

**Case Report**

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## Excellent Recovery with Conservative Treatment of Tuberculosis Knee in HIV Patient: A Case Report

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### Abstract

Osteoarticular tuberculosis accounts for only 1 to 3% of tuberculosis with cases involving the knee joint even less common. This condition is commonly associated with immunosuppressive state like HIV. A case of tuberculosis knee in a middle-age gentleman with underlying HIV is reported. Diagnosis is complicated as culture analyses of synovial fluid yielded negative results. Chronic nature of knee pain with suggestive clinical and imaging findings assisted in pointing towards the correct diagnosis. A remarkable recovery was seen in terms of pain and range of motion of the knee following commencement of antitubercular therapy and physiotherapy. Tuberculosis of knee is a diagnostic challenge due to paucibacillary nature of tuberculous lesion. From this experience, we suggest clinicians to always consider the possibility of tuberculosis especially in endemic regions and high-risk patients as timely intervention is associated with better prognosis.

**Keywords:** Tuberculosis knee, *Mycobacterium tuberculosis*, osteoarticular tuberculosis, HIV.

### INTRODUCTION

Tuberculosis or TB is an infectious disease that is present worldwide caused by a pathogen named *Mycobacterium tuberculosis*. It is estimated that one-quarter of humanity has been infected with TB and up to 10 percent of the infected population developed pulmonary or extra-pulmonary symptoms [1]. Extra-pulmonary tuberculosis accounts for 19 percent of cases and out of this osteoarticular TB is even more uncommon with an incidence rate of 11-15 percent [2]. Specifically, TB knee is the third most common osteoarticular TB after TB spine and hip with an incidence of 10 percent. Generally, HIV patients are more prone to TB infection due to immunocompromised state and are estimated to be 18 times more likely to develop active TB infection [1].

TB infection of knee commonly affects synovial lining of the joint with variable juxta articular bone involvement [3]. Diagnosis of TB knee is often precarious especially in early stage due to its paucibacillary nature. Thus, high clinical suspicion plays an important role in early diagnosis of the disease to enable early intervention. We present a case of TB knee in a gentleman with underlying HIV treated with antitubercular therapy and early physiotherapy.

### CASE REPORT

A 37-years-old gentleman with underlying HIV presented with right knee pain for 10 months associated with gradual swelling. Initially, pain was only occasional with no aggravating factors. Subsequently, pain worsened after a session of intense aerobic exercise. Otherwise, he denied any prolonged fever, cough, night sweats, and other constitutional symptoms. 7 years prior, he was diagnosed and treated for lymph nodes tuberculosis with 9 months course of antitubercular therapy. He maintained good compliance to HAART module for HIV infection since 2010. His CD4 cell count 2 months prior to presentation was 327.

Clinical examination revealed a tender and swollen right knee with doughy consistency and thickened synovium. Fixed flexion deformity of the knee was observed with range of motion from 15 to 60 degrees. No overlying skin changes or cold abscess were noted. Right knee arthrocentesis was done but synovial fluid Gram stain and culture analyses were negative. Acid-fast bacillus smear taken on 3 separate occasions yielded negative results. Blood investigations were normal except for increased CRP (24 mg/L) and ESR (120mm/hr).

Roentgenogram of right knee showed bony lesion over lateral condyle of femur with reduced joint space over lateral aspect (Figure 1).

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MRI was subsequently performed and demonstrated thickened synovium with serpiginous foci seen in both femoral condyles and proximal tibia (Figure 2). Diagnosis of right knee tuberculosis was established based on clinical and radiographic findings.



Figure 1: Lateral and AP view of right knee x-ray

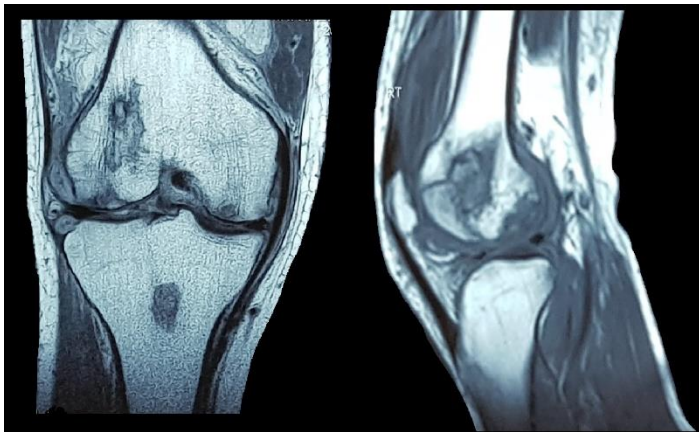


Figure 2: Sagittal and coronal view of right knee MRI

The patient was prescribed with antitubercular therapy for 9 months along with physiotherapy. Intensive phase of 2 months preceded the maintenance phase under directly observed therapy by community clinic. Range of motion and muscle strengthening exercises were gradually introduced later once the pain has improved. A remarkable improvement was seen after just 1 month of therapy in terms of pain and range of motion. Follow-up after 1 year showed almost complete recovery with restoration of full range of knee motion and pain subsidence. Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC), was utilized to assess the functional outcome of the patient. A score of 5 was evaluated as he complained of moderate knee stiffness upon waking up in the morning with mild difficulty in descending stairs, going shopping, and performing heavy domestic duties.

## DISCUSSION

Osteoarticular TB in immunocompromised hosts is frequently due to hematogenous spread. Other manners of spread include contiguous spread from adjacent tissues or rarely, by direct inoculation. Reactivation of dormant bacillus foci in bone that was disseminated during primary TB infection was also thought to be the pathophysiology of osteoarticular TB [3]. In our case, the patient was both immunocompromised and had previous lymphatic TB which raised the alarm for the possibility of secondary TB infection.

Diagnosis of osteoarticular TB has always been a challenge. Although positive tissue culture is considered as the gold standard for definitive

diagnosis of TB knee, low sensitivity of the test especially in early cases may complicate diagnostic process. Synovial or periarticular bone biopsy frequently revealed area of caseous necrosis with lymphocytes infiltration with positive culture of up to 80% of cases [4]. Nonetheless, performing tissue biopsy for diagnostic purpose especially in early stage such as our case may not be preferable as open biopsy is associated with complications such as stiffness and bacterial superinfection [5]. Apart from synovial tissue biopsy, Mycobacterium tuberculosis may be isolated in up to 40% of synovial fluid [6].

Low sensitivity of polymerase chain reaction (PCR) test on synovial tissue as proved by Hofmann has rendered the labor and cost-intensive method to be futile [7]. Another study on PCR assay for Mycobacterium tuberculosis reported higher sensitivity of 98.5% but the specimens tested were sputum [8]. Alternatively, in a study of 60 osteoarticular TB cases, GeneXpert MTB/RIF assay has been found to be 82% sensitive and 100% specific [9]. Limitations include the unavailability of the test in developing countries as well as the substantial cost.

Classically, TB knee has been divided into 4 radiographic stages of increasing severity [10]. In our case, the roentgenogram is consistent with stage 2 in which there was presence of bony lesion and reduced joint space without gross anatomical disorganization. CT scan may assist in the evaluation of bone damage and is useful in CT-guided biopsy. MRI is invaluable in detecting early changes in bone and more accurately assess soft tissues like synovial lining, joint space, and cartilage [11].

In essence, diagnosis of osteoarticular can be classified into three categories based on evidence of TB infection [12].

1. Definitive TB- diagnosis confirmed with positive tissue culture
2. Suspected TB- defined with positive AFB smear/chronic granulomatous inflammation
3. Possible TB- retrospective consideration with favorable radiological and clinical response to antituberculosis treatment

In view of negative tissue culture coupled with good response to antitubercular therapy and suggestive radiographic findings diagnosis of current case is considered to be possible TB.

Generally, soft tissue lesions without bony involvement and joint space are treated conservatively. In early stage like the current case, antitubercular therapy with gradual physiotherapy yielded an excellent result. Some authors advocate chemotherapy even in severe cases. Gupta et al. concluded that antitubercular therapy produced better results clinically when compared to open synovectomy [5]. Patients who underwent surgical intervention were noted to have persistent symptoms and stiffer knees postoperatively. A similar opinion is shared by Lee et al. in which 33 paediatric patients had good results when treated solely by chemotherapy and physiotherapy [13]. According to Kerri et al, open synovectomy is unnecessary as it is difficult to completely debride affected tissues [10].

On the other hand, Wilkinson et al. recommended surgical intervention in their study of 68 knees stating that the persistence of pannus may delay joint recovery [14]. Early surgical interventions may also lessen the disease load while serving as a method to confirm the diagnosis [15].

The current authors concur that antitubercular therapy is the mainstay of treatment and surgical intervention should be preserved in cases with failed conservative treatment or presence of abscess requiring drainage.

## CONCLUSION

The rare occurrence of TB knee may impede its early diagnosis. High clinical suspicion especially in high-risk patients in high TB burden countries should provide a vital clue in helping to diagnose the disease.

Conservative treatment should be commenced as early as possible to hinder the progression of the disease.

## REFERECES

1. WHO. World Health Organisation Global tuberculosis report 2020.
2. Tuli SM. Tuberculosis of the Skeletal System. 4th ed. New Delhi: Jaypee Brothers. 2010;44(3):56.
3. Ersöz G, Öztoprak N, Sarigül F. Tuberculosis Arthritis and Osteomyelitis. In: Sener A, Erdem H. (eds) Extrapulmonary Tuberculosis. New York: Springer. 2019;71-82.
4. Storm M, Vlok GJ. Musculoskeletal and spinal tuberculosis in adults and children. In: Tuberculosis: A Comprehensive Clinical Reference. Elsevier Inc. 2009;494-03.
5. Gupta SK. The treatment of synovial tuberculosis of the knee by a method with unrestricted activities. Ind J Orthop. 1982;16:14-18.
6. Charisma A, Koesoemoprodjo W. Diagnosis and Outcome of Tuberculosis of Knee Joint (Gonitis Tuberculosis) with Pulmonary Tuberculosis after Completing Anti-Tuberculosis Therapy: A Case Report. Jurnal Respirasi. 2021;7(1):19-26.
7. Hoffman EB, Allin J, Campbell JA, Leisegang FM. Tuberculosis of the knee. Clin Orthop Relat Res. 2002;(398):100-6.
8. du van Helden PD, Toit R, Jordaan A, Taljaard B, Pitout J, Victor T, *et al.* The use of the polymerase chain reaction test in the diagnosis of tuberculosis. S Afr Med J. 1991;80(10):515-6.
9. Wen H, Li P, Ma H, Lv G. Diagnostic accuracy of Xpert MTB/RIF assay for musculoskeletal tuberculosis: a meta-analysis. Infect Drug Resist. 2017;10:299-05.
10. Kerri O, Martini M. Tuberculosis of the knee. Int Orthop. 1985;9:153-57.
11. Leonard M, Blumberg H. Musculoskeletal Tuberculosis. In: Schlossberg D. Tuberculosis and Nontuberculous Mycobacterial Infections. Sixth Edit. Philadelphia, Pennsylvania: American Society for Microbiology (ASM) Press. 2017;371-92.
12. Arathi N, Ahmad F, Huda N. Osteoarticular tuberculosis-a three years' retrospective study. J Clin Diagn Res. 2013;10:2189-92.
13. Lee AS, Campbell JAB, Hoffman EB. Tuberculosis of the knee in children. J Bone Joint Surg. 1995;77B:313-18.
14. Wilkinson MC. Tuberculosis of the hip and knee treated by chemotherapy, synovectomy, and debridement: A follow-up study. J Bone Joint Surg. 1969;51A:1343-59.
15. Babhulkar S, Pande S. Tuberculosis of the hip. Clin Orthop Relat Res. 2002;398:93-99.

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