

CASE REPORT

Tuberculosis of left wrist joint and spine

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ABSTRACT

The wrist is an uncommon site for tuberculous infection. Clinical features and radiographic findings are not necessarily helpful in the beginning and may delay in achieving the diagnosis and therefore poor treatment results. We report here a case of wrist tuberculosis, which had delayed diagnosis and hence delayed initiation of antituberculous treatment as the initial investigations were not conclusive of tuberculous infection. The patient was treated surgically multiple times before achieving the final diagnosis and followed with initiation of antituberculous chemotherapy for a duration of 1 year. She became afebrile and infective markers have returned to normal. However she developed left wrist stiffness due to arthrofibrosis and bony destruction of wrist joint by the end of treatment.

Keywords: tuberculosis, wrist arthritis, wrist tuberculosis, tubercular arthritis, septic arthritis

INTRODUCTION

Skeletal involvement is seen in 1% to 3% of patients with tuberculosis[1]. Estimated half of these affect the spine and the rest are extraspinal osteoarticular joint [4]. Wrist joint is one of the rare sites. Tubercular infection typically has a prolonged course and is rarely diagnosed before the development of full blown arthritis [2].

Poncet's disease or tubercular rheumatism is a nondestructive polyarthritis that occurs during acute TB infection which is a different entity from tuberculosis arthritis (TB arthritis). TB arthritis is usually monoarticular and in which the organism can be isolated from the joint [5]. TB arthritis often starts as a synovitis then progress to periarticular demineralization, marginal erosions, and finally to joint destruction [6]. The time period from synovitis to joint destruction is rapid, particularly in weight-bearing

joints. When tubercular arthritis complicated by secondary infection like *Staphylococcus aureus*, it results in accelerated joint destruction associated with severe systemic features [4].

Patients tend to have mild local and constitutional symptoms, frequently leading to significant delays in diagnosis. The diagnosis of tubercular arthritis is also frequently delayed due to its varied clinical presentation and often lack of constitutional features [4]. The delay in diagnosis and treatment may result in additional bone or joint destruction, especially in patients with either of those diseases with septic arthritis due to infection caused by mycobacterial species [6]. Therefore, it is important to understand the epidemiology, diagnosis and treatment of TB arthritis.

CASE REPORT

A 70 years old woman admitted 26th May 2017 under the orthopedic department, presented with symptoms of left wrist pain and swelling, associated with fever in the past 2 days. The swelling was significant enough to expand over the palmar and dorsal aspect of the hand. It was soft on palpation, minimal fluctuation, mild oedema over dorsum, tender and warm. She does have underlying diabetes mellitus and ischemic heart disease. There was no past or family history of tuberculosis. She had no complaints of respiratory symptoms or hemoptysis.

Blood investigation where by the total white cell count (TWC) : 38,000/UL, erythrocyte sedimentation rate (ESR): 45 mm/h, C-reactive protein (CRP): 455 mg/L. The blood culture and sensitivity revealed Streptococcus Pyogenes. Left wrist xray was done with no abnormal findings. A chest radiograph showed no significant findings.

She was diagnosed with left wrist abscess. Left wrist incision and drainage with flexor retinaculum release was then performed. A dense yellow fluid was seen during the operation. Intraoperative specimens were sent to microbiology. The pus culture and sensitivity revealed no growth. Based on blood culture and sensitivity; Streptococcus Pyogenes antibiotic therapy, intravenous Meropenem 1g tds administered over a course of 4 weeks period and discharged with another 2 weeks of oral unasyn 375mg BD. The WBC, CRP and ESR were all normal readings by the end of 6 weeks of IV Meropenem.

However, the wrist had been warm and she developed recurrent swelling in the course of 6 weeks after discharge. She also complained about back pain. Thoracolumbar xray revealed erosion of T8 and T9 vertebral body. Left

wrist xray repeated revealed erosive arthritis of wrist and carpal joints.

MRI thoracolumbar done suggestive of spondylodiscitis of T8&T9 with suspicion of tuberculosis infection. Magnetic resonance imaging (MRI) of left wrist was suggestive of erosive arthritis with gas forming abscess along ulnar side. It showed fluid collection intraarticular and extraarticular space of the wrist.

The involvement of spine in diagnostic imaging has led to suspicion of tuberculous infection. Left wrist debridement and arthrotomy was performed and samples sent for biopsy. Spine T8&T9 transpedicular biopsy performed.

Blood markers ; TWC 10,000/UL, ESR 70 mm/h and CRP 46 mg/L. Mantoux test, serum PCR tuberculosis and Quantiferon TB Gold test were performed and the results are negative. The left wrist tissue AFB was revealed positive during 2nd look debridement on 5th Oct 2017.

She underwent antituberculous therapy for duration of 1 year after being diagnosed left wrist and spine tuberculosis. Her left wrist swelling and back pain started to reduce as the antituberculous treatment initiated and then resolved completely by end of treatment. However she developed left wrist stiffness due to arthrofibrosis and bony destruction of the left wrist joint.



Figure 1: Xray film of left wrist on admission , increased soft tissue shadow with no obvious abnormality.



Figure 2: Xray film of left wrist after 1 year of antituberculous therapy, There is erosion and lytic lesion around the bony skeleton at the wrist. Mild reduction of the bony density seen at the carpals and metacarpals .

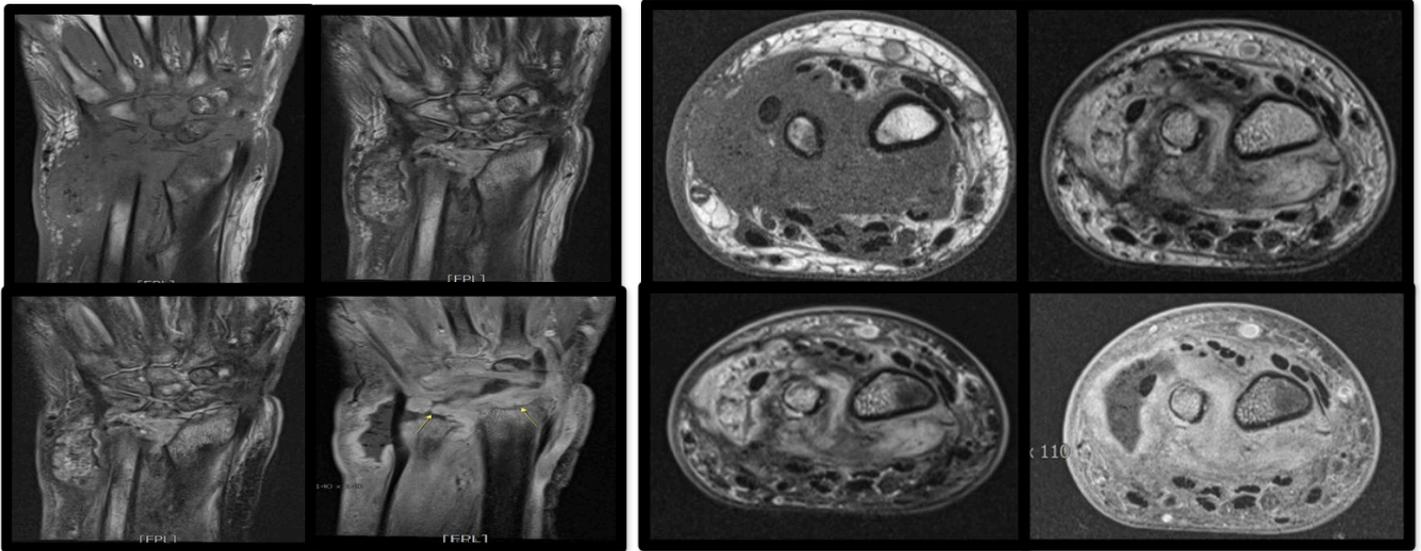


Figure 3: MRI film of left wrist at 2 months follow up, suggestive of erosive arthritis with gas forming abscess along ulnar side



Figure 4: Xray film of spine at 2 months follow up. There is reduction of T8 and T9 vertebral body height, erosion of the superior end plate of T9 noted. The T8/T9 intervertebral disc space is narrowed. Appearance suggestive of discitis with paravertebral soft tissue collection at T8/T9 level and erosion of the T8 and T9 vertebra.

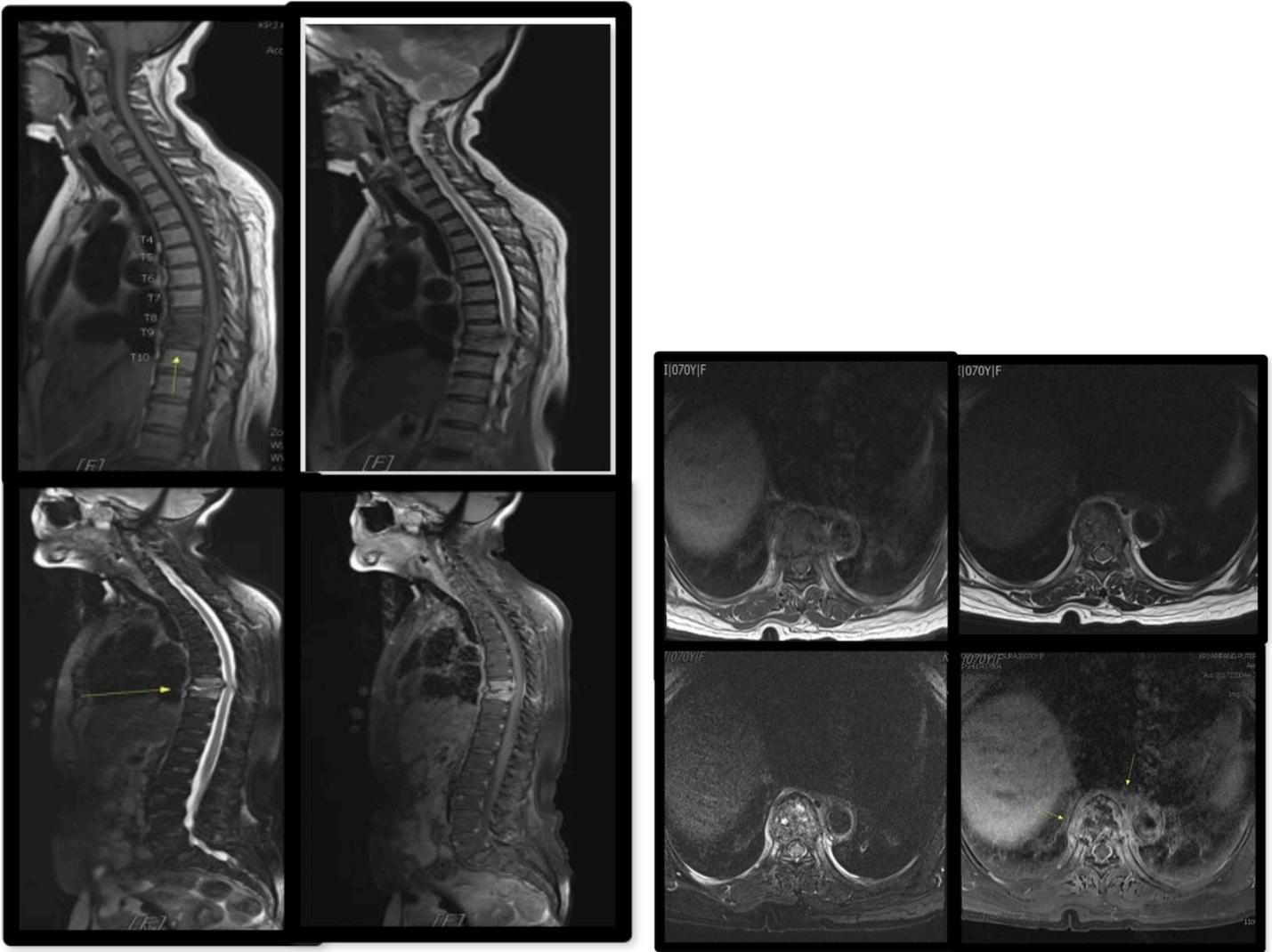


Figure 5: MRI films of spine at 2 months follow up, suggestive of spondylodiscitis of T8&T9 with suspicion of tuberculosis infection.



Figure 6 : swollen left hand picture taken after the 1st drainage and debridement

DISCUSSION

Tuberculosis has always remained as a significant infection in developing countries. Extrapulmonary involvement can be difficult to diagnose because several clinical and radiographic features of osseous tuberculosis mimic a wide range of pathologies [7]. Subacute or chronic pyogenic arthritis, rheumatoid arthritis, osteochondrosis, benign bone tumors, and advanced Kaposi sarcoma are all possible differential diagnoses[8]. In our case it presented as wrist abscess.

Articular tuberculosis is a chronic and progressive disease that mostly affects weight bearing joints. Small joint presentations are not common and diagnosis usually get delayed with confusing clinical presentation. The osteoarticular TB arrives in the fourth position after pulmonary, urogenital and ganglionic localization[9]. The vertebral localization remains the most frequent one. Extrapulmonary tuberculosis usually results from reactivation of primary foci and secondary hematogenous spread[11]. The discovery of spine involvement 2 months later in our patient questions which could be the primary foci.

Tenosynovial disease is the most common presentation of hand tuberculosis[11]. Tuberculous tenosynovial disease has a gradual onset and is slowly progressive. Presentation is usually swelling with mild pain and limitation of movement. Classic presentations include a compound palmar ganglion, "sausage digit" and carpal tunnel syndrome [11]. Wrist joint tuberculosis presents with painless swelling that progress through tendons mostly without any other systemic sign or evidence of tuberculosis[1]. However our case presented with painful progressive swelling with no involvement of tendons along with constitutional symptoms.

Diagnosis is confirmed on histology of tissue sample. A negative pus culture or inability to see acid fast bacilli under tuberculosis [4]. A confirmation of acid

fast bacillus (AFB) from any body fluid or tissue is the gold standard for the diagnosis of tuberculosis.

The classical triad of radiologic characteristics of TB arthritis the Phemister's triad ; the presence of juxtaarticular osteoporosis, peripheral osseous erosions, and gradual narrowing of the joint space, is suggestive of tubercular arthritis. Such characteristic findings are not present in every case. Early cases are more likely to be missed [10].

Bone scan shows increased uptake, but bone scan finding are non-pathognomonic. The MRI features of tubercular arthritis include synovitis, effusion, central and peripheral erosions, active and chronic pannus, abscess, bone chips, and hypointense synovium. MRI is the investigation of choice to reveal both extent and severity of damage . An MRI is also nonspecific. The Mantoux test is the recommended standard tuberculin skin test (TST). Interferon Gamma Release Assays (IGRAs) as of Quantiferon-TB Gold more specific than the TST but are currently unable to distinguish between active disease and latent tuberculosis infection[4].

PCR Testing cannot differentiate living bacilli from dead bacilli . The PCR tests are positive in 95% to 100% of culture positive cases and in 50% to 60% of culture negative cases[4].

Synovial Fluid Examination with PCR analysis in synovial fluid, tissue samples, bone marrow aspirate, and peripheral blood is faster and more specific .

The gold standard for diagnosis of tubercular arthritis is synovial biopsy, with positive results in 80% of cases .It shows caseating granulomas, lymphocytes, and giant cells with caseation, which is very characteristic of tubercular arthritis.

The treatment is easy, from the three classic shutters of the treatment of the osteoarticular TB; only chemotherapy is essential [11]. Chemotherapy has been replaced in recent years with a progressively shorter treatment (6

months) using more effective drugs [11]. The orthopedic wrist splint maintained until the disappearance of clinical signs (3-4 weeks) and followed by rehabilitation[11]. Medical treatment of this type of localized TB mainly consists in antibacillary chemotherapy for 12 months, associating isoniazid, rifampicin, pyrazinamide and ethambutol. Other than the biopsy, there is very little need for surgery. Surgical debridement is controversial for wrist joint tuberculosis[3] . Any surgical debridement must be planned after a period of chemotherapy as presurgical chemotherapy prevents bony destruction and dissemination of disease[3] . Multidrug chemotherapy must be continued for 9 or 12 months.

Atypical site ,clinical presentation and delayed biopsy in our case had delayed diagnosis of wrist tuberculosis. If the wrist tuberculosis diagnosis met early, the antituberculous chemotherapy would have been initiated earlier, thus would have reduced the need for repeated surgical debridement and improved the clinical outcome. High index of suspicion of tuberculosis should prevail when dealing with lesions of the wrist joint whether acute or chronic.

Abbreviation

TB	tuberculosis
PCR	polymerase chain reaction
IGRAs	Interferon Gamma Release Assays
AFB	acid fast bacillus
TST	tuberculin skin test

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