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Case Report

Tuberculous tenosynovitis of wrist – a diagnostic uncertainty

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ABSTRACT

Among the rare manifestations of extrapulmonary TB, musculoskeletal involvement is uncommon but significant, with TB synovitis being a particularly rare form. TB synovitis typically affects the larger, weight-bearing joints such as the hip or knee, but the involvement of the wrist is exceedingly rare, and the reported incidence is around 5%. So, it may be easily mistaken for other inflammatory conditions like rheumatoid arthritis or septic arthritis. Here we report a rare case of a 50-year-old gentleman who presented with complaints of swelling over the right wrist for 3 months. Swelling was insidious in onset, progressive and associated with pain and restriction of movements. The patient had no history of trauma. On examination, there were 2 swellings of size 5×5 cm noted over dorsal aspect and 2×2 cm over volar aspect of wrist which was soft in consistency and fluctuation test was found to be positive. Radiological imaging showed erosion of all carpal bones and base of 2nd, 3rd, 4th, 5th metacarpals extending to radio-ulnar joint. MRI showed T1 hypointense, T2/STIR high signal density collection in subcutaneous plane. Patient underwent open tenosynovectomy and intraoperatively, cheesy caseous material was found. Samples were sent for analysis and showed granulomatous tenosynovitis on histopathological examination and *M. tuberculi* was detected on CBNAAT. This case is being reported for its rare, uncommon site and presentation. TB synovitis of wrist can be misdiagnosed as simple ganglion cyst, so we recommend CBNAAT analysis for all tenosynovitis cases. This case report highlights a rare instance of TB synovitis involving the wrist, focusing on its clinical presentation and diagnostic approach. It emphasizes the need for a high index of suspicion for tuberculosis in endemic regions or in patients with relevant risk factors, as early diagnosis and treatment are crucial to prevent irreversible joint damage and systemic complications.

Keywords: Tenosynovitis, Tuberculosis, Wrist joint, Histopathology, Tenosynovectomy, Rarity

INTRODUCTION

Among the rare manifestations of extrapulmonary tuberculosis (EPTB), musculoskeletal involvement is uncommon but significant, with tuberculous synovitis (TS) being a particularly rare form. TB synovitis typically affects the larger, weight-bearing joints such as the hip or knee, but the involvement of the wrist is exceedingly rare, and the reported incidence is less than 1%.[1] As a result, it might be often misdiagnosed with other inflammatory disorders such as Rheumatoid arthritis or septic arthritis. Due to its subtle presentation and vague clinical symptoms that can create difficulties, TB tenosynovitis (TS) can be difficult to diagnose in a timely manner. Herein, we report a unique case of Tuberculous synovitis involving the wrist, emphasizing the variable clinical manifestation and diagnostic methodology.

CASE REPORT

Here, we present a unique case involving a 50-year-old right-hand dominant male who has experienced pain and swelling in his right wrist for a duration of three months., which was insidious in onset, gradually progressive and associated with limitation of daily activities like combing and maintaining personal hygiene. The patient had no

history of trauma or other constitutional symptoms. On examination, there were two swellings of size 5×5 cm noted over the dorsal aspect and 2×2 cm over the volar aspect of the wrist, which was soft in consistency and fluctuant (Figure 1). Radiological imaging (X-rays) showed erosion of all carpal bones and the base of the 2nd, 3rd, 4th, and 5th metacarpals extending to the distal radio-ulnar joint. MRI showed T1 hypointense and T2/STIR high signal density collection in the subcutaneous plane. The patient underwent an open tenosynovectomy, and intraoperatively cheesy caseous material was noted (Figure 2). Samples were sent for analysis, and granulomatous tenosynovitis was shown on histopathological examination. *M. tuberculi* was detected on CBNAAT. Subsequently patient was started on anti-tubercular therapy (ATT), and after three months of therapy, there was no sign of a disease recurrence; the functional outcome was improved. Full course of chemotherapy was given. The patient is presently capable of performing his daily living activities. This case is being reported for its rare, uncommon site and variable presentation.

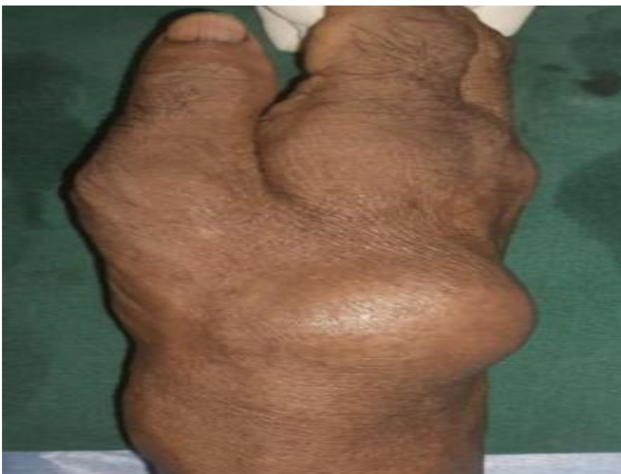

Figure 1: Preoperative image of dorsal and volar swelling over the wrist joint.

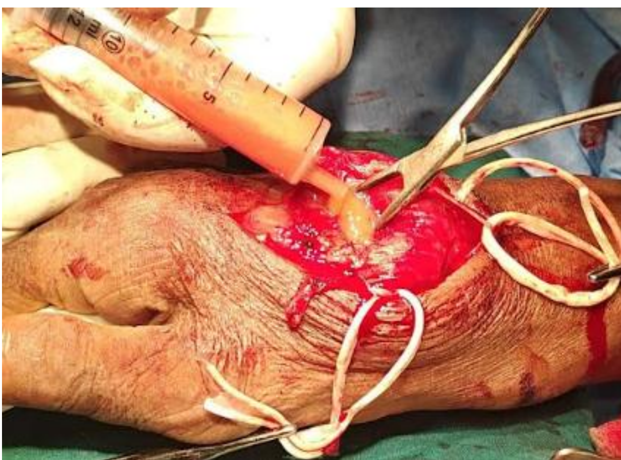

Figure 2: Intraoperative image showing caseous material from the swelling.

DISCUSSION

One of the biggest public health problems in developing nations is tuberculosis. Among musculoskeletal tuberculosis, the localization of tuberculosis involving the wrist and fingers remains relatively rare. The incidence of tuberculous tenosynovitis involving the wrist is less than 1%. Despite the fact that it is relatively uncommon, wrist tuberculosis can end in significant morbidity.[2]

The most common presentation of tuberculous tenosynovitis is the compound palmar ganglion, characterized by painless swelling proximal and distal to the carpal tunnel. It primarily affects the flexor sheath of the little finger and extends to the ulnar bursa.

The second is the sausage digit, which typically involves the index, middle, or ring finger digit. Third, carpal tunnel syndrome, where the patient presents with volar wrist or distal forearm swelling. However, because this ailment is uncommon, its symptoms can be mistaken for those of other conditions, which could result in a misdiagnosis.[3]

On rare occasions, tuberculous tenosynovitis has been identified to manifest as rice bodies in the tendon sheaths. The term "rice bodies" was originally used in German literature in 1895, and Rogers later used it in English literature in 1927.[4] A current and ongoing discussion over the aetiology of rice bodies is still subject to debate. While some researchers contend that they may result from microinfarctions followed by synovial shedding and fibrin encasement, they are generally believed to be exacerbated by persistent bursitis.[5]

Some articles state that less than 50% of cases had rice bodies, a non-specific finding. However, in our case report, there were no signs of rice bodies. It should be noted, nonetheless, that "rice bodies" can also be observed in other wrist conditions, particularly osteoarthritis of the joint, rheumatoid arthritis, systemic lupus erythematosus (SLE), and seronegative arthritis.[6]

The disease evolves slowly and exhibits subtle symptoms, resulting in a delayed diagnosis. Furthermore, it is often mistaken for inflammatory tenosynovitis, pyogenic infections, or inflammatory arthritis. As a consequence, patients who present with abscesses and bone and joint abnormalities often undergo unnecessary investigations and ineffective medical and surgical interventions.

As a diagnostic strategy, tubercular tenosynovitis should be established in all patients based on a comprehensive clinical, radiological, and histological study, according to a case series published by Jain et al.[7]

A significant element of tubercular tenosynovitis is radiological evaluation; X-rays and MR imaging appear to be better at assessing the size of the lesion, especially in soft tissue.

Sometimes TB synovitis of the wrist can be misdiagnosed as a simple ganglion cyst, so we recommend CBNAAT and histopathological analysis for all tenosynovitis cases. Early diagnosis and initiation of appropriate treatment yields better functional outcomes.

Anti-tubercular therapy is the standard therapy for treating tuberculous tenosynovitis. As soon as possible after diagnosis, anti-tuberculosis medications should be implemented, and finishing the entire course is crucial to eliminating recurrence and in the event of resistant strains.

In accordance with Tuli, patients who fail to recover beyond four or five months of chemotherapy are advised to have surgical debridement. Another benefit is that antitubercular drugs should be tried first considering surgery can end up in adhesions, particularly on the palmar side of the hand.

After performing a tenosynovectomy and obtaining a biopsy report, our patient was started on anti-tubercular medications and achieved full recovery without complications.[8] However, both medical and surgical treatment plays a key role in managing these patients.

CONCLUSION

This case report highlights a rare instance of TB synovitis involving the wrist, focusing on its clinical presentation and diagnostic approach. It emphasizes the need for a high index of suspicion for tuberculosis in endemic regions or patients with relevant risk factors, as early diagnosis and treatment are crucial to prevent irreversible joint damage and systemic complications.

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