CASE REPORT

Multimodality imaging assessment of meniscal ossicle

Abstract  A case of meniscal ossicles occurring in the left knee of a 23-year-old woman is presented. Radiographs showed two calcified lesions at the posteromedial aspect of the knee which were interpreted as loose bodies. Sonography, computed tomography arthrography and magnetic resonance imaging showed the fragments within the posterior horn of the medial meniscus permitting a diagnosis of meniscal ossicles. These techniques can detect meniscal ossicles and exclude intra-articular loose bodies.

Key words  Meniscal ossicles · Ultrasound · CT-arthrography · MRI

Introduction

Meniscal ossicles (MO) can mimic intra-articular loose bodies (LB) and lead to inappropriate surgical treatment. Imaging is required to confirm the diagnosis and assess meniscal integrity. Standard radiographs and magnetic resonance imaging (MRI) have been reported useful in the diagnosis of MO. To the best of our knowledge sonography (US) and computed tomography (CT)-arthrography have not been used in the assessment of MO. We report on a case of MO evaluated with these modalities.

Case report

A 23-year-old woman with a history of recent local trauma presented with left knee pain. Physical examination showed a moderately painful swollen joint and a small intra-articular effusion. Range of movement and meniscal tests were negative. Routine frontal and lateral radiographs showed two small bone fragments located at the posteromedial aspect of the knee leading to a presumptive diagnosis of LB (Fig. 1).

US was performed, with a 5–10 MHz linear electronic probe, to confirm the intra-articular location of the fragments. Axial and sagittal sonograms were obtained over the medial aspect of the popliteal space with the patient prone. Two contiguous hyperechoic fragments without posterior acoustic shadowing were detected inside the posterior horn of the internal meniscus (Fig. 2). No displacement of the fragments was evident during dynamic sonograms obtained with different degrees of flexion of the knee. The rest of the US examination was normal as were US and radiographs of the contralateral knee.

To confirm the suspicion of MO a spiral CT-arthrogram was performed (Fig. 3). After intra-articular injection of 10 ml of iiodinated contrast under fluoroscopic control and several weight-bearing flexions of the knees, to allow optimal intra-articular distribution of the dye, the patient was examined with only the involved knee inside the gantry. The CT protocol included 20 slices at the level of the patella (collimation thickness of 2.5 mm) obtained by the traditional technique, followed by a volumetric acquisition of 102 slices at the level of the menisci (collima-
tion thickness of 0.6 mm, reconstruction at 0.3 mm, pitch 1). In both sequences the parameters were FOV of 250 mm, matrix 512×512, high-resolution filter, high angular sampling. Oblique sagittal, coronal and radial two-dimensional reconstructions of the menisci were obtained from the volumetric data. The MO appeared as two trabecular bone fragments (3 and 5 mm), surrounded by a rim of cortex and embedded in the posterior horn of the internal meniscus. The meniscus maintained its normal triangular shape and showed no localized bulging. No meniscal tears were detected. A partial-thickness, focal lesion of the femoral cartilage overlying the ossicles was noted. The remaining structures of the knee were unremarkable; no LB were detected.

MR images were obtained with a transmit-receive extremity coil on a 2-T system (Fig. 4). Examination parameters were: section thickness 3 mm, intersection gap 0.3 mm, field of view 15 cm, matrix 200×256. MR images showed the typical appearance of MO with internal high signal on T1-weighted images surrounded by a low-signal rim on both T1-weighted and T2-weighted images. Signal characteristics corresponded to marrow fat surrounded by cortex. Inversion recovery fast spin echo (IRFSE) images showed no internal signal and excluded marrow edema. No other abnormalities were detected.

Arthroscopic selective meniscectomy confirmed the diagnosis of MO and the presence of the cartilage fissure.

**Discussion**

MO are rare lesions usually found in young men [1, 2, 3]. In a recent review of the literature only 39 cases were found and their prevalence in 1287 MR examinations was 0.15% [2]. The origin of MO remains controversial. Some authors noted that they can be found in a number of primates and presume that they re-