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CASE REPORT

Case report: A rare case of tubercular arthritis in Immunocompromised individual

[1]Dr. Bhargavi Suresh Mahakulkar, [2]Dr. Atul Thakur, [3]Dr. Rajendra Prasad Gupta

[1]Junior Resident, [2]Assistant Professor, [3]Professor, Department of General Medicine, Krishna Mohan Medical College and Hospital, Mathura, India

Corresponding author
Dr. Bhargavi Suresh Mahakulkar
Junior Resident, Department of General Medicine, Krishna Mohan Medical College and Hospital, Mathura, India
Email: m.bhargavi1995@gmail.com

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ABSTRACT

Background: Tuberculosis (TB) remains a significant global health concern, ranking as the 10th leading cause of death worldwide. While pulmonary TB is well-recognized, extrapulmonary manifestations, including tuberculous arthritis, are increasingly reported, particularly among immunocompromised patients. This report highlights a rare case of tuberculous arthritis in a middle-aged male with HIV. **Case Presentation:** A 50-year-old HIV-positive male, on antiretroviral therapy for 2.5 years, presented with chronic monoarthritis of the wrist, characterized by progressive, painless swelling and restricted movement over a year. Clinical examination and laboratory investigations were unremarkable, except for imaging findings consistent with Phemister's triad. Diagnosis was confirmed via Cartridge-Based Nucleic Acid Amplification Test (CBNAAT) of joint aspirate, which detected Mycobacterium tuberculosis with rifampicin resistance. **Conclusion:** Tuberculous arthritis should be considered in the differential diagnosis of chronic monoarthritis, particularly in immunocompromised patients. Prompt diagnosis and appropriate therapy can significantly improve clinical outcomes, emphasizing the need for vigilance in such cases.

Keywords: Tuberculous arthritis, chronic monoarthritis, extrapulmonary tuberculosis, immunocompromised

INTRODUCTION

As the 10th most common cause of all reported deaths, tuberculosis is a major global source of illness and mortality (1). Without a reliable vaccine, the prevention of tuberculosis depends on early case detection, infection management strategies, and preventive treatment for people who have latent Mycobacterium tuberculosis infections (2). Annually, more than 10 million individuals contract tuberculosis, with India representing 27% of global TB cases, as reported in the Global TB Report 2023 by the World Health Organisation (3). Although tuberculosis is a preventable and treatable disease, around 1.7 million fatalities were linked to it, with over 167,000 of these deaths occurring in individuals living with human immunodeficiency virus (PLHIV) (5). Tuberculosis (TB) predominantly affects the respiratory system, although it can impact any organ in the body (6). In recent years, the incidence of extrapulmonary tuberculosis (TB) manifestations has markedly risen due to the widespread prevalence of human immunodeficiency virus (HIV) infection and the extensive use of immunosuppressants in diverse contexts (7, 8), potentially occurring with or without active pulmonary involvement (9). Literature has accounts of tuberculous arthritis and tuberculous spondylitis; however, there is a paucity of information about the incidence of tuberculous arthritis in immunocompromised patients. We present an uncommon case of tuberculous arthritis in a middle-aged male patient with a documented immunocompromised condition.

CASE REPORT

Tubercular arthritis, though rare, remains a significant challenge in clinical practice, especially in immunocompromised patients. This report discusses a 50-year-old male who was diagnosed with HIV and had been on antiretroviral therapy (ART) for two and a half years. He presented with chronic monoarthritis of the wrist, a condition often underdiagnosed due to its insidious onset and the absence of constitutional

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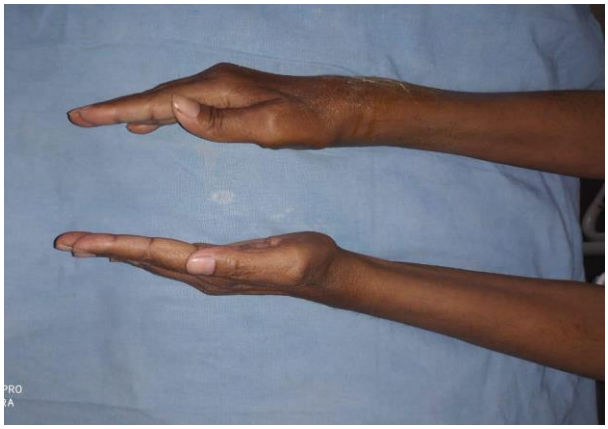
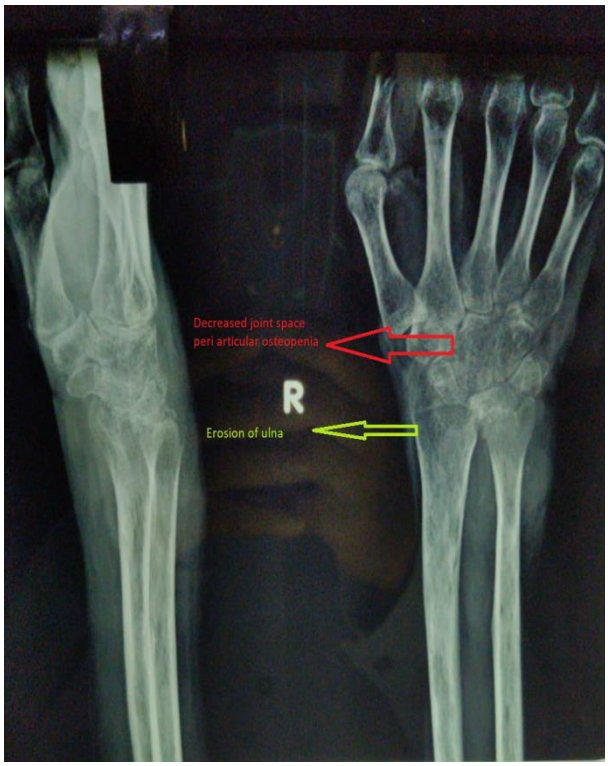
symptoms in many cases. The patient developed a gradually progressive, painless swelling over the right wrist for one year. Over the past two months, he reported restricted movement, which interfered with daily activities such as driving and writing. He had no history of fever, trauma, or wrist injury, nor did he report any history of cough, weight loss, decreased appetite, or contact with tuberculosis (TB) patients. There was also no prior history of musculoskeletal disorders.

The patient appeared afebrile with stable vital signs: pulse rate of 100 beats per minute, respiratory rate of 20 breaths per minute, oxygen saturation of 98% on room air, and blood pressure of 110/70 mmHg. There were no clinical signs such as cyanosis, clubbing, pedal edema, or lymphadenopathy, and his jugular venous pressure was not raised. Systemic examination showed no abnormalities, with normal heart sounds, equal air entry in both lungs, a soft and non-tender abdomen, and no focal neurological deficits. Local examination revealed swelling over the right wrist joint, which was non-tender and soft, without crepitus, but associated with restricted movement.

Laboratory investigations, including complete blood count, kidney function tests, and liver function tests, were all within normal limits. Radiographic imaging of the right wrist joint revealed juxta-articular osteopenia, peripheral osseous erosions, and gradual narrowing of the joint space—findings characteristic of Phemister's triad, typically seen in tuberculous arthropathy. Aspiration of the wrist joint produced a non-foul-smelling, whitish to yellowish fluid. The aspirate was sent for Cartridge-Based Nucleic Acid Amplification Test (CBNAAT), which confirmed the presence of Mycobacterium tuberculosis with rifampicin resistance.





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DISCUSSION

Tuberculosis arthritis arises either from an infection disseminated from the neighbouring bone or through haematogenous dissemination from a remote organ, such as the lungs (10). In non-endemic regions, extrapulmonary tuberculosis typically manifests in individuals with immunosuppression, including conditions such as HIV, chronic illnesses like diabetes mellitus, alcoholism, cancer, or those undergoing treatment with corticosteroids or immunomodulators. Furthermore, localised harm, including trauma, surgical procedures, or intravenous drug administration, may trigger the reactivation of tuberculosis in the neighbouring joints (11).

The arthritic manifestation caused by Mycobacterium tuberculosis is gradual and stealthy, commencing with uncomplicated synovitis, characterised by an enlarged joint space in imaging studies. Subsequently, granulation tissue develops, followed by effusion, pannus development, and cartilage degradation. In the subsequent stage, the underlying bone may be compromised, or para-articular cold abscesses may develop, leading to the formation of fistulae and draining sinus tracts (11). Tuberculosis arthritis typically manifests as a monoarticular condition. Large and medium weight-bearing joints, such as the hip and knee, are the most often affected sites in peripheral tuberculosis arthritis (12). Nevertheless, a subset exhibits involvement of the foot or ankle joints (13). In cases of subacute to chronic arthritis, TB should be considered as a potential differential diagnosis. This is particularly applicable to instances of arthritic involvement accompanied by a draining sinus tract to the adjacent epidermis (14,15).

Pathologically, two separate forms of bone and joint involvement have been recognised: the caseous exudative type and the granular type. The caseous exudative variant, predominantly observed in youngsters, is marked by significant bone degradation, abscess and sinus development, along with systemic manifestations including fever and weight loss. The granular variant, more frequently observed in adults, advances gradually with less tissue damage and negligible abscess formation. These presentations emphasise the dynamic characteristics of host-parasite interactions in tuberculosis, frequently exhibiting developing mixed patterns across time (16). Tuberculous arthritis clinically manifests as a slow onset of oedema, discomfort, and limited joint mobility. In contrast to acute infections, the impacted joints are generally "cold," devoid of erythema and warmth. Constitutional symptoms, such as fever and weight loss, are present in fewer than 30 percent of individuals. Advanced illness frequently leads to joint damage, deformity, and limited range of motion, with certain individuals experiencing draining sinuses (5). Granulomatous inflammation characterises tuberculous arthritis, resulting in synovial growth, effusion, and progressive cartilage degradation. In the absence of prompt management, these degenerative alterations lead to joint disorganisation and possible deformity. The management of tuberculous arthritis necessitates protracted anti-tubercular therapy (ATT), generally lasting a minimum of 9 months, with the duration perhaps prolonged in immunocompromised individuals owing to their heightened risk of relapse (17). The prompt commencement of antitubercular therapy is essential to avert joint deterioration and maintain functionality. Surgical intervention may be required to debride necrotic tissue or address abscesses in certain instances. A case study by Omonge et al. (18) examined a patient with HIV who manifested Poncet's illness, a kind of reactive polyarthritis linked to tuberculosis, which responded favourably to antitubercular therapy, highlighting the significance of prompt intervention. The present case underscores the importance of maintaining a high index of suspicion for tuberculous arthritis in immunocompromised individuals presenting with chronic monoarthritis. Comprehensive diagnostic evaluation, including imaging and microbiological studies, is essential for accurate diagnosis. Timely initiation of ATT, combined with appropriate surgical and rehabilitative measures, ensures optimal outcomes and functional recovery for affected patients

CONCLUSION

Tubercular arthritis in immunocompromised individuals remains a diagnostic challenge due to its atypical presentation and overlap with other conditions. Prompt recognition and initiation of appropriate therapy can significantly improve outcomes. This case emphasizes the critical role of vigilance and comprehensive diagnostic evaluation in addressing rare manifestations of TB in vulnerable populations.

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