An intraosseous lipoma of the calcaneus: a case report
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Case 14572

Clinical History:

A 52-year-old housewife with no past pathological history complained of left heel pain for 5 months with no history of trauma or weight loss.
The physical examination showed no deformity, redness or local warmth.
The patient was sent to our department to conduct a radiograph of the foot.

Imaging Findings:

The lateral radiograph of the left foot showed an osteolytic area with a well-defined sclerotic border without a cortical destruction or periosteal reaction.
For a better characterization of the lesion, a foot CT was done and revealed an intraosseous fat density oval formation on the posterior facet of the subtalar joint in the calcaneus, homogeneous and well-defined.

Discussion:

Intraosseous lipomas are part of the rarest bone tumours in the body. The incidence has been reported to be less than 0.1% of all primary bone tumours [1, 2]. Only 8% of all intraosseous lipomas are located at the calcaneus. This low incidence can be explained by the fact that some are asymptomatic and, therefore, are under-reported [2–4].
Three theories have been considered: a traumatic origin and fat degeneration as a consequence, infections or osseous fat infarction with metaplasia and, finally, most authors currently think that it’s a primary tumour of marrow fat.
Nearby two thirds of patients are symptomatic, complaining of located pain after months or years of evolution and swelling of soft tissue, related especially to long standing or exercise. [5, 6]
Radiologically, the lesion is seen as a radiolucent cystic image, with sclerotic defined borders, frequently accompanied by a central calcification, called a bull’s eye image [7]. In all reported cases of intraosseous lipomas of the calcaneus, the lipoma appears in the neutral or critical angle of the calcaneus [3, 5, 8].
The classification of Milgram [4] divides lipomas in 3 groups. Stage 1: radiolucent, pure areas, well defined, with remodelling of the bone lesion; stage 2: radiolucent, well-defined areas and central calcifications with fat necrosis and stage 3: bony reabsorption and new areas of dystrophic calcification in the external margins of the injury. Our case is classified as Milgram stage 1.
In CT, the fat lesions are confirmed when they are presenting between –40 and –110 Hounsfield units (HU) which avoid a biopsy of the lesion in order to confirm the diagnosis by pathological anatomy [9, 10]. Besides that, it helps
the differential diagnosis and the exclusion of malignant processes.

The treatment of symptomatic intraosseous lipoma of calcaneus is based on curettage and bone grafting in order to prevent pathological fractures and degenerative changes.

**Differential Diagnosis List:** Intraosseous lipoma of calcaneus. CT imaging was sufficient for the diagnosis. The other bone tumors of the calcaneus: unicameral bone cyst, aneurysmal bone cyst, osteoblastoma, enchondroma, chondromyxoid fibroma, nonossifying fibroma, giant cell tumour, chondroblastoma, fibrous dysplasia, and chondrosarcoma. Others: plantar fasciitis, retrocalcaneal bursitis, gout, stress fracture.

**Final Diagnosis:** Intraosseous lipoma of calcaneus. CT imaging was sufficient for the diagnosis.

**References:**

Figure 1

Description: An osteolytic area with a well-defined sclerotic border in the calcaneus. Origin: Imaging department, Mohamed V Military Hospital, Rabat, Morocco
Description: Axial: An intraosseous fat density formation of the calcaneus. Origin: Imaging department, Mohamed V Military Hospital, Rabat, Morocco
Figure 3

Description: Sagittal Origin: Imaging department, Mohamed V Military Hospital, Rabat, Morocco