

Residual foreign body in the foot causing chronic osteomyelitis mimicking a pseudotumor: A case report

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Abstract

Osteomyelitis from a retained foreign body should be included in the differential diagnosis of any osteolytic lesion of the foot. We report here a case of a 59-year-old man who presented with swelling over the dorsolateral aspect of the right foot. Plain x-ray showed an osteolytic lesion that mimicked a pseudotumor. Magnetic resonance imaging (MRI) showed multilocular fluid collection over the right cuboid with a hypointense lesion over the plantar fascia. The patient underwent surgery and a rubber fragment (1 cm × 0.8 cm) was removed from his foot that had been present for two years following a stabbing injury. The patient fully recovered without complication or disability.

Keywords

Foot, foreign body, osteolysis, pseudotumor

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Introduction

Penetrating wounds of the foot with retained foreign bodies in soft tissues are not uncommon.^{1–4} However, retained foreign body injuries to the bone are rare.^{1–3} The reaction to foreign material can result in infection and lead to osteomyelitis.

We report here a case of osteomyelitis of the cuboid bone that mimicked a pseudotumor and was caused by a residual foreign body identified two years after a nail injury.

Case report

A 59-year-old man presented to our hospital with a two-month history of swelling

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over the dorsal surface of the cuboid bone of his right foot. Radiography showed an osteolytic lesion over his right cuboid bone (Figure 1). Initially, a bone tumour was suspected and so computed tomography (CT) and magnetic resonance imaging (MRI) scans were performed. The CT scan showed bony destruction over the patient's right cuboid bone (Figure 2). MRI scans showed multilocular fluid collection over the right cuboid bone extending from the

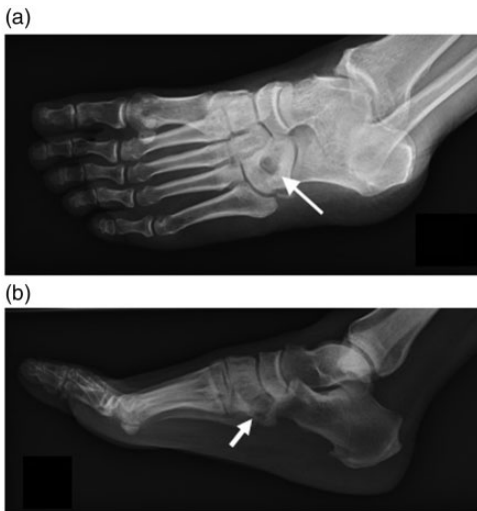


Figure 1. Plain radiography (a: oblique view; b: lateral view) of the injured right foot showing an osteolytic lesion over the cuboid bone (arrows) and no signs of a foreign body in the plantar region.

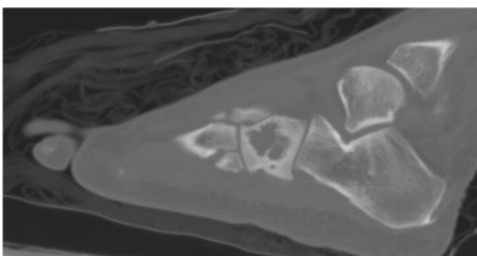


Figure 2. Sagittal view on computed tomography (CT) scan of the injured right foot showing an osteolytic lesion over the cuboid bone. No visible foreign body was observed over the plantar region.

plantar to the dorsolateral side (Figure 3). Fluid accumulation was noted along the plantar fascia with a hypointense lesion observed on both T1-weighted (TIW) and T2-weighted (T2W) images without enhancement (Figure 4).

On further questioning, the patient described that he had been stabbed accidentally two years previously by a nail in his right foot and that he had removed the nail himself without specific wound care. His wound had healed well and he had continued with normal working life. Blood samples taken at the hospital showed the patient to have a moderately elevated erythrocyte sedimentation rate (ESR) (37 mm/hr) without leucocytosis. Therefore, chronic osteomyelitis with abscess formation over the plantar to dorsolateral side of right foot with cuboid bony destruction was suspected. Debridement surgery was arranged.

During the operation, bony destruction of the cuboid bone with abscess accumulation and sinus tracts extending to the plantar fascia were observed. A plastic-like foreign body (1 cm × 0.8 cm) surrounded by an abscess was found over the plantar fascia (Figure 5). The patient recognized the foreign body as a fragment from the sole of

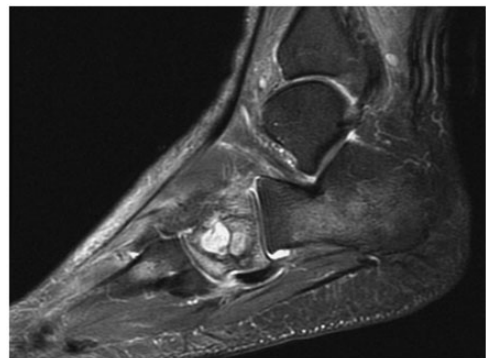


Figure 3. Sagittal view of a T2-weighted (T2W) magnetic resonance imaging (MRI) scan of the injured foot which showed multilocular fluid collection over right cuboid bone.

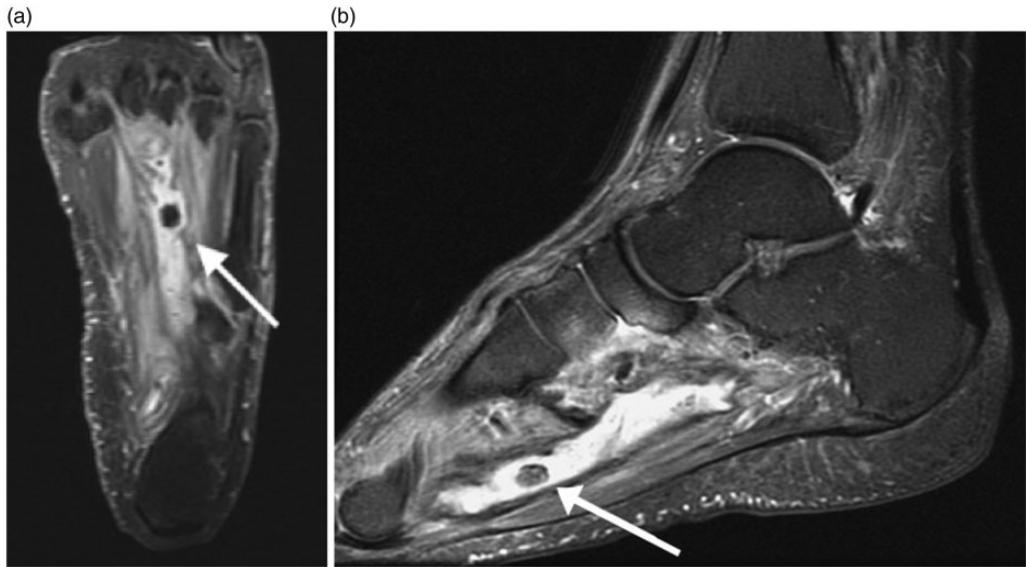


Figure 4. Magnetic resonance imaging (MRI) scan of the foreign body. Fluid accumulation was noted along the plantar fascia with a hypointense lesion observed on both T1-weighted (TIW) and T2-weighted (T2W) images without enhancement (arrows).

(a: TIW fat suppression with contrast, axial view; b: T2W, coronal view).

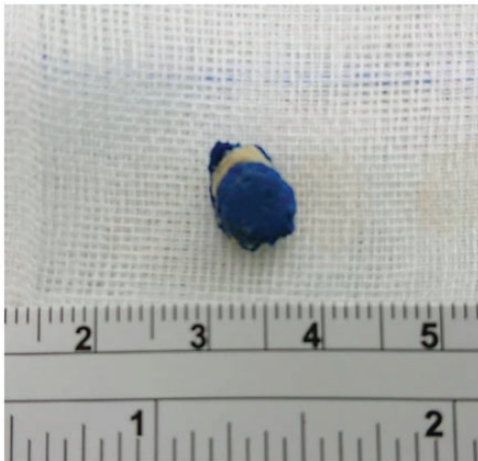


Figure 5. Photograph of the foreign body (1 cm × 0.8 cm).

his shoe that he was wearing at the time he sustained the stabbing injury.

Analysis of specimens collected during the operation showed the presence of

acute and chronic inflammatory cell infiltration, granulation tissue, necrosis, fibrosis and aggregation of degeneration leukocytes, all findings compatible with an abscess. The deep-wound culture collected during the operation showed an oxacillin-susceptible *S. aureus* (OSSA) infection. Following the surgery and subsequent antibiotic treatment, the patient fully recovered without complication or disability.

This case report did not require ethics committee approval and written authorisation was obtained from the patient before publication of this article.

Discussion

In spite of the absence of recalled trauma, differential diagnosis should include the possibility of a foreign body reaction when considering a foot lesion observed on plain film x-ray.⁴ Other possibilities

should include osteomyelitis and bone tumours, and MRI, which has a high sensitivity for the detection of pathologic changes in bone, will assist in discriminating the various options.¹⁻⁵ However, in some cases, detection may be achieved only on surgical exploration.⁶

When organic foreign material is in contact with bone, it will cause irritation and inflammatory changes which will induce osteolytic and osteoblastic changes which can sometimes mimic bone tumours.^{1,7,8} In most cases, following an embedded foreign body injury, inflammation/infection will occur after a few days, but in some cases it may occur months, or even years later.^{4,6-9} In this present case, a rubber fragment was left inside the patient's foot for more than two years and the patient did not associate his painful foot with the nail penetration trauma event or the missing rubber piece on his shoe.

Many types of foreign bodies can be retained in soft tissues after a penetration injury. Metal or ceramic material can easily be identified on plain radiographs but plastic, rubber or other radiolucent foreign bodies are more challenging to recognise.^{2-4,6,10,11} However, MRI provides detailed images and can show the sinus tracts, soft tissue oedema and sometimes even the radiolucent foreign body itself.^{8,12} Indeed, a typical presentation of a foreign body on MRI is hypointensity on T1-weighted image, surrounded with fluid-rich granulation tissue or a fluid-filled cyst.^{2,8,11,12}

In summary, differential diagnosis of an osteolytic lesion in the foot should include the possibility of an embedded foreign body. In addition, an osteolytic lesion may mimic a pseudotumor on both plain x-ray and CT scan. Therefore, trauma history should be reviewed carefully, even in patients who cannot recall recent trauma events. Moreover, MRI has an important role in the pre-operation evaluation and

diagnosis of these patients especially when the foreign body is radiolucent.

Declaration of conflicting interest

The authors declare that there are no conflicts of interest.

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