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# When a Diagnosis of Septic Arthritis Conceals Osteoarticular Tuberculosis: A Diagnostic Challenge

**Catarina Pinto da Silva*, Flávia Ramos, Rita Sevivas, Luís Fabião and Márcia Ribeiro**

[1]*Hospital de Santa Maria Maior, Barcelos, Portugal.*

***Correspondence:**
Catarina Pinto da Silva, Hospital de Santa Maria Maior, Barcelos, Portugal.

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## ABSTRACT

*Tuberculosis persists as a significant public health challenge, particularly in developed countries, where atypical manifestations, including osteoarticular involvement, often complicate diagnosis. This case highlights the diagnostic difficulty in distinguishing osteoarticular tuberculosis from septic arthritis. We report an 81-year-old male with a history of hypertension and cerebrovascular disease who presented with a two-week history of persistent fever and an abscessed lesion in the left axilla. Initial imaging and microbiological analysis suggested septic arthritis, leading to antibiotic treatment.*

*However, the patient's condition deteriorated, prompting further investigation that revealed lytic lesions and osteomyelitis. Surgical intervention confirmed the presence of acid-fast bacilli and Mycobacterium tuberculosis in culture. This case underscores the necessity for a high index of suspicion for mycobacterial infections in elderly patients presenting with arthritis-like symptoms, the importance of a multidisciplinary approach, and the relevance of timely diagnosis and treatment in improving patient outcomes.*

## Keywords

Tuberculosis**,** Osteoarticular tuberculosis, Septic arthritis, *Mycobacterium tuberculosis*, Extrapulmonary TB, Multidisciplinary approach, Diagnosis and treatment.

## Introduction

Tuberculosis (TB) is an ancient infectious disease that continues to present significant global health challenges. Despite advances in diagnostic tools and therapeutic interventions, TB remains endemic in many regions, with resurgence observed even in developed countries due to factors such as increased migration, HIV/AIDS prevalence, and drug resistance [1,2]. Although pulmonary TB is the most common form, extrapulmonary TB accounts for 20-25% of cases, with osteoarticular TB representing approximately 10% of these cases [3,4]. Osteoarticular TB predominantly involves the spine (*Pott's* disease), but peripheral joints, osteomyelitis, and soft tissue abscesses are also observed [5]. The clinical presentation is often insidious, mimicking other conditions such as septic arthritis, malignancies, or degenerative diseases [6]. These overlapping features pose diagnostic challenges, necessitating a high index of suspicion, especially in older individuals with comorbidities. This report presents a complex case of osteoarticular TB initially misdiagnosed as septic arthritis, highlighting the importance of a multidisciplinary diagnostic approach and timely intervention [7].

## Clinical Case

An 81-year-old male with a medical history of hypertension and cerebrovascular disease presented to the emergency department with a persistent fever lasting two weeks. Physical examination revealed an abscessed lesion in the left axilla, measuring 40 mm by 12 mm, with signs of fistulization. Ultrasonography suggested a hematoma in the left shoulder. Surgical drainage yielded 20 mL of purulent fluid, which was negative for bacterial growth in culture.

### Initial Diagnostic Workup

Computed tomography (CT) of the thoraco-abdominal-pelvic region revealed a right paravertebral collection measuring 5.3 cm, initially suggestive of septic arthritis of the left glenohumeral joint.

Antibiotic therapy with Vancomycin, Ampicillin, and Clindamycin was initiated based on the presumed diagnosis of septic arthritis. However, the patient's condition worsened, with new abscesses appearing in the right shoulder and bilateral pectoral regions. Additionally, the patient reported severe lumbar pain.

Lumbar spine CT revealed a lytic lesion at L1 and bone resorption suggestive of spondylodiscitis or a mycobacterial infection. Magnetic resonance imaging (MRI) demonstrated extensive paravertebral abscesses and osteomyelitis at L2 and L4, with heterogeneous gadolinium uptake in affected areas. Laboratory tests, including HIV serology, were negative, and a chest X-ray showed no significant abnormalities. Despite aggressive antibiotic therapy, no clinical improvement was noted. Fluid samples from the left glenohumeral joint were collected through multiple surgical interventions. Microscopic examination revealed acid-fast bacilli, and culture confirmed *Mycobacterium tuberculosis*. A diagnosis of osteoarticular TB was established following multidisciplinary discussions involving Infectious Disease and Neurosurgery teams.

## Management and Outcome

The patient was initiated on a 12-month anti-TB regimen, beginning with a two-month intensive phase of Rifampicin, Isoniazid, Ethambutol, and Pyrazinamide, followed by a 10-month maintenance phase with Rifampicin and Isoniazid. Clinical follow-up demonstrated gradual resolution of symptoms, with significant improvement in mobility and pain relief.

## Discussion

Osteoarticular TB remains a diagnostic challenge due to its nonspecific symptoms and ability to mimic other pathologies. In this case, the initial diagnosis of septic arthritis delayed the identification of TB, underscoring the need for heightened clinical suspicion in at-risk populations. Elderly patients with comorbidities, such as our case, are particularly vulnerable to atypical presentations. The pathophysiology of osteoarticular TB typically involves hematogenous dissemination from a primary focus, often pulmonary. However, in many cases, the primary site remains undetected [8]. Diagnostic imaging plays a crucial role, with MRI being the modality of choice for detecting bone and soft tissue involvement. Microbiological confirmation through acid-fast staining and culture remains the gold standard, although newer molecular diagnostic tools such as GeneXpert have shown promise in reducing diagnostic delays [7].

Prompt initiation of anti-TB therapy is essential to prevent complications such as joint destruction and spinal instability. Surgical intervention may be necessary for abscess drainage or stabilization of the affected joint, as demonstrated in our case. Multidisciplinary collaboration between infectious disease specialists, radiologists, and orthopedic surgeons is critical for successful outcomes. This case underscores the complexity of diagnosing osteoarticular infections, particularly in elderly patients with nonspecific presentations. Tuberculosis should always be considered in the differential diagnosis of septic arthritis, especially in high-risk populations. Early recognition, multidisciplinary management, and timely initiation of anti-TB therapy are essential to improving patient outcomes. Further research and awareness are needed to reduce diagnostic delays and optimize treatment strategies for osteoarticular TB.

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