by a series of pathological manifestations resulting from the invasion of osteoarticular structures in the musculoskeletal system by the *Bacillus of Koch* (BK), or *Mycobacterium tuberculosis*. This condition exhibits a higher frequency of involvement in the spine and hips, with the occurrence of tuberculosis in the epiphyses of long bones being extremely rare. The indolent nature of the disease poses a significant challenge for clinicians in accurately diagnosing epiphyseal tuberculosis in long bones. Given the varied clinical and radiological presentations, a diagnosis requires a high level of suspicion, often confirmed through biopsy and culture. This case presentation aims to highlight the uncommon incidence of tuberculosis in long bones. A 53-year-old woman sought medical attention due to chronic leg pain and swelling. Radiological investigations revealed a lytic lesion in the proximal tibia. A minimally invasive biopsy of the lytic lesion followed by curettage and histopathology confirmed the diagnosis of proximal tibia tuberculosis. The patient received medical treatment for nine months using the 2RHZE/7RH protocol (rifampicin, isoniazid, pyrazinamide, ethambutol), with good results at follow-up. This case underscores the importance of considering tuberculosis in cases of epiphyseal lesions in long bones, particularly in regions where the disease is endemic.

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INTRODUCTION

Osteoarticular tuberculosis is a relatively rare infection, accounting for about 3%-5% of all tuberculosis cases (1). Among infections outside the lungs, up to 50% occur in the spine, indicating a preference for this area (2). In contrast, tuberculosis affecting long tubular bones constitutes less than 1% of all cases of skeletal tuberculosis (3). Tuberculosis can appear in various forms within bones, and radiographic characteristics often lack specificity. Diagnosis can be challenging, requiring multiple clinical considerations. However, when faced with diagnostic difficulties, surgical biopsy remains the preferred diagnostic procedure (4). The approach to treatment involves a combination of antibacterial therapy and surgical intervention. This dual strategy aims to address the infectious aspect through antibacterial treatment and manage complications such as bone destruction and deformity through surgical measures (5). There have been very few occurrences of primary epiphyseal tuberculosis of the tibia. In this context, we present a case of tuberculosis affecting the proximal tibia.

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CASE PRESENTATION

A woman aged 53 has been admitted to the orthopedic trauma department complaining of skin redness, warmth, and swelling in her right knee that had been worsening over the past three years. She had also been experiencing intermittent pain since the onset of these symptoms. The pain would often intensify after physical activities, but there were no associated respiratory symptoms, and she had no history of trauma or medication use. The patient received anti-inflammatory treatment and physical therapy, but there was no improvement in her symptoms or clinical condition. Her leg swelling worsened along with the pain. Upon physical examination, there was swelling, warmth, and redness on the anteromedial aspect of her left knee. There was also a slight limitation of joint movement, with flexion at 110° and extension at -10°. Other joint examinations were unremarkable. Sequential radiographic examinations showed the progression of knee destruction, joint space narrowing, and a lytic lesion at the upper end of her tibia (Figure 1).

A left knee computed tomography (CT) scan revealed a lacunar image at the upper end of the tibia, displaying a break in the anterior cortex, an intra-articular hypodense soft tissue collection, and cortical thickening (Figure 2).

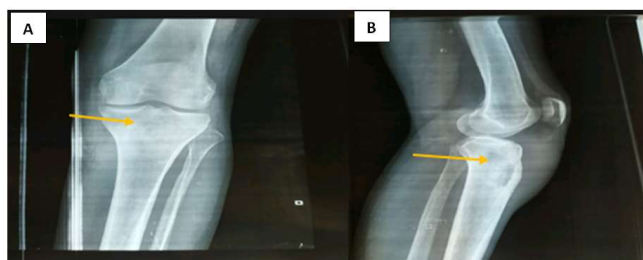


Figure 1. Plain radiographs of the left knee at presentation.

A: AP radiograph showing a lytic lesion of the tibial plateau with joint space narrowing.

B: Lateral view showing a lytic lesion of the tibial plateau with progression of knee destruction



Figure 2. CT scan of the left knee at presentation.

A: Coronal view reveals a lacunar image of the tibial plateau with cortical invasion.

B: Sagittal view reveals the extension of the lacunar image with rupture of the anterior cortex.

Blood tests indicated normal blood cell count and thrombosis parameters, but an elevated level of C-reactive protein (CRP). Subsequently, the patient underwent an internal approach for curettage and cement filling, which resulted in the extraction of frank pus (15cc) during internal arthrotomy and bacteriological sampling. Curettage of the upper end of the tibia was performed, followed by biological cement filling (Figure 3).

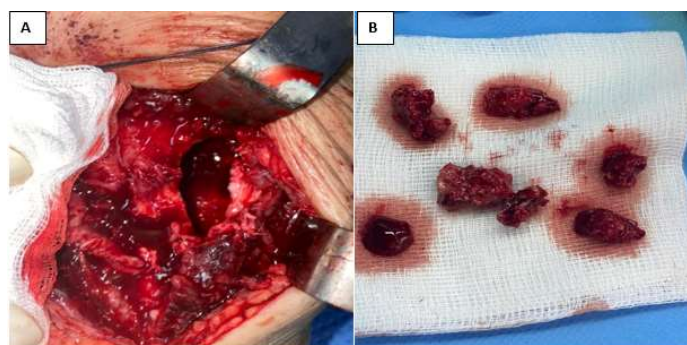


Figure 3. Surgical intervention following an internal approach to the knee

A: Extensive curettage of the lesion.

B: macroscopic aspect of the lesion.

Histopathology revealed the presence of epithelioid and giant-cell granulomas with caseous necrosis, initially suggestive of

tuberculosis. Subsequently, the patient was prescribed isoniazid (10 mg/kg/day), pyrazinamide (30 mg/kg/day), rifampicin (15 mg/kg/day), and ethambutol (15 mg/kg/day) for two months. The treatment was continued for nine months with isoniazid (10 mg/kg/day) and rifampicin (15 mg/kg/day). After six months of treatment, the patient showed clinical improvement, with the disappearance of pain and complete recovery of joint mobility after 20 sessions of physical rehabilitation. After one year, the patient showed no clinical symptoms, and there was an improvement in radiographic examinations (Figure 4).



Figure 4. Clinical examination after six months of treatment

DISCUSSION

Articular tuberculosis is a chronic disease that progresses slowly, and it is characterized by monoarthritis that affects the hip or knee in about 90% of cases (6). Articular tuberculosis is caused by several predisposing factors, including trauma, immunosuppressive conditions like alcoholism, corticosteroid therapy, and HIV/AIDS (5). The spine, femur, tibia, and fibula are commonly affected sites in tuberculosis osteomyelitis, listed in order of frequency (7). TB bacilli reach the proximal tibia through hematogenous spread, leading to a metaphyseal focus (8). Diagnosing osteoarticular tuberculosis is often delayed because it is paucibacillary, making it challenging to isolate or culture Koch's bacillus (9). A high index of suspicion is necessary for diagnosing the condition, and it typically requires confirmation through arthrocentesis and mycobacterial culture. In many cases, a synovial biopsy is also required for a comprehensive evaluation (10). Pigmented villonodular synovitis, pyogenic arthritis, tumors, and various inflammatory disorders are frequently described as mimicking Tuberculosis (11). Radiography may reveal soft tissue swelling, followed by the later development of osteopenia, periosteal thickening, and periarticular bone destruction. In advanced cases, cold abscesses and fistulae may develop (6). MRI is the optimal imaging test for diagnosing and monitoring tuberculous osteoarthritis. It can reveal synovial pannus, joint effusion, cartilage destruction, bone erosions, and periarticular abscesses (12). Histological evidence plays a crucial role in the diagnosis of osteoarticular tuberculosis and is considered a fundamental step. The presence of an epithelioid and gigantocellular granuloma with caseous necrosis, when demonstrated alongside a suggestive clinical and radiological presentation, allows for a definitive diagnosis of osteoarticular tuberculosis (13). Antibiotic therapy for tuberculosis is focused on the combination of several antituberculosis drugs, with a minimum treatment duration of nine months, according to the World Health Organization (5). Surgery plays a crucial role in conducting biopsies or draining large abscesses, and it also helps to prevent or correct deformities (4).

CONCLUSION

Tuberculosis remains a major public health concern worldwide, especially in countries with underdeveloped healthcare systems, such as Morocco. When tuberculosis affects the proximal tibia, it is a rare form of osteoarticular tuberculosis that presents with various clinical symptoms. To manage such cases, a combination of surgery and prolonged, targeted antituberculous chemotherapy is recommended. This approach is particularly effective in patients with neurological symptoms or deformities and has resulted in satisfactory outcomes in the majority of cases.

DECLARATION OF INTERESTS

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Patient Consent Statement: Consent was obtained from the patient for publication of this case report and accompanying images.

Ethical Approval: Ethical approval is exempt at our institution for deidentified case reports

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