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Case Report

Insufficiency fractures: A rare cause of foot and ankle pain in three patients with rheumatoid arthritis☆,☆☆

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ABSTRACT

Insufficiency fractures are recognized but rare complications in patients with longstanding rheumatoid arthritis. Such fractures are typically solitary and are rarely seen to affect the foot and ankle. We describe 3 women with longstanding rheumatoid arthritis, treated with one, or a combination of, corticosteroids, DMARDs and anti-TNF, presenting with foot and ankle pain with no prior history of trauma. MRIs showed rare multiple florid insufficiency fractures of the foot and ankle, in 2 cases bilaterally, which were managed conservatively. These cases highlight the importance of considering insufficiency fractures in similar patients presenting with foot and ankle pain. Radiographs may fail to demonstrate these lesions, delaying diagnosis, and worsening patient outcome, therefore in such cases MRI is a valuable modality.

Introduction

Rheumatoid arthritis predisposes patients to insufficiency fractures secondary to osteoporosis, this is in part due to the disease process, but also due to environmental factors such as reduced weight bearing and as a side effect of medications used to treat the disease. In the medical literature, single insufficiency fractures of the hip and pelvic girdle are more commonly reported. This case series presents 3 cases of insufficiency fractures that are unusual in a number of ways. First, the site of the fractures is unusual in affecting the foot and ankle, in 2 cases bilaterally. Second, the fractures are also florid rather than solitary in nature. Third, clinical suspicion of fracture was low with few signs of inflammation. And finally, in 1 case plain films of the extremities failed to detect any fracture, with MRI providing the final diagnosis. This paper highlights the importance of including insufficiency fracture in one's differential, in patients with longterm RA presenting with pain.

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Case 1

Presentation

Case 1 is a 66-year-old lady with seropositive RA treated with methotrexate for over 20 years. In September 2015, her arthritis became active and she had synovitis affecting her ankles and feet. She received a steroid injection and the methotrexate was increased. She was also commenced on alendronate, as she had osteoporosis with a T score of −2.6 in the femoral neck and −2.7 in the spine, with a 16% 10 year probability of major fracture using fracture risk assessment tool assessment. Calcium and vitamin D levels were normal. The inflammation improved, but the pain in the ankles and feet increased. X-rays of the right foot in February 2016 showed osteopenia and 4th and 5th metatarsophalangeal (MTP) subluxation and degenerative change and she was referred for podiatry assessment for presumed mechanical foot pain. In March 2016, she was complaining of severe pain in the feet, worse on the right with difficulty weight bearing and was seen by an orthopaedic consultant in April. On examination, she had tenderness particularly over the ankle and subtalar joints and Achilles tendons but the joints were not hot, red, or swollen.

Investigation

She was referred to radiology for MRI of both feet and/or ultrasound guided steroid injections. An MRI of both feet was performed. MRI of the right foot showed multiple fractures in the ankle and foot with extensive high signal change noted within the distal tibia, posterior talus, cuboid, and calcaneus with corresponding serpentine low signal lines noted in these respective bones (Figs. 1a,2,3). MRI of the left foot showed extensive marrow oedema in the distal tibia, calcaneus, talar neck, navicular, and proximal phalanx of the great toe with corresponding low signal lines in the distal tibia, calcaneus, and navicular (Fig. 2). Further high signal changes were noted within the lateral cuneiform. In short, she had florid bilateral insufficiency fractures of the foot and ankle (Fig. 1b).

Fig. 1a – Case 1—Sagittal T1 image of right foot and ankle. Serpentine low signal changes within the distal tibial metaphysis (white arrowhead) and navicular (white arrow).

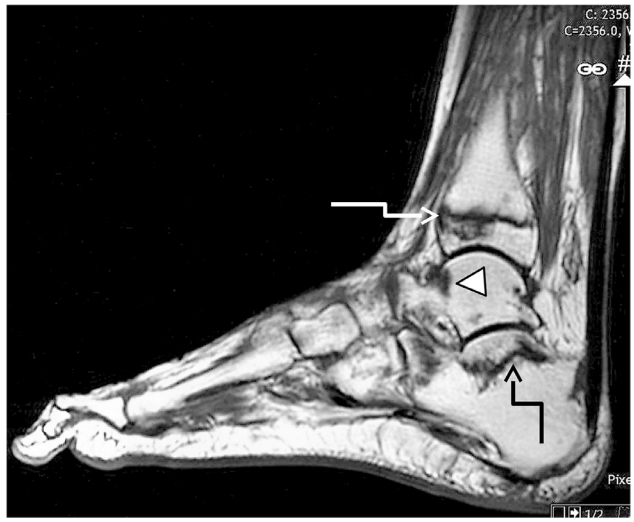

Fig. 1b – Case 1—Sagittal T1 images of left foot and ankle showing low signal serpentine line in keeping with fractures in the distal tibial metaphysis (white arrow), posterior calcaneus (black arrow), and talar neck (white arrowhead).

Treatment

From an orthopaedic perspective, she was managed conservatively using an air-cast boot for 3 months. Repeat MRI at 3 months showed healing fractures, following which she was discharged by orthopaedics. She remains under regular rheumatology follow up.

Case 2

Presentation

Case 2 is a 75-year-old lady who was diagnosed with seronegative rheumatoid arthritis in 2003 at a center elsewhere and was seen in our department in March 2017. She was taking methotrexate 20 mg once weekly and had not received any corticosteroid treatment to our knowledge (previous clinical records were unavailable). Two months previously she had developed increased right ankle pain and swelling, and had received a course of antibiotics from the GP for an associated infection and had recently been started on furosemide for ongoing swelling. On examination she had pitting oedema at the ankle with reduced movement and mild tenderness but there was no erythema. The furosemide was discontinued and an ankle MRI was requested.

Investigation

MRI showed a complete healing insufficiency fracture in the lower one-third of the tibia as evidenced by high signal change, periosteal reaction, callus formation, and subtle val-