



## A RARE CASE OF WRIST TUBERCULOSIS SYNOVITIS

## Orthopaedics

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## ABSTRACT

The tuberculosis of the hand and the wrist is a rare entity. It is usually diagnosed at an advanced stage of carpal destruction, due to slowly development of the symptoms. We report the case of a 54-year-old male, presenting as wrist pain for 2 months. Clinical study showed a local swelling in the left wrist, the mobility of the wrist was restricted and painful at the end of motion. The diagnosis of wrist TB synovitis was suspected after radiological and biological study then confirmed after histological study. Antibacillary chemotherapy during 12 months promoted healing and good outcome.

## KEYWORDS

## INTRODUCTION:

The lack of specific signs and symptoms of extrapulmonary involvement may be contributory factors to a delay in diagnosis of atypical presentations. The wrist joint is the most rarely involved joint in tubercular infections of the upper limb. The reported incidence of elbow TB varies from 2 to 4% of all skeletal locations.<sup>1</sup> There are few published major reports focusing on TB of the wrist joint.

## CASE REPORT:

A 54 years old male came with complaints of left wrist pain and swelling for past 2 months. Physical examination revealed tenderness over left wrist-carpal and metacarpal bones. There was no H/O of trauma and no H/O of fever. Range of motion in left wrist was affected globally. In systemic review there were no respiratory symptoms like cough, sputum and dyspnoea or systemic symptoms like fever, chills and weight loss.

In our patient, oligo-arthritis was presumed and was treated with analgesics and anti-inflammatory drugs. But the patient symptoms persisted. To make differential diagnosis, plain radiography of the left wrist joint and haematological examination was performed.

At an early stage, radiological signs are little suggestive. This involves a diffuse osteoporosis within which a discreet irregularity of the radiocarpal surfaces can be revealed. The tomography can then be more specific. A joint space narrowing is suggestive. The variable sized joint space or geode is usually in the scaphoid or the semi-lunar, without sequestration. It is a variable-sized joint space. The radiological signs evolve with the clinical picture. Multiple geodes, the articular spaces disappearing, all the joints are affected including the **Trapezio-metacarpal joint, scapholunate**, and all the bones are nibbled, deformed within a significant radiological blurring. It is the stage of articular destruction. The erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP) were elevated to 52mm and 4.8 mg/dl respectively. The WBC count, rheumatoid factor were all normal. Montoux test was done and found to be positive **18 mm**. Relevant serological tests confirmed that the patient was not immunocompromised. An MRI scan of the left wrist revealed multiple subchondral erosion of varying sizes seen in distal aspect of radius multiple carpal bones and base of metacarpal bones, moderate collapse with deformation of carpal bones causing proximal and distal intercarpal derangement, synovial thickening seen in radioulnar joint, radiocarpal joint, ulnocarpal joint, intercarpal joint, carpometacarpal, destruction of scapholunate joint seen. Mild synovial thickening seen along extensor tendons.

**Fig 1: X-ray of left wrist joint showing multiple bone erosions around the joint and an overall decrease in the joint space and MRI showing subchondral erosions and thickening of radiocarpal and ulnocarpal joint Fig 1:2 shows destruction of scapholunate joint**



As a result he underwent an incisional synovial biopsy, debridement and washout of the joint. The incisional synovial biopsy results confirmed eroded bone and caseating granulomata, consistent with tuberculosis, with polymerase chain reaction (PCR) testing showing evidence of **Mycobacterium Tuberculosis**.

As a result of the culture and biopsy findings, the patient was commenced on anti-tuberculous therapy and was treated for a total period of 9 months with anti-tubercular chemotherapy with four drugs comprising isoniazid (INH), Rifampicin, Ethambutol and Pyrazinamide. The wrist joint was immobilized initially in an **wrist splint** for a period of 4 weeks till the inflammation, swelling and spasm subsided. This was followed by mobilization of wrist and strengthening protocols for 2-4 months. By the end of the treatment period, she regained full range of movement of her left wrist. In the due course of the treatment, ESR, C-reactive protein and LFT was monitored for each month.

## DISCUSSION:

Tuberculosis is classified as either pulmonary or extra-pulmonary, with bone and joint tuberculosis accounting for up to 35% of extra-pulmonary tuberculosis. The spine is involved in half of all musculoskeletal cases. In the remainder, osteo-articular tuberculosis usually affects weight-bearing joints, with 20% being poly-articular but non-weight bearing joints affected by tuberculosis, such as the elbow, are not frequently reported in the medical literature. Clinically, the diagnosis of osteoarticular tuberculosis can be difficult. The most consistent symptoms include a gradual onset of joint pain associated with swelling and a decreased range of motion. Systemic symptoms are usually absent in extrapulmonary tuberculosis and pulmonary disease is only seen on chest radiographs of 50% of patients presenting with musculoskeletal tuberculosis. Changes in plain film radiography of the affected joint may include non-specific changes including joint effusion (as in this case), soft tissue swelling, joint space narrowing (as in this case), subchondral erosions and osteopenia. However, the changes may be absent and further imaging modalities will be required to aid diagnosis. The role of MRI is well-documented to provide further aid to the diagnosis.

## MRI REPORT SHOWS

multiple subchondral erosion of varying sizes seen in distal aspect of radius multiple carpal bones and base of metacarpal bones, moderate collapse with deformation of carpal bones, destruction of scapholunate joint, causing proximal and distal intercarpal

derrangement, synovial thickening seen in radioulnar joint, radiocarpal joint, ulnocarpal joint, intercarpal joint, carpometacarpal joint seen. Mild synovial thickening seen along extensor tendons. Gadolinium contrast helps in showing low and high signal intensity. A recent study shows synovial thickening associated with osteoarticular tuberculosis is hypointense on T2-weighted MRI images, distinguishing this from other proliferating synovial arthropathies. However, radiological findings in osteoarticular tuberculosis are non-specific and require aspiration or synovial biopsy for definitive diagnosis. Microscopy and cultures of synovial fluid yield positive results in up to 82% of patients with osteoarticular tuberculosis. The remainder are diagnosed through synovial, or bone biopsies, which shows positive mycobacterial culture and caseating granulomata on histology.

#### CONCLUSION:

Diagnosing osteo-articular tuberculosis clinically can be difficult and the clinician should always have a high index of suspicion. Not considering tuberculosis as a possibility in the differential diagnosis can delay definitive treatment by up to 10 years (with the mean being 16–19 months) leading to an increase in complications and loss of joint function. As this case illustrates, patients with extra-pulmonary tuberculosis do not always have the classic systemic symptoms associated with pulmonary tuberculosis. In addition, radiographs of the joint may look essentially normal. TB of the wrist begins in the scapholunate joint and carpal bones are deformed but it is usually diagnosed at an advanced stage of carpal destruction, due to the slow development of the symptoms. At an early stage, the affection of the scapholunate joint must be highly suspected of being osteoarticular TB. The medical treatment remains effective. However, it is important to realize that these 'normal' findings do not rule out disease. A history of exposure to, and risk factors for, tuberculosis should be considered.

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