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Case Report

Tubercular arthritis of the elbow mimicking as a neoplasm: a case report and literature review

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ABSTRACT

Tuberculous arthritis of the elbow joint is rare. A 38-year-old male patient presented with swelling, pain, and deformity of the elbow. The symptoms first appeared one year ago; he was clinic-radiologically evaluated and diagnosed with neoplasm. The patient underwent biopsy to confirm the diagnosis and was found to have tuberculous arthritis and was started on anti-tubercular treatment and underwent surgical debridement. Tuberculous arthritis usually presents with chronic arthritis. However, it can also present in patients with septic arthritis. If untreated, it can cause joint destruction. Hence, early diagnosis and treatment is important.

Keywords: Tuberculosis, Septic arthritis, Neoplasm, Anti-tubercular therapy, Surgical debridement

INTRODUCTION

One of the few conditions in orthopaedic practice that is regarded as emergency is septic arthritis. If left untreated, the joint will quickly disintegrate, become unstable, and become useless. *S. aureus* is the most frequent microbe responsible for septic arthritis.[1] Nonetheless, a number of different species, such as *M. tuberculosis*, can result in chronic septic arthritis/ synovitis.

Extrapulmonary tuberculosis (EPTB) is a very uncommon condition. Furthermore, musculoskeletal TB is uncommon, making up just around 2% of all TB cases.[2,3] Around 1-3% of cases of musculoskeletal TB involves elbow TB. Because of the vague and sneaky nature of the clinical presentation, it might be difficult to diagnose these patients. Nonetheless, to stop osteoarticular damage and preserve function, early identification is crucial. When patients with elbow joint discomfort and swelling present, TB must rank among the top differential diagnoses in nations where the disease is prevalent.

We present a case of TB of the elbow joint which was subject to misdiagnosis and hence received delayed treatment.

CASE REPORT

A 38-year-old Caucasoid male presented to the orthopaedic outpatient department with complaints of right elbow pain, swelling and deformity for 1 year. He also gave a history of development of discharging sinus 6 months ago. There was history of significant weight loss and loss of appetite. There was no h/o fever or other constitutional symptoms, trauma, other joint involvement, or history of any co-morbidities. On clinical examination, the patient was vitally stable and afebrile. There was diffuse swelling of the right elbow, a discharging sinus was present over the medial aspect, prominent visible veins were seen as seen in Figure 1. The joint was warm to touch, and range of movements was restricted due to pain.

Laboratory investigations showed a white blood cell count of 5740/µL with 74% polymorphonuclear neutrophils (PMN) and 18% lymphocytes. The renal function tests and electrolytes were all within normal limits. Erythrocyte sedimentation rate and C-reactive protein were elevated at 114 mm/hr and 96 mg/L, respectively. Initial radiographs revealed periosteal reaction and osteopenia around the elbow joint as seen in Figure 2.

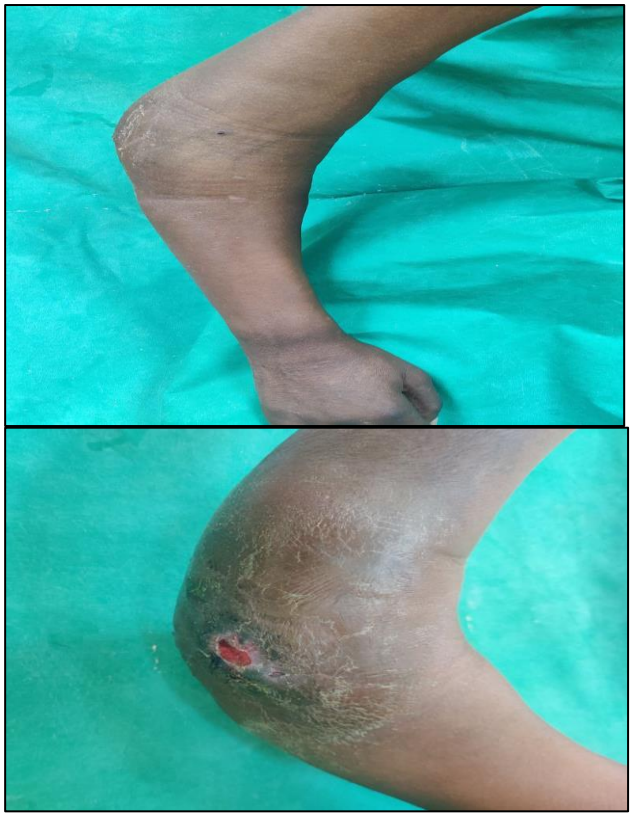

Figure 1: Clinical picture of affected elbow showing diffuse swelling and non-healing discharging sinus.

Figure 2: Early radiographs of the right elbow-AP and lateral views.

MRI showed altered signal intensity lesion in the distal elbow joint with loss of fat planes, altered signal intensity changes within the olecranon process of ulna with areas of focal cortical breach which was suggestive of a neoplastic aetiology (Figure 3) and multiple enlarged axillary lymph nodes with heterogenous restricted diffusion which was likely to be metastasis.

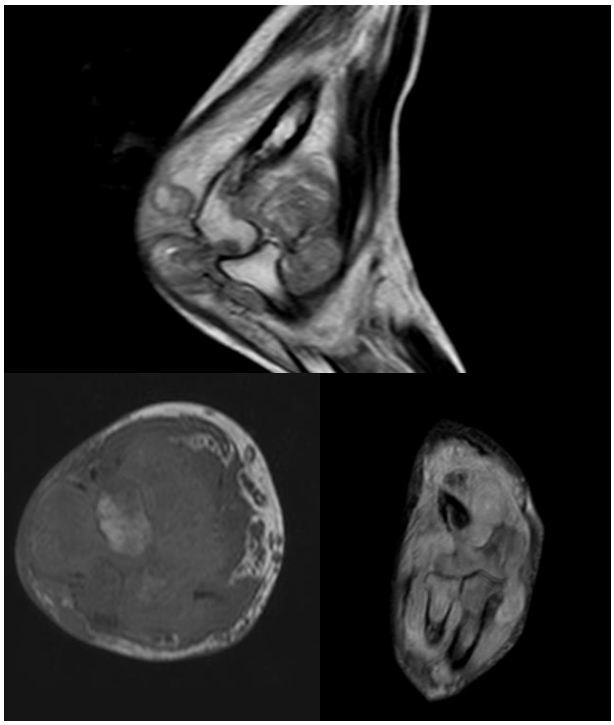

Figure 3: MRI images of the right elbow.

The 99-Tc MDP bone scan was done which showed increased tracer uptake in the right proximal ulna which was suggestive of primary bone neoplasm.

Clinico-radiologically, a provisional diagnosis of a primary bone neoplasm was done and a bone biopsy was planned for confirmation of diagnosis. Bone biopsy was done and samples were sent for investigations. Culture and sensitivity reports showed no growth, Z-N staining did not reveal any acid fast bacilli. Histopathological examination revealed few granulomas composed of lymphocytes, epitheloid cells and Langhans type of giant cells with central caseous necrosis. Also noted were a few degenerating bone fragments.

Treatment

After histopathological examination suggested a diagnosis of TB, the patient was started on ATT with four drugs, isoniazid (5 mg/kg), rifampicin (10 mg/kg), pyrazinamide (25 mg/kg) and ethambutol (15 mg/kg) in a fixed dose combination-4 tablets per day based on his weight for 12 months according to Index TB guidelines. However, the patient did not show any clinical improvement even after taking ATT for 3 months. Repeat X-rays of the elbow showed destruction of the articular surfaces.

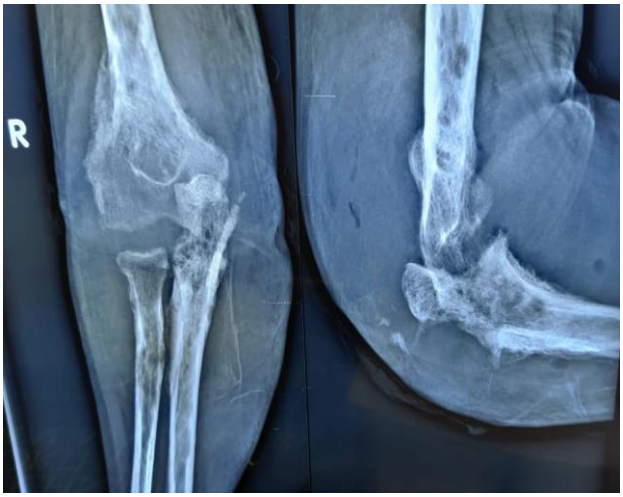

Figure 4: X-rays of the right elbow taken 3 months after starting ATT.

We suggested surgery for the definitive diagnosis and as having the best likely outcome, and the patient agreed. Chest radiograph was also reviewed and did not find any evidence of pulmonary TB. In the OT, the elbow was approached posteriorly through a midline longitudinal incision, and necrotic tissue with a cheese-like appearance with frank pus was found. Copious irrigation and debridement were done. A subsequent tissue acid-fast bacillus (AFB) stain was negative. CBNAAT however was positive for *M. tuberculosis.* Histopathological examination also showed evidence of TB. Tissue culture and sensitivity showed growth of Methicillin sensitive *S. aureus* and hence the patient was also started on clindamycin (600 mg) thrice a day and cotrimoxazole (800 mg/160 mg) twice a day based on the sensitivity reports. A definitive diagnosis of tubercular septic arthritis with superadded MSSA infection was made and ATT was continued.

The wound eventually healed, and the stitches were removed at two weeks' post-operation. The elbow was immobilized in a posterior slab for six weeks. The patient developed pus discharging sinus again at 2 months post-operatively. He was advised for re-debridement. But the patient lost to follow up after this.

DISCUSSION

TB is a communicable disease which is a major cause of morbidity and mortality worldwide with 6.4 million people newly diagnosed in 2021 alone. Until COVID-19 pandemic, TB was the leading cause of death by a single infectious agent. Without treatment, mortality rate is high (about 50%) with 1.6 million deaths in 2021 alone.[4]

EPTB affects 15-20% patients with TB. ETPB affecting the musculoskeletal system manifests differently. TB vertebral osteomyelitis can cause long-term nonspecific back discomfort, as well as neurological deficits. A kyphosis deformity may be the only presenting sign in late-presenting instances.[5] Subacute to chronic joint pain and swelling might be symptoms of TB septic arthritis.[6]

TB of the elbow is thought to begin in the olecranon or lower end of the humerus, while in certain cases the initial lesion is located in the synovium or higher end of the radius.[7-10] If the condition is not diagnosed early, it has the potential to deteriorate, culminating in severe cartilage degeneration and joint subluxation or dislocation.

TB of the elbow joint is extremely rare and there is a paucity of case reports, which are summarized in Table 1.

Table 1: Summary of TB elbow case reports.

Author(s)	Year	Patient characteristics	Diagnosis	Treatment
Desdiani et al[11]	2022	24-year-old male	TB elbow septic arthritis	Drainage, anti- TB drugs for 9 months
Tangadulrat et al[12]	2021	77-year-old female	TB elbow septic arthritis and osteomyelitis	Drainage, anti- TB drugs for 12 months
Boodoo et al[13]	2020	53-year-old make	TB elbow septic arthritis	Not reported
Alamri et al14	2018	75-year-old male	TB elbow septic arthritis	Planned for anti-TB drugs for 6 months
Liao et al[15]	2017	85-year-old female	TB elbow septic arthritis and osteomyelitis	Anti-TB drugs for 12 months
Yazıcı et al[16]	2016	57-year-old male	TB elbow septic arthritis	Anti-TB drugs (duration not stated), drainage
Rahman et al[17]	2015	37-year-old male	TB elbow septic arthritis	Anti-TB drugs (duration not stated)
Novatnack et al[18]	2015	69-year-old male	TB elbow septic arthritis	Not reported
Jung et al[19]	2010	50-year-old female	TB elbow septic arthritis and osteomyelitis	Irrigation, anti-TB drugs (duration not stated)

Chen et al published a case series on the mid- to long-term outcomes of 23 individuals with TB arthritis of the elbow.[20] The majority of the patients had persistent elbow discomfort that lasted more than six months and were treated with the synovectomy, intra-articular debridement, and the curettage. Anti-TB medicines were administered for at least a year. The outcomes were satisfactory; most wounds healed without incident, but reduced ROM and lingering discomfort were prevalent.

Martini et al published another series on the results of conservatively treated TB elbow in 1980.[21] All patients were administered anti-TB drugs for 12 months, immobilised with a plaster splint for one to two months before proceeding to physiotherapy. The majority of individuals exhibited reduced range of motion, particularly in supination and pronation.

Previous pieces of evidence has shown that TB elbow has a bad prognosis. We believe that two primary variables contribute to the poor outcomes in these patients. First, due to the insidious character of this form of TB infection, the patient usually presents late, and there is a high incidence of incorrect diagnosis at first. When discovered late, the damage of the osteoarticular component is substantial, and despite the fact that there are several alternatives for repair, the prognosis is typically bad. Second, TB infections need anti-TB treatments which are often lengthy, and so poor adherence to the anti-TB medication regimen, as well as different drug side effects, may impede total disease eradication. Strategies of treatment include conservative management with anti TB drugs and immobilization in cases with chronic pain, synovitis with no significant collection. However, in cases with significant collection, surgical management with thorough debridement is recommended. If additional joint destruction is present, then some additional reconstruction procedure needs to be done.

Early diagnosis and treatment of elbow TB are essential to better outcomes. We recommend that TB of the elbow be considered in the initial differential diagnosis in cases of chronic elbow pain accompanied by synovitis. The preferred imaging technique is an MRI, which can reveal signs of osteomyelitis, synovitis, and collection. The presence of severe osteoarticular destruction despite no to minimal systemic symptoms distinguishes TB elbow from other diseases in both MRI and plain film. Aspirate the joint and send it for TB culture, PCR, and AFB staining. Another option for early disease without an urgent need for open irrigation and debridement is tissue biopsy. Early TB medications and the right surgical procedure will normally improve the outcome.

CONCLUSION

Elbow TB infection is quite uncommon. The creeping, variable appearance can be mistaken for other elbow disorders. A delayed diagnosis might result in serious joint damage and a poor outcome. In situations of chronic elbow discomfort with synovitis, the doctor should always be on the lookout for TB elbows, especially in TB-endemic areas. The best diagnostic methods are MRI and joint fluid aspiration. The primary form of treatment is antitubercular therapy. It can be argued that appropriate surgical measures, such as collection drainage, synovectomy, and reconstructive surgeries, are required. For the best possible treatment planning, the orthopedician and an infectious disease expert must work together.

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