

A Rare Cause of Knee Pain: A Case Report on Lipoma Arborescens

Diz Ağrısının Nadir Bir Nedeni: Lipoma Arboresans Üzerine Bir Olgu Sunumu

 Deniz Sarıtosun¹,  Sefa Özcan¹,  Selda Çiftci İnceoğlu¹,  Aylin Ayyıldız²,  Banu Kuran¹

¹University of Health Sciences Turkey, Şişli Hamidiye Etfal Training and Research Hospital, Department of Physical Medicine and Rehabilitation, İstanbul, Turkey

²University of Health Sciences Turkey, Başakşehir Çam and Sakura City Hospital, Department of Physical Medicine and Rehabilitation, İstanbul, Turkey

Abstract

Lipoma arborescens (LA) is a rare benign synovial tumor, most commonly affecting the knee. An 81-year-old woman with advanced knee osteoarthritis presented with chronic knee pain and swelling. Examination revealed limited, painful knee motion, and imaging of the left knee showed stage 4 gonarthrosis, suprapatellar effusion, synovial hypertrophy, and a frond-like mass. Aspiration was non-inflammatory, and magnetic resonance imaging (MRI) confirmed a hyperintense lesion on fat-suppressed sequences, consistent with LA. Given the presence of comorbidities, conservative management was chosen. LA in older adults is usually secondary to chronic joint irritation. Diagnosis relies on imaging features, especially MRI, which helps differentiate it from conditions such as pigmented villonodular synovitis or synovial osteochondromatosis. Recognition of LA and its characteristic imaging findings is crucial for accurate diagnosis and appropriate management of intra-articular masses.

Keywords: Knee, lipoma arborescens, osteoarthritis, pain

Öz

Lipoma arboresans (LA), en sık dizde görülen nadir bir benign sinovyal tümördür. İleri evre diz osteoartriti olan 81 yaşında bir kadın, kronik diz ağrısı ve şişliği ile başvurdu. Muayenede diz hareketlerinde kısıtlılık ve ağrı saptandı ve görüntüleme sol dizde evre 4 gonartroz, suprapatellar efüzyon, sinovyal hipertrofi ve yaprak benzeri bir kitle görüldü. Aspirasyonda inflamasyon saptanmadı ve magnetik rezonans görüntüleme (MRG), yağ baskılı hiperintens bir lezyonu doğruladı; bu da LA ile uyumluydu. Eşlik eden hastalıklar nedeniyle konservatif tedavi tercih edildi. Yaşlılarda LA genellikle kronik eklem harabiyetine bağlı olarak ortaya çıkar. Tanı, özellikle MRG olmak üzere görüntüleme özelliklerine dayanır ve bu da onu pigmentli villonodüler sinovit veya sinovyal osteokondromatozis gibi durumlardan ayırt etmeye yardımcı olur. LA'nın ve karakteristik görüntüleme bulgularının tanınması, intraartiküler kitlelerin doğru teşhisi ve uygun tedavisi için çok önemlidir.

Anahtar kelimeler: Ağrı, diz, lipoma arboresans, osteoartrit

Introduction

Lipoma arborescens (LA) is a rare primary benign tumor of diarthrodial joints characterized by villo-lipomatous proliferation of the synovium and replacement of the

synovial tissue with mature fat cells (1). It is usually monoarticular and most commonly seen in the knee joint (2). However, rare cases with bilateral involvement in young patients have also been reported in the literature (3).

Address for Correspondence: Selda Çiftci İnceoğlu, University of Health Sciences Turkey, Şişli Hamidiye Etfal Training and Research Hospital, Department of Physical Medicine and Rehabilitation, İstanbul, Turkey

E-mail: seldavd@gmail.com **ORCID:** orcid.org/0000-0002-0387-3558

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The literature contains fewer than 100 reported cases of LA (4). Two etiological types have been identified. Primary cases occur at younger ages, and their etiology is unknown. Secondary LA occurs in older individuals and is caused by chronic irritation of the synovium. LA is suspected to be secondary to advanced gonarthrosis. The non-inflammatory nature of the joint aspirate, along with the absence of crystals and bacteria and normal biochemical and hemogram parameters, supports this hypothesis (2).

LA is diagnosed using advanced imaging techniques and confirmed by histopathological examination. Due to its high specificity for adipose tissue, the villo-lipomatous proliferation characteristic of LA can be seen on magnetic resonance imaging (MRI) (5). Findings supporting the diagnosis of LA on MRI include a frond-like synovial mass, adipose tissue signal on all sequences, lesion suppression on fat-suppressed sequences, concomitant joint effusion, the presence of a chemical-shift artifact between water and fat, and the absence of hemosiderin-induced tenderness seen in pigmented villonodular synovitis (PVNS) (6). Plain radiography reveals degenerative changes, while ultrasound (USG) may reveal a frond-like, hyperechoic mass. Less commonly, computed tomography can detect a villous or frond-like mass of fat density. Clinical articular masses may result from non-infectious proliferative processes, infectious granulomas, vascular causes, neoplastic causes, and disorders involving joint accumulation. The most common differential diagnoses include PVNS, rheumatoid arthritis, tuberculous arthritis, gouty arthritis, xanthomas, and synovial osteochondromatosis (2,4).

This case report aims to draw attention to LA in the differential diagnosis of knee pain and to provide a review of the current literature.

Case Report

An 81-year-old woman presented to the outpatient clinic complaining of knee pain. She had experienced knee pain for 6-years and had recently developed swelling in her left knee. She had dementia and multiple comorbidities. She had not benefited from previous non-steroidal anti-inflammatory drugs and intra-articular injections.

She was able to ambulate with a walker, had a positive patellar shock test in her left knee, and had painful, limited knee joints. Both knees had a positive patellar grind test, and the left knee had a positive patellar shock test. A slight increase in temperature was observed in her left knee.

Laboratory findings, including erythrocyte sedimentation rate, C-reactive protein, rheumatoid factor, full blood count and routine biochemistry tests, were within normal limits. Her knee radiograph revealed stage 4 gonarthrosis (Figure 1) according to the Kellgren-Lawrence classification (7). A knee USG revealed bilateral suprapatellar effusion, synovial hypertrophy, and a soft-tissue mass in the left knee (Figure 2). A USG-guided aspiration was performed, but the effusion was found to be non-inflammatory. The fluid was yellow and non-purulent. A microscopic evaluation demonstrated 120 leukocyte/mm³, 440 erythrocyte/mm³ and the cell typing was normal distribution. Cultures of aspirated synovial fluid for common pathogens and tuberculosis were negative. MRI of the left knee showed synovial hypertrophy and a hyperintense lesion on T1 and T2 sequences, as well as a lesion that was suppressed on fat-suppressed imaging, consistent with LA (Figure 3).

The patient was referred to the orthopedics clinic; however, due to the presence of comorbid conditions, a decision was made to proceed with conservative management. The treatment included cold application, elastic bandaging, electrical stimulation, and pulsed USG therapy, alongside the initiation of a structured exercise program.

Discussion

LA is a rare yet clinically important cause of chronic knee pain and swelling, particularly in older patients with



Figure 1. Anteroposterior radiography of knee

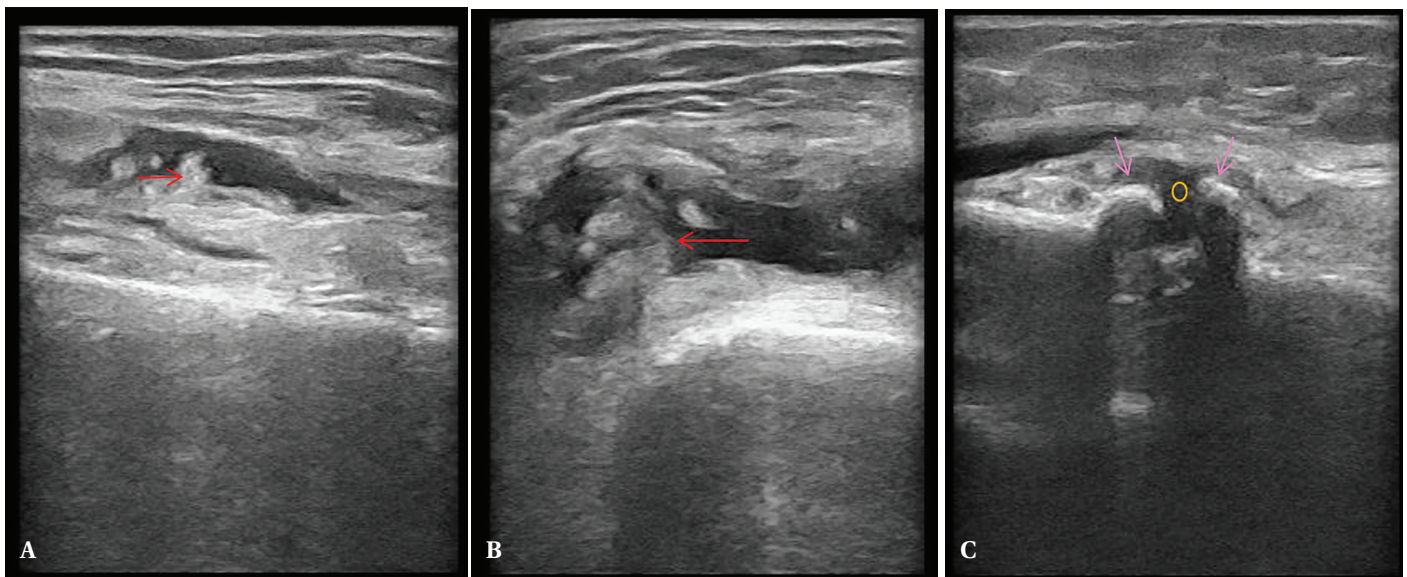


Figure 2. Knee ultrasonography. A, B) Effusion of knee and mass tissue (red arrow), C) Joint space (yellow circle) and osteophytes (purple arrow)

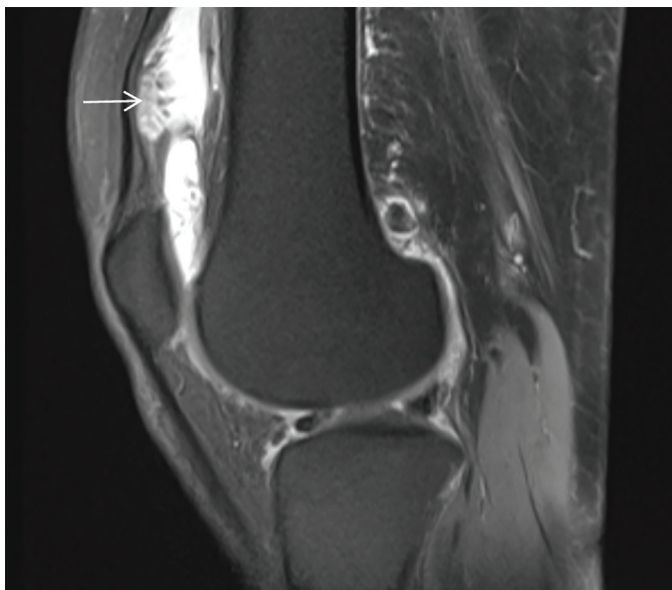


Figure 3. Magnetic resonance imaging of knee and lipoma arborescens (white arrow)

advanced degenerative joint disease. In our case, the presence of gonarthrosis, non-inflammatory synovial fluid, and characteristic MRI findings supported the diagnosis of secondary LA and highlighted the role of imaging in differentiating it from similar intra-articular pathologies.

LA is an infrequent intra-articular condition characterized by the replacement of synovial tissue with mature adipocytes and is thought to represent a reactive rather than neoplastic process. It typically appears as a frond-like,

fat-containing lesion in the suprapatellar recess, showing high signal on T1-weighted images and suppression on fat-saturated sequences, allowing for confident MRI diagnosis (8,9). USG typically reveals hyperechoic, villous masses within the joint effusion, which may move gently but may not rotate with sonopalpation. These lesions are usually soft and compressible, unlike the firm nodules observed in PVNS (2,10).

The treatment for LA is either open or arthroscopic synovectomy. Although an arthroscopic approach is generally preferred, open surgery may be necessary in cases of extra-articular LA (2,11). Case reports in the literature show that synovectomy was performed as the treatment (4-6,12). Favorable outcomes following surgical treatment have also been reported, including rare cases with bilateral knee involvement in young patients, long-standing symptoms, and no recurrence during follow-up (13). In asymptomatic cases or when surgery is not possible, conservative treatment is applied (2,14). Recurrence is rare, and malignant degeneration has not been reported (2,4,6).

In cases of intra-articular masses, considering LA in the differential diagnosis and a thorough understanding of USG and MRI findings facilitate accurate diagnosis and appropriate treatment.

Ethics

Informed Consent: In this case report, written informed consent was obtained from the patient and their family before the preparation of the case presentation.

Footnotes

Authorship Contributions

Surgical and Medical Practices: D.S., S.Ö., S.Ç.İ., Concept: D.S., S.Ö., S.Ç.İ., A.A., B.K., Design: D.S., S.Ö., S.Ç.İ., Data Collection or Processing: D.S., S.Ö., S.Ç.İ., B.K., Analysis or Interpretation: A.A., B.K., Literature Search: D.S., S.Ö., S.Ç.İ., Writing: D.S., S.Ç.İ.

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