Intraosseous Lipoma of the Patella

Patellar İntraoseöz Lipom

Ahmet Mete
Assist. Professor of Radiology
Medical Faculty of Gaziantep University
dr.meteahmet@gmail.com

Ayhan Özkur
Assoc. Professor of Radiology
Medical Faculty of Gaziantep University
ozkur@gantep.edu.tr

Mehmet Subaşı
Professor of Orthopedics
Medical Faculty of Gaziantep University
subasi-m@hotmail.com

Metin Bayram
Professor of Radiology
Medical Faculty of Gaziantep University
mebayram@gantep.edu.tr

Abstract
Intraosseous lipoma is a rare benign tumor of the bone, and it frequently occurs in the calcaneus and metaphyses of the long bones. It is usually identified as an incidental roentgenographic finding. Rare localizations such as mandibula, rib, fibula and fronthoethmoidal sinus have been described before. We report the first case of intraosseous lipoma of the patellar localization and discuss the radiologic features.

Key words: **Lipoma; Magnetic Resonance Imaging; Patella.**

Özet
İntraosseöz lipom kemiğin nadir benign tümörüdür ve sıklıkla kalkaneus ile uzun kemiklerin metafizinde yerleşim gösterir ve genellikle rastlantısal olarak direkt grafilerde karşımıza çıkar Mandibula, kosta, fibula ve frontoetmoidal sinus gibi nadir yerleşim lokalizasyonları daha önce bildirilmiştir. Biz burada intraosseöz lipomun ilk defa patellar lokalizasyonunu ve radyolojik bulgularını literature bilgileri eşliğinde sunmayı amaçladık.

Anahtar kelimeler: **Lipom; Manyetik Rezonans Görüntüleme; Patella.**

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Corresponding Author:
Yrd. Doç. Dr. Ahmet Mete
Gaziantep Üniversitesi
Tıp Fakültesi
Radyoloji Anabilim Dalı

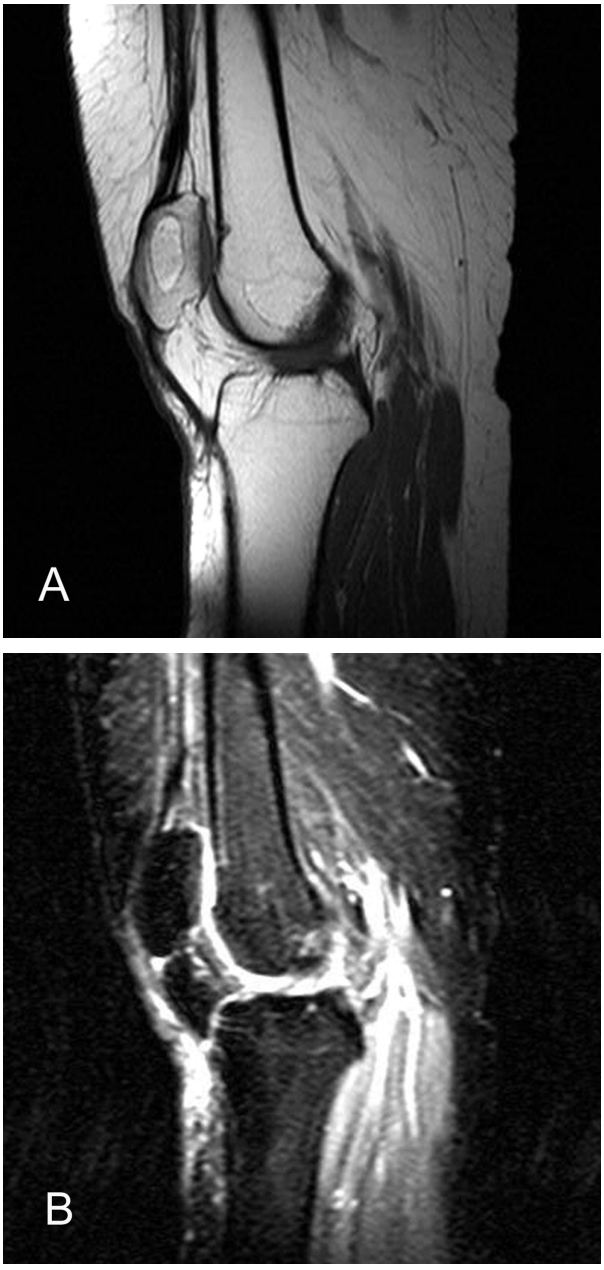
Phone : +90 - 342 3606060
e-mail : dr.meteahmet@gmail.com

Introduction

Intraosseous lipomas are rare benign lesions of bone and have an incidence less than 0.1% of primary bone tumors (1). In recent years considerable number of cases has been reported and the real incidence of this tumor seems higher than previously recognized. Intraosseous lipomas have been rarely diagnosed and confused with often benign tumors, cysts, and infarctions (2). These tumors occur most often in the metaphysis of the long bones, especially in the proximal femur and in the calcaneus and are usually identified as an incidental roentgenographic finding (3). Radiographs may suggest the diagnosis of intraosseous lipoma, but it can not be enough for discriminate other entities (4). In contrast, magnetic resonance imaging (MRI) can establish the diagnosis; thereby, the correct management can be planned with certainty (5). Herein we report a case of an intraosseous lipoma in patellar localization as the first description.

Case report: A 38-year-old woman presented with a 3-month history of sometimes occurring pain in her left knee over the patella. She complained of the pain when flexing the knee and physical examination revealed mild tenderness at patellar area. Laboratory findings were in the normal range. Plain radiographs of the knee demonstrated a non-expansile, sharply defined radiolucent lesion with sclerotic margins at the central part of the patella (Pic. 1). T1-weighted MR images revealed a lesion with slightly greater signal intensity than that of intramedullary fat and isosignal intensity to subcutaneous fat (Pic. 2a). In STIR imaging, the lesion had a homogeneous low signal intensity consistent with fat tissue (Pic. 2b). The MRI indicated the presence of an intraosseous fatty soft tissue tumour.

Figure 1. A lateral radiograph of the left knee shows a well-defined radiolucent lesion with sclerotic margins in the patella.



Figuer 2. (A) A sagittal spin-echo T1-weighted MR image (TR/TE, 500/17) shows an intraosseous lipoma in the patella. The majority of the lesion was composed of areas with isosignal intensity to subcutaneous fat. (B) STIR images of the same section showing decreased signal intensity of lesion.

Discussion

Intraosseous lipoma is the rarest benign primary bone tumor and represents proliferation of fat tissue within the marrow of normal trabecular bone. The etiology of intraosseous lipoma is not clearly evident. Both genders are equally affected and they most commonly observed during the fourth and fifth decades of life (2).

The majority of the patients is asymptomatic and appears only as incidental findings at routine roentgenographic evaluations. When symptoms occur, 70% of patients with intraosseous lipomas present with pain. There may be tenderness to palpation and symptoms may be present for years. Pathological fractures appear to be extremely rare. The lesion generally undergoes spontaneous involution, so that surgery may not be necessary in some cases (6).

Intraosseous lipomas have a wide distribution and may occur in the appendicular as well as the axial skeleton. The metaphysis of the long bones is the most frequently affected region. Involvement of the epiphysis or diaphysis is uncommon. Favored sites are the upper femur (more than 25% of intraosseous lipomas), tibia, fibula, and the central body of the calcaneus (7). Other reported sites of occurrence include the pelvis, ribs, skull, spine, and mandible and it seems likely that any bone can be affected such in our case (8). This case is of interest because of its patellar localization, and also we were not able to find a report of intraosseous lipoma at patellar localization in the literature.

On plain radiographs, intraosseous lipomas are seen as well defined radiolucent lesions with sclerotic margins without cortical expansion (6).

Bone infarction, fibrous dysplasia, enchondroma, chondromyxoid fibroma, aneurysmal bone cyst, and other benign tumors are in the spectrum of roentgenographic differential diagnosis. Milgram (8) subdivided intraosseous lipomas into three groups. Stage 1 lesions radiographically show a purely radiolucent zone with expansion of the original cortex. Stage 2 lesions demonstrate some of the same radiographic features as Stage 1 lesions but also contain localized regions of increased roentgenographic density due to calcified fat. Stage 3 lesions show considerable ossification around the calcified fat of the outer rim of the lesions. The present case conforms to a Stage 1 lesion.

Intraosseous lipomas show well-defined osteolytic lesions with negative Hounsfield units equivalent to those of fat on CT examinations. Sclerotic margins, cortical irregularity, and sclerosis around lesions are often established. If present, CT can detect central calcification within the lesion. Cortical breakthrough is rarely observed (9). Magnetic resonance imaging shows high signal intensity on T1- and T2-weighted images (5) similar to that of subcutaneous fat. El-Atta et al. (10) and Levin et al. (11) suggested that the short-tau inversion recovery (STIR) sequence was useful for diagnosing intraosseous lipomas, because the extra signal intensity of the lesion is suppressed, indicating the presence of normal fat. This stresses the importance of these imaging techniques for diagnosing intraosseous lipoma without surgical biopsy (5). With CT or MRI techniques, the diagnosis of lesions can be differentiated and biopsy is not necessary.

In conclusion, the diagnosis of intraosseous lipoma appears to become more common with the advent of CT and MRI with their ability to determine the nature of these lesions. The recognition of an intraosseous lipoma in CT or MRI is important to avoid biopsy and surgery for diagnosis of such cases.

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