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Foot and ankle tuberculosis: Case series and literature review☆

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ABSTRACT

Foot and ankle tuberculosis (TB) is a rare presentation of skeletal TB. The uncommon site along with low index of clinical suspicion in the western world leads to delays in the diagnosis and treatment. This can make joint sparing procedures less successful, especially in the midfoot where the joints can often be interconnected. Plain radiographs have low sensitivity and specificity and cross sectional imaging in the form of MRI or CT is more reliable. Treatment involves the use of multiple anti-tuberculous drugs in the first instance, followed by surgery to address any symptomatic deformity and/or secondary degenerative changes. We present our experience on the management of this rare problem and review the literature on the clinical presentation, diagnosis, imaging modalities and treatment.

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1. Introduction

Tuberculosis (TB) is an infection caused by the bacteria *Mycobacterium tuberculosis* that most often affects the lungs, but occurs in many locations within the body. Bones and joints are involved in 1–3% of cases and only about 10% of osteoarticular TB affects the foot and ankle [1–5]. The rarity of the problem and a low index of suspicion in the western world often lead to delayed diagnosis and potentially worse outcomes [2,3].

Extra-pulmonary TB favours those with sub-optimal immune function and includes the very young, the elderly and those with underlying conditions such as HIV and renal failure [6]. The incidence of TB in the UK remains high compared to most Western European countries, despite the stabilisation of TB rates since 2005.

Although there is published literature on the management of osteoarticular TB, there is a relative paucity of large studies on the presentation and management of this condition in the foot and ankle in the western world. This article reports on two cases of foot and ankle TB highlighting the diagnostic pitfalls leading to delay in the initiation of treatment. The literature on the outcomes of treatment of TB in the foot and ankle is also reviewed.

2. Materials and methods

2.1. Case 1

A 66 year old Asian patient with diabetes presented with a 2-year history of left foot pain and difficulty walking. The patient was seen in primary care with unexplained pain/swelling and had been treated symptomatically. He had no constitutional symptoms. The patient had visited India a few times in the last two years. Examination findings included swelling on the dorsum of the talonavicular joint area with localised warmth and diffuse tenderness. Radiographs showed talar head destruction. An MRI scan was arranged to clarify whether this was an infective process or Charcot's arthropathy and the radiological features are illustrated in Fig. 1. The swelling was biopsied under image guidance and the histology confirmed granulomatous caseating necrosis consistent with tuberculosis.

The patient was started on multimodal anti-tuberculous therapy and over the next year his symptoms improved. However, the patient was never pain free and needed periods of splintage in an aircast boot. The patient completed his anti-tuberculous treatment and was discharged by the infectious disease unit.

After 18 months, the patient was still struggling to mobilise and radiographs confirmed advanced collapse and degeneration in the talonavicular joint. It is planned for him to have a talonavicular joint arthrodesis when he returns to the UK.

2.2. Case 2

A 50 year old Asian woman with psoriasis presented with an 18 month history of right ankle pain to the rheumatologists.

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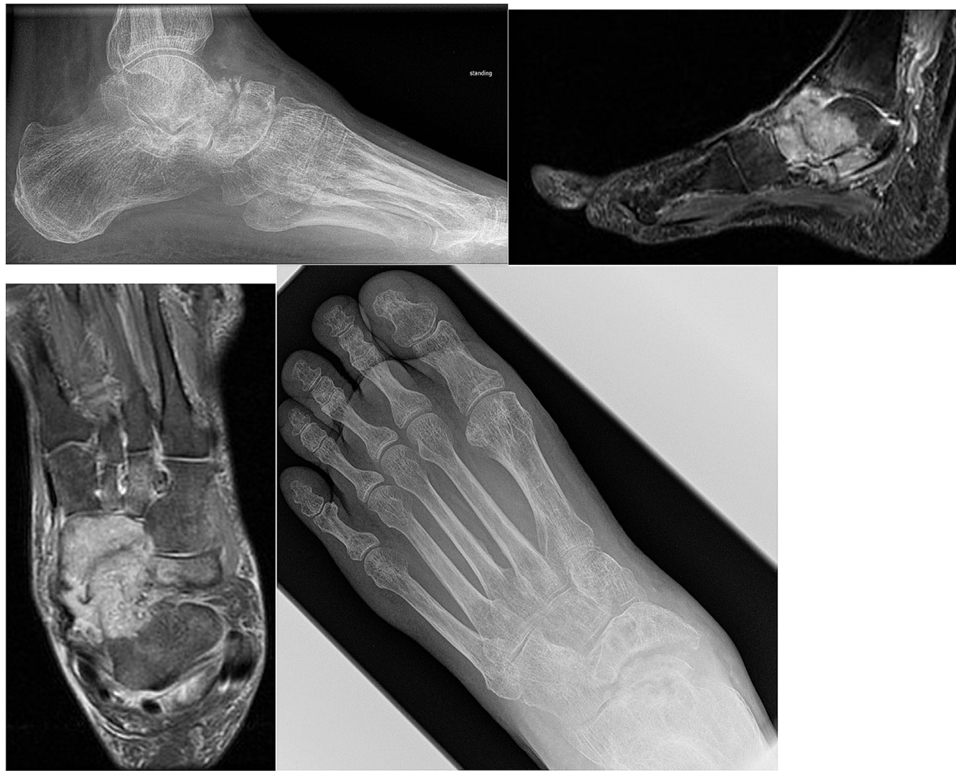

Fig. 1. Radiographs and MRI of talonavicular joint TB with erosions on talar head and.

The patient's inflammatory markers were normal as well as a quantiferon test. She was treated for presumed psoriatic arthropathy of the ankle joint. The patient had two steroid injections in the ankle joint and was on methotrexate and leflunomide when she was seen in the foot and ankle clinic. The patient was noted to have a swollen and warm right ankle with reduced range of movement. Radiographs showed bony destruction in the tibia and talus and erosion of the fibula as illustrated in Fig. 2. An urgent arthrotomy and biopsy was arranged. Macroscopically, thick grey synovium was found in the joint space and advance joint degeneration was present. The histology showed granulomatous inflammation with epitheloid granuloma including multinucleate giant cells and a peripheral rim of lymphoid cells.

The patient was started on multimodal therapy and is on a second course of treatment due to recurrence of the disease. Her last radiographs showed advanced degeneration and deformity in the ankle joint and the patient is likely to require an ankle arthrodesis in the near future.

3. Discussion

The two cases illustrate some of the difficulties faced by orthopaedic surgeons when confronted with potential

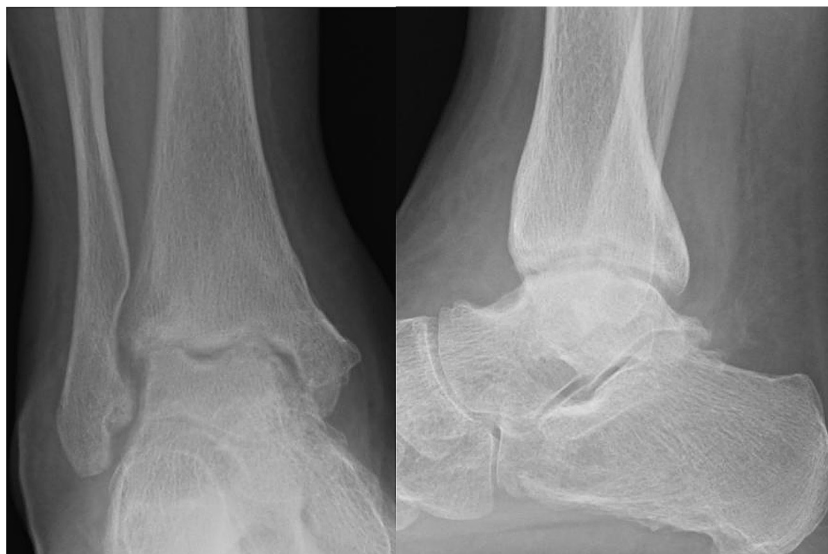

Fig. 2. Radiographs showing advanced destruction of the tibiotalar joint and syndesmosis.

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