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(CASE REPORT)

A Multifocal Tuberculosis Revealed by Coxofemoral Involvement: A Case Report

S. Moatassime *, A. Mourhri, M. Ijim, O. Fikri and L. Amro

Department of Pneumology, Mohammed VI University Hospital, Faculty of Medicine and Pharmacy of Marrakech, Cadi Ayyad University, LRMS Laboratory, Marrakech, Morocco.

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Abstract

Multifocal tuberculosis, defined as the concomitant involvement of multiple non-contiguous sites by Mycobacterium tuberculosis, is a rare entity, particularly in immunocompetent individuals. Osteoarticular localizations, especially tuberculous coxitis, represent an uncommon mode of presentation. We report the case of a 17-year-old male with no medical history, presenting with acute left hip pain revealing multifocal tuberculosis, confirmed by detection of Mycobacterium tuberculosis in sputum using the GeneXpert test. This case highlights the importance of early consideration of tuberculosis in any subacute or chronic arthritis with suggestive clinical context.

Keywords: Multifocal tuberculosis; Tuberculous coxitis; Adolescent; GeneXpert; Pulmonary micronodules

1. Introduction

Tuberculosis (TB) remains a major global health concern, particularly in countries with high endemicity. Although pulmonary disease represents the most frequent form, extrapulmonary tuberculosis accounts for approximately 15–20% of all reported cases [1]. Among extrapulmonary sites, osteoarticular involvement is uncommon, occurring in only 1–3% of patients with tuberculosis [2]. Tuberculous coxitis, most often unilateral, typically develops insidiously, leading to diagnostic delay. In certain circumstances, it may represent the initial manifestation of multifocal tuberculosis.

2. Case presentation

A 17-year-old adolescent male, with no prior medical history or known contact with TB, presented with acute left hip pain evolving over several days. The patient reported a chronic cough with mild hemoptysis for four months, associated with weight loss of 5 kg, anorexia, and night sweats.

On examination, his temperature was 39°C, oxygen saturation 95% on room air, with no significant respiratory findings. Musculoskeletal examination revealed severe pain on mobilization of the left hip without local redness or swelling.

Laboratory tests showed a C-reactive protein level of 118 mg/L, leukocyte count of 7,700/mm^3 with neutrophils 5,250/mm^3, hemoglobin 12 g/dL, and lymphopenia at 880/mm^3. Chest radiography revealed bilateral infiltrates and left apical micronodules. Pelvic X-ray demonstrated narrowing of the left hip joint space with subchondral sclerosis and alteration of femoral head architecture.

An ultrasound-guided joint aspiration was performed, yielding a small amount of purulent synovial fluid. Cytological analysis showed predominantly neutrophilic inflammatory cells. Culture of the synovial fluid on Löwenstein-Jensen medium produced characteristic “cauliflower-like” colonies, from which *Mycobacterium tuberculosis* was isolated.

* Corresponding author: S. Moatassime

GeneXpert testing on sputum confirmed *Mycobacterium tuberculosis* without resistance to rifampicin, supporting the diagnosis of multifocal tuberculosis involving both pulmonary and osteoarticular sites.

Figure 1 Chest X-ray showing bilateral diffuse infiltrates and left micronodules

Figure 2 Pelvic radiograph demonstrating narrowing of the left coxofemoral joint space, subchondral osteolysis, and diffuse demineralization

The patient was started on standard first-line anti-tuberculous therapy (isoniazid, rifampicin, pyrazinamide, and ethambutol) for two months, followed by dual therapy for seven months. Clinical, radiological, and orthopedic functional monitoring was instituted. No surgical intervention was required due to the absence of severe joint destruction or abscess formation.

3. Discussion

Multifocal tuberculosis is defined as the simultaneous involvement of at least two distinct and non-contiguous sites [3]. Although more frequent in immunocompromised patients, several reports have documented its occurrence in immunocompetent adolescents and young adults [4]. In our case, the coexistence of coxofemoral and pulmonary involvement illustrates this unusual presentation.

Tuberculous coxitis accounts for approximately 15% of osteoarticular TB cases [5]. Infection typically spreads hematogenously from a pulmonary or lymph node focus. Its slow progression, with mechanical pain and increasing stiffness, often delays diagnosis. Radiographic changes — including joint space narrowing, marginal osteolysis, and

poorly defined bone margins — usually appear at a late stage. Magnetic Resonance Imaging (MRI) allows earlier detection by demonstrating synovial effusion and subchondral bone involvement [6].

Biologically, inflammatory markers are often moderately elevated. Lymphopenia may be observed in active disease, reflecting impaired cell-mediated immunity [7]. In our patient, high CRP levels and fever at 39 °C indicated a systemic infectious process.

Diagnosis relies on bacterial identification of *Mycobacterium tuberculosis* through histological examination or molecular techniques. The GeneXpert assay, used here on sputum samples, offers rapid and sensitive detection even in smear-negative cases [8]. It also enables early identification of rifampicin resistance.

Treatment follows the Moroccan National Anti-Tuberculosis Program (LAT) recommendations, which align with WHO guidelines. For osteoarticular tuberculosis in adults, the regimen consists of a 9-month course, including a 2-month intensive phase with four drugs (isoniazid, rifampicin, pyrazinamide, and ethambutol), followed by a 7-month continuation phase with isoniazid and rifampicin [9].

Supportive management involves relative immobilization during the acute phase and early functional rehabilitation to preserve joint mobility and prevent ankylosis.Surgical intervention is reserved for cases with severe joint destruction, sequestrum, or cold abscess formation[10].

4. Conclusion

Tuberculous coxitis remains a rare but revealing presentation of multifocal tuberculosis, even in immunocompetent individuals. This case emphasizes the importance of considering TB in any atypical or chronic coxitis. Early use of imaging and molecular diagnostic tools such as GeneXpert improves diagnostic timing and functional outcomes

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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