

Primary lipoma arborescens of the knee

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Abstract

Lipoma arborescens is a rare and benign intra-articular lesion of unknown etiology; it is characterized by synovial villous proliferation and sub-synovial connective tissue replacement by mature fatty tissue. It is part of the differential diagnosis in patients with an articulation affected by a slow, progressive, and chronically inflamed affection. We report primary knee involvement in a patient without significant articulate antecedents. Lipoma arborescens was diagnosed after knee magnetic resonance imaging and was confirmed by an anatomopathological study of the surgical specimen.

Keywords: Lipoma arborescens, synovial membrane, monoarthritis, magnetic resonance imaging

Introduction

Lipoma arborescens (LA) is a rare benign intra-articular condition of unknown etiology. It is characterized by diffuse sub-synovial tissue replacement by mature adipocytes, which initiates chronic synovial membrane lipomatous villous proliferation (1). With higher incidence in the adult age group (5th and 6th decades of life) and predilection for the male sex, it might be associated with chronic inflammatory diseases such as osteoarthritis, rheumatoid arthritis, psoriatic arthritis, and gout (2).

The clinical picture normally presents chronic or recurrent painless swelling of the knee joint. This condition is typically monoarticular, although bilateral articular involvement has been reported in the literature (3). The knee is the most commonly affected articulation, particularly the suprapatellar bursa, although other joints may also be affected (2, 4).

The diagnosis is based on magnetic resonance imaging (MRI) findings and synovial biopsy results, whereas laboratory examination results, including those of the synovial liquid, are normal in general. LA should be considered in the differential diagnosis of chronic articular effusions and patients with mechanical pain with a decreased range of motion (1, 5). We describe the case of a patient with long-lasting L knee monoarthritis with a recent MRI diagnosis of primary LA.

Case Presentation

A 56-year-old male went to the Rheumatology Department with complaints of swelling, pain, and heat and clicks in the left knee, which affected his quality of life. He reported sporadic exacerbations for 10 years, with mechanical blocking and swelling of the left knee, with good response to the use of nonsteroidal anti-inflammatory drugs.

Osteoarticular physical examination results on admission were as follows: enlarged left knee (+++/4+) and heat and redness in the suprapatellar region involving soft tissues and restricting articular movement. Laboratory examinations showed a moderate increase in the erythrocyte sedimentation rate (ESR): 54mm, C-reactive protein (CRP) level: 0.95mg/dL, latex: negative, uric acid level: 8.3mg/dL, thyroid-stimulating hormone level: 3.12mg/dL, free T4 level: 0.91 mg/dL, and levels of complements C3:117mg/dL and C4:21mg/dL. MRI showed a villonodular frond-like expansive lesion in the suprapatellar compartment, which is typical of LA (Figure 1a-d).

After the physical and supplementary examinations, the patient underwent anterior arthroscopy, medial parapatellar on the knee, via open surgery. Partial synovectomy was performed with full excision of the lipomatous lesion in the suprapatellar recess, showing the macroscopic appearance of a lipoma and diffuse pedunculated lesions measuring approximately 7×4cm (Figure 2). The material was sent for an anatomopathological examination, which confirmed the presence of mature adipocytes, formed the villous expansive lesion, and was covered by synovial cells without atypical features, with a fibrovascular



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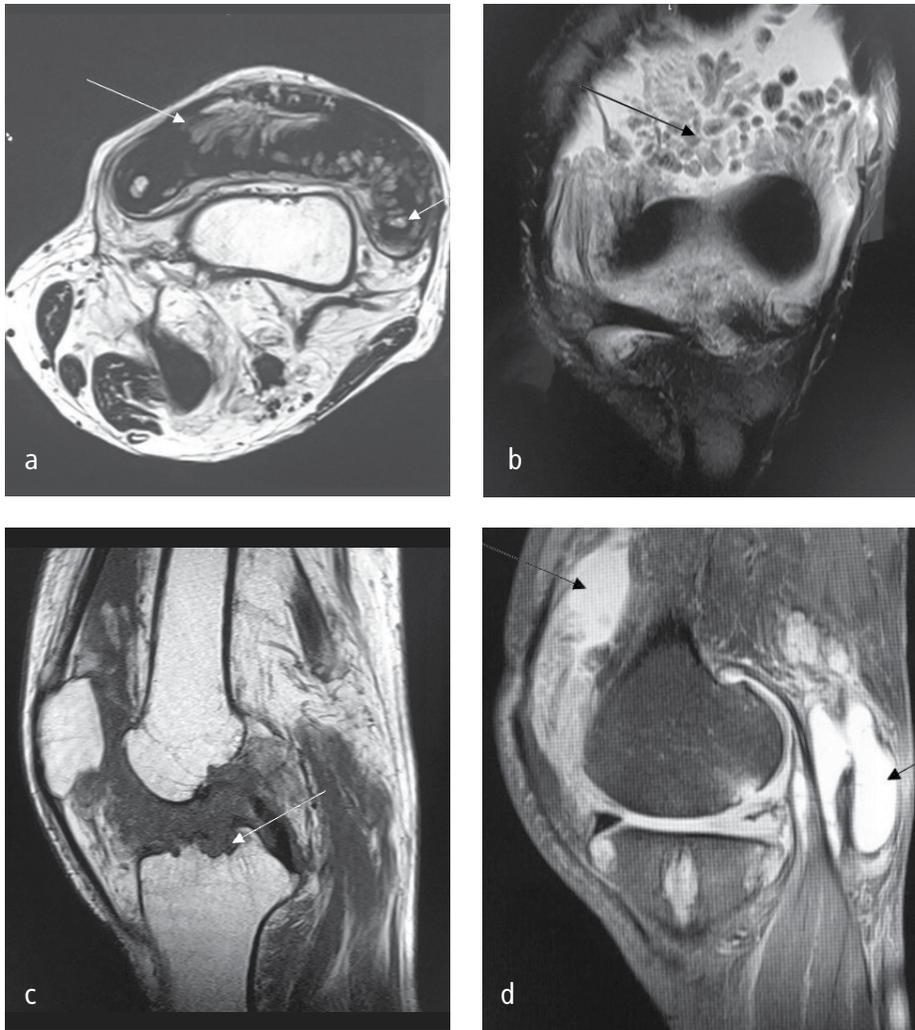


Figure 1 a-d. Magnetic resonance images of the left knee: Axial section in T1: Frond-like lesion with a fat sign, similar to other fat components of the knee (a); Coronal section in the proton density-weighted image with fat saturation shows the following: lesion signal drop confirming a predominant fat component (b); Sagittal section in the T1-weighted image shows bone erosion ("saca-bocado" in Portuguese) on the tibial plateau (c); Sagittal section in the proton density-weighted image with fat saturation: large articular synovitis including posterior bursa strain (Baker cyst). Note the erosion on the femoral condyle with associated bone edema (d)



Figure 2. Macroscopic appearance of the lipoma and diffuse pedunculated lesions, measuring approximately 7x4cm

axis and discrete lymphoplasmacytic infiltrate (Figure 3).

Written informed consent was obtained from the patient who participated in this study.

Discussion

Lipoma arborescens is a rare pathology that has been described since the beginning of the 20th century; it has been consolidated as a disorder related to slowly evolving, recurrent, and generally painless monoarthritis and progresses with articular effusion and decreased range of movement. LA has a predilection for the knee joint, but polyarticular presentations have already been described involving the bursae and tendon sheath (6).

Cases of LA have been described in several reports associated with inflammatory diseases, including rheumatoid arthritis, osteoarthritis, ankylosing spondylitis, and gout; however, it has still not been firmly determined if a lipomatous lesion results from these disorders or if, in fact, it represents a risk factor in the genesis; this paper reports a case of primary knee LA (7).

Lipoma arborescens should be considered in the differential diagnosis of monoarthritis with effusion and synovial thickening, without a systemic disease, such as progressive villonodular synovitis, synovial lipoma, and synovial osteochondromatosis (8).

Our case provides evidence on the relationship of a patient presenting with acute erosive arthritis and having a personal prior history of intermittent arthritis with a long-term joint volume increase. Reports in the literature mention that laboratory examinations, such as complete blood count and inflammatory parameters such as ESR, CRP levels, and rheumatoid factor levels show no changes (1, 6). However, in the case discussed in the present paper, laboratory examinations showed moderate uric acid level increase and ESR.

The magnetic resonance image showed a fatty tissue signal drop in sequences with fat saturation, confirming fatty tissue predominance. Other findings of erosive arthritis were described in femoral condyles and the tibial plateau.

A simple X-ray can be used in the LA diagnostic procedures, which generally reveals an enlarged joint and soft tissue volume in the suprapatellar recess, which is the primary site of lesion attachment. Ultrasound studies echogenic synovial proliferation in a segmental manner and articular effusion with good sensibility.

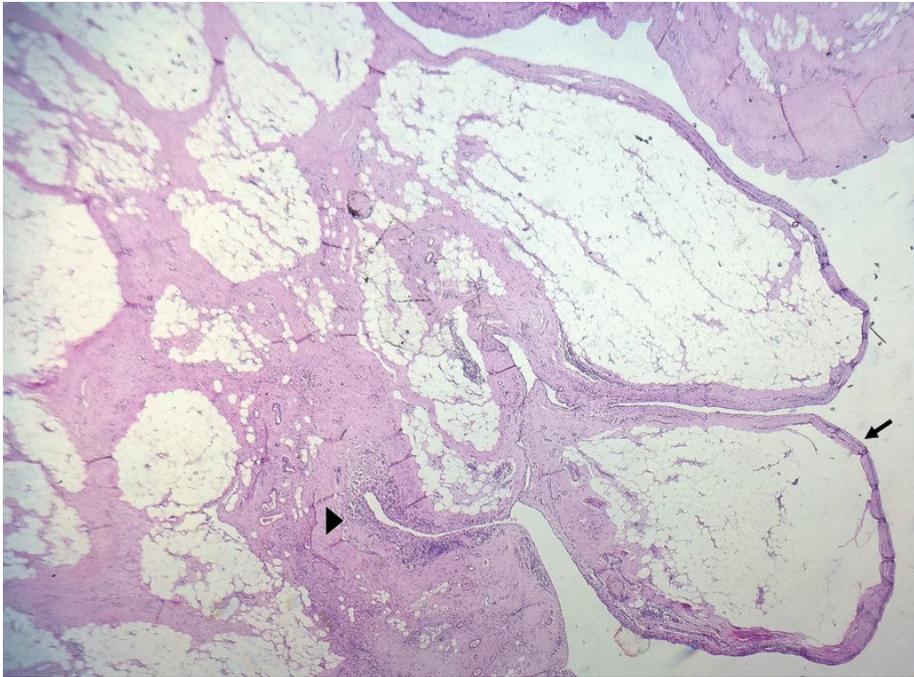


Figure 3. Mature adipocytes forming the expansive villous (arrow) lesion lined by synovial cells without atypical features with a central fibrovascular axis and discrete lymphoplasmacytic infiltrate (arrowhead)

Our patient underwent synovectomy via open surgery; the treatment was chosen in view of the low rate of recurrence and was considered curative. Surgical specimen analysis revealed mature adipocytes covered by synovial cells without atypia, with a central fibrovascular axis and discrete lymphoplasmacytic infiltrate, without detecting specific markers of other causes of arthritis, setting the diagnosis of gout aside by looking for uric acid crystals in the surgical specimen as the patient presented with hyperuricemia.

We believe that currently, MRI is sufficient to reach a diagnosis (9). In this specific case, the cause–effect relationship between LA and other arthritis, despite the hyperuricemia, was not established, thus corroborating our assumption on the primary nature of the lesion. We strongly recommend synovectomy, particularly because of the possibility of early

osteoarthritis development, which is the most prevalent issue in papers (5, 6, 10).

This case increases attention to this rare condition, whereas the primary occurrence of the lesion has already been described in the literature (7). We are reiterating the relevance of MRI for this diagnosis and the fact that general practitioners need to keep this suspicion in mind when dealing with recurring effusion and increased joint volume through synovial proliferation.

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