Cent. Eur. J. Med. • 6(3) • 2011 • 263-265
DOI: 10.2478/s11536-011-0013-5

VERSITA

Central European Journal of **Medicine**

Bilateral lipoma arborescens of the knee: a case report

Case Report

Evangelos Perdikakis*, Apostolos Karantanas

Department of Radiology, University of Crete, Stavrakia, 711 10 Heraklion, Crete, Greece

Received 17 November 2010; Accepted 23 February 2011

Abstract: Lipoma arborescens, a diffuse articular lipomatosis, is a rare disorder characterized by marked villiform synovial proliferation and diffuse replacement of the subsynovial tissue by mature adipocytes. Unilateral joint involvement is the usual presentation while bilateral joint involvement is more uncommon. We reported a case of bilateral lipoma arborescens in a male patient with associated marked patellofemoral osteoarthritis and described the MR imaging findings.

Keywords: *Lipoma arborescens • Synovial plicae • MR imaging • Osteoarthritis • Knee joint/patellofemoral*

1. Introduction

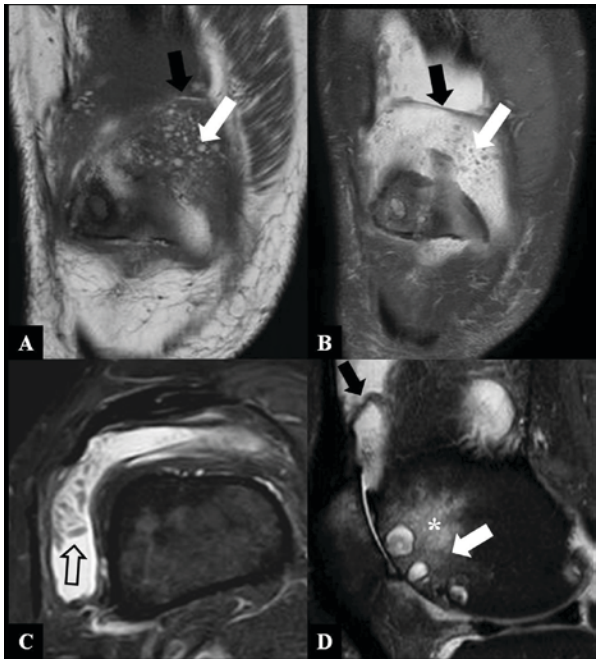
Lipoma arborescens (LA) represents a benign intra-articular lesion of unknown aetiology [1]. The villous proliferation of the synovium (in a tree-like configuration) and the diffuse replacement of the subsynovial tissue by mature fat cells are the pathologic hallmarks of the disease [2]. The disease is usually presented in a monoarticular fashion but bilateral joint involvement has been reported in limited literature reports [3-7]. The knee joint is the most common location [5]. The MR imaging characteristics of LA are considered not pathognomonic but strongly suggestive of the diagnosis. We present a rare case of bilateral LA of the knee in a 71-year-old male patient.

2. Case Report

A 71-year-old male, presented with a 20-year history of mild pain and swelling in both knees. His complaints had progressed slowly over the last years and were more pronounced on the right side. The patient was on NSAIDs for a long time period but with only moderate improvement. The clinical examination revealed swelling associated with a moderate degree of limited flexion but neither warmness nor increase in temperature was noticed. Physical examination tests for instability were negative and the patient did not recall any traumatic incidence. A thorough laboratory and rheumatologic test revealed no findings of inflammatory arthritis (negative blood tests for increased WBC, ESR, C-reactive protein, ANA and anti-DNA, Rheumatoid Factor and HLA B27). An aspiration of the joint was also negative for inflammatory or crystal-induced arthropathy. The plain X-rays (not shown) showed only soft tissue swelling and demonstrated evidence of bilateral patellofemoral degenerative disease with joint space loss, subchondral sclerosis, geode formation, and marginal osteophytosis. An MRI was performed upon request that demonstrated intraarticular effusions and synovial frond-like projections (Figure 1, 2). The signal intensity of the villiform synovial projections was identical to fat on all sequences and was suppressed on fat suppressed images, a finding in keeping with their fatty nature (Figure 1, 2). MRI also demonstrated severe osteoarthritic changes on both patellofemoral joints. The MRI highlighted the bone marrow edema, subcortical cyst formation and severe cartilage degradation on both sides of the patellofemoral joints. The medial and lateral compartments did not show any significant evidence of osteoarthritis. The diagnosis of bilateral lipoma arborescens of the knees was suggested on MRI and the patient underwent total

* *E-mail: perdikakis_ev@yahoo.gr*

Figure 1. Right knee joint. The coronal (a) T1-w MR image and the corresponding coronal (b) fat suppressed PD-w MR images, demonstrate the presence of innumerable intraarticular components of the lesion in the suprapatellar pouch (white arrows). The signal is suppressed on fat suppressed PD-w images, a finding in keeping with their fatty nature. Note that the greater part of the lesion is limited from the suprapatellar plica (black arrows in a,b,d). The axial (c) and the sagittal fat suppressed PD-w MR images show the villiform fatty synovial (open arrow in c) and extensive osteoarthritic changes in the patellofemoral joint. Note geode formation (white arrow in d), extensive bone marrow edema (white asterisk) and joint space narrowing.

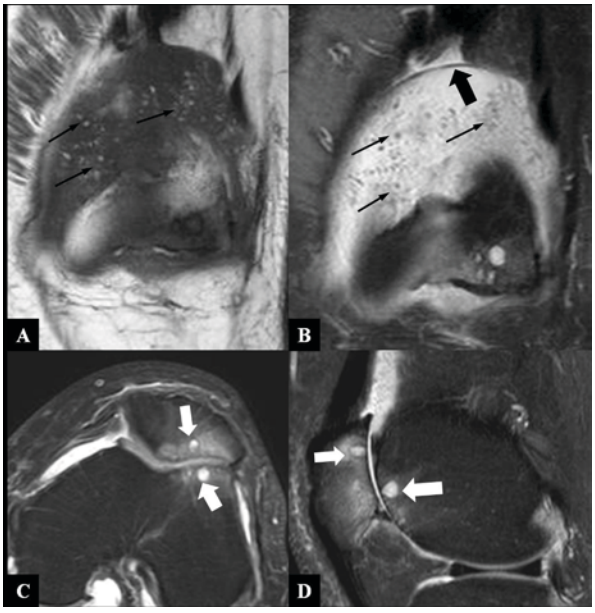


synovectomy and a bilateral patellofemoral arthroplasty (Avon prosthetic device) with patellar resurfacing. The histological examination of the specimens confirmed the MR imaging diagnosis by showing marked fatty metaplasia and hyperplasia of the synovium.

3. Discussion

Lipoma arborescens (LA) is a rare intraarticular disorder that is characterized by villous lipomatous proliferation of the subsynovial tissue [1-2]. This synovial pathology is reported to be more common in men than in women, and the peak of incidence is in the fifth to sixth decades of life [2]. The majority of literature reports describe a monoarticular disease mode most frequently found in the knee. Bilateral reports of this disease have been described in limited case reports [3-7]. The clinical presentation includes typically a long-standing (up to several years) and slowly progressive swelling of the joint with recurrent effusions and variable pain and

Figure 2. The coronal (a) T1-w MR image and the fat suppressed coronal (b), axial (c), sagittal (d) PD-w MR images of the left knee joint, demonstrate the same changes. Note the villiform fatty synovial proliferation (small black arrows), the plica limiting the lesion (thick black arrow) and the extensive osteoarthritic changes of the affected patellofemoral joint.



limited motion [1-12]. The MR imaging characteristics of LA, although not pathognomonic, are strongly suggestive of the diagnosis [10-13]. MRI can show the villiform synovial proliferation with signal intensity similar to that of fat. MR fat saturation sequences and techniques are widely available on MRI scans nowadays and provide the clue to the final diagnosis. Effusions are the usual accompanying MR findings [13]. The differential diagnosis of LA includes PVNS (pigmented villonodular synovitis), rheumatoid or seronegative arthropathies, synovial osteochondromatosis, low-grade specific infections, synovial hemangioma - vascular malformations and traumatic injuries [13].

The suprapatellar pouch is a large continuation of the synovial membrane of the knee joint proximal to the trochlea. The presence of a suprapatellar plica may compartmentalize the knee joint and thus limit pathology between the suprapatellar fossa and the rest of the knee joint [14]. A predilection for occurrence of LA in the suprapatellar pouch, as in our case, has already been described. Dragoo JL et al. have presented the suprapatellar pouch disorders of the knee and reported this high incidence of LA in this knee compartment [14].

Although the increasingly frequent use of MRI has demonstrated that LA cases are discovered regularly in a large radiology practice, there are few previous reports of bilateral knee involvement [3-7]. Al-Ismail

K et al. described a case report with bilateral knee osteoarthritis as a possible result of LA [5]. Karahan O.I. et al. reported a case of a mediopatellar plica limiting lipoma arborescens in the knee joint and described the associated MRI findings [9]. What makes our case unusual and interesting is that the bilateral presence of the tumor and the associated severe bilateral osteoarthritis are limited in the patellofemoral joints. A possible association of LA and osteoarthritis has been implicated by some authors. Ikushima K et al. have reported that lipoma arborescens of the knee could be a possible cause of osteoarthrosis [2]. Al-Ismail K et al. in their case postulated an association between LA and secondary osteoarthritis [5]. They suggested that the villous lipomatous proliferation of the synovial membrane may result in chronic irritation to the synovium and underlying cartilage. Although an issue remains to be elucidated as whether LA is the result, and not the cause of synovial irritation, we believe that we cannot draw conclusions from our single case report. However, it must be pointed out that our patient did not show any evidence of degeneration in the medial and lateral compartments.

In summary, a rare case of bilateral LA of the knee, limited by the suprapatellar plicae and associated with severe patellofemoral osteoarthritis is presented herein. The MR imaging characteristics and the clinical picture are demonstrated as the treatment applied is described.

References

[1] Vilanova JC, Barcelo J, Villalon M, Aldoma J, Delgado E, Zapater I. MR imaging of lipoma arborescens and the associated lesions. Skeletal Radiol 2003; 32:504-509

[2] Ikushima K, Ueda T, Kudawara I, Yoshikawa H. Lipoma arborescens of the knee as a possible cause of osteoarthrosis. Orthopedics 2001; 24:603-605

[3] Yan CH, Wong JW, Yip DK. Bilateral knee lipoma arborescens: a case report. J Orthop Surg (Hong Kong) 2008; 16:107-10

[4] Cil A, Atay OA, Aydingoz U, Tetik O, Gedikoglu G, Doral MN. Bilateral lipoma arborescens of the knee in a child: a case report. Knee Surg Sports Traumatol Arthrosc 2005; 13:463-7

[5] Al-Ismail K, Torreggiani WC, Al-Sheikh F, Keogh C, Munk PL. Bilateral lipoma arborescens associated with early osteoarthritis. Eur Radiol 2002; 12:2799-802

[6] Haasbeek JF, Alvillar RE. Childhood lipoma arborescens presenting as bilateral suprapatellar masses. J Rheumatol 1999; 26:683-6.

[7] Sailhan F, Hautefort P, Coulomb A, Mary P, Damsin JP. Bilateral lipoma arborescens of the knee: a case report. J Bone Joint Surg Am 2011;93:195-8

[8] Davies AP, Blewitt N. Lipoma arborescens of the knee. Knee. 2005; 12:394-6

[9] Karahan OI, Baykara M, Gulec M, Duygulu F. Mediopatellar plica limiting lipoma arborescens in the knee joint: MRI findings. European Journal of Radiology Extra 2003; 47 : 55-8

[10] Dinauer P, Bojescul JA, Kaplan KJ, Litts C. Bilateral lipoma arborescens of the bicipitoradial bursa. Skeletal Radiol 2002 Nov;31(11):661-5.

[11] Pandey T, Alkhulaifi Y. Bilateral lipoma arborescens of the subdeltoid bursa. Australas Radiol 2006; 50:487-9

[12] Sumen Y, Ochi M, Soda Y, Ikuta Y. Lipoma arborescens in bilateral knee joints. Arch Orthop Trauma Surg 1998; 117:105-7.

[13] Karantanas AH, Mitsionis GI, Skopelitou AS. PVNS of the knee simulating lipoma arborescens on MR imaging. Comput Med Imaging Graph 2004; 28: 23-26

[14] Dragoo JL, Abnousi F. Disorders of the suprapatellar pouch of the knee. The Knee 2008; 15: 348-354