

Intra-articular lipoma arborescens of the knee joint

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Ann Saudi Med 2011; 31(2): 194-196

PMID: **** DOI: 10.4103/0256-4947.77501

Intra-articular lipoma arborescens (LA) is a rare entity that can present with monoarticular or polyarticular involvement of joints such as knees, ankles, hips, shoulders, and elbows. We describe a case in a 26-year-old man who presented with intermittent pain and swelling of the left knee joint for the previous 2 years. Physical examination showed only tenderness over the medial line of the left knee joint. MRI found only joint effusion; therefore, the patient was referred to the orthopedic clinic where he underwent arthroscopy, which revealed a diffuse yellow soft tissue synovial papillary growth involving both medial and lateral gutters of the suprapatellar pouch. A biopsy reported intra-articular LA. This is the first case of LA reported in Saudi Arabia. LA should be included in the clinical and radiologic differential diagnosis of cases with persistent knee joint effusion.

Intra-articular lipoma arborescens (LA) is an uncommon benign synovial neoplasm of unknown etiology. LA is characterized by villous transformation of the synovium due to diffuse infiltration of the subsynovial stroma by mature adipose cells. The Latin word “arbor” means tree-like morphology. LA affects mainly large joints such as hips and knees;¹ however, other joints can be involved such as elbows, shoulders, and ankles.² Clinically, it can present as intermittent joint pain and swelling with a monoarticular or polyarticular pattern.³ Most of cases can be predicted by MRI.¹ This report describes a case a 26-year-old man who presented with an intermittent left knee joint pain and effusion and was diagnosed histopathologically with lipoma arborescens. Radiological and histomorphologic features are described.

CASE

A 26-year-old man presented with a history of intermittent pain and swelling of the left knee joint for the previous 2 years. He had a history of repeated soccer trauma to the same joint, without any other underlying joints disorders. The patient was treated initially by physiotherapy and nonsteroidal anti-inflammatory drugs such as piroxicam and diclofenac with limited response. Physical examination revealed an obese individual with tenderness over the medial line of the left knee joint.

Pivot shift, McMurray, and Lachman test results were negative. Blood tests revealed a normal leukocyte and differential count. Other laboratory investigations were unremarkable. Initial MRI showed only mild effusion. The patient continued to have intermittent pain and tenderness over the medial side of the knee joint. He had another MRI, which found no significant abnormality except joint effusion. The patient subsequently was referred to the orthopedic clinic where he underwent diagnostic arthroscopy, which revealed diffuse yellow soft tis-

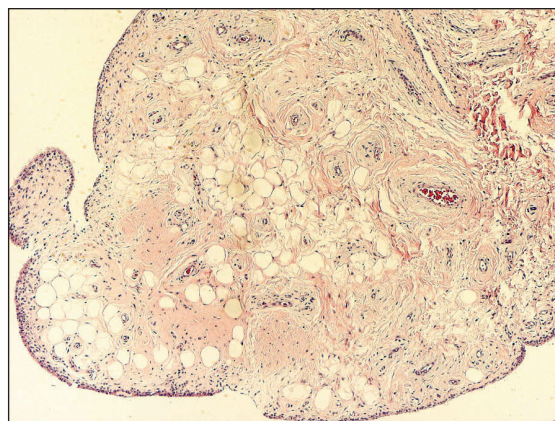


Figure 1. Photomicrograph showing a synovial lined villous proliferation which is diffusely infiltrated by mature fat (original magnification, hematoxylin and eosin stain, ×40).

sue synovial papillary growth involving both medial and lateral gutters of the suprapatellar pouch. In addition, there was a mild effusion, but no signs of injury to ligaments or menisci. A synovial biopsy was taken and histopathologic examination showed a synovial lined villous proliferation, in which the villi are diffusely infiltrated by mature adipose tissue (Figure 1). After the establishment of the histopathologic diagnosis of intra-articular lipoma arborescens, the second MRI was reexamined by the radiologist in the light of discussion with the orthopedic surgeon and the pathologist, allowing a precise radiologic localization of the lesion (Figure 2A, 2B). MRI post-arthroscopic intervention showed disappearance of the lesion (Figure 3A, 3B). The patient elected to continue on a conservative management without open synovectomy, unless the symptoms got worse. The clinical follow up showed mild improvement.

DISCUSSION

Tumors of the synovium are rare and can involve the lining of the joints, tendons, or bursa. LA is a very rare benign primary intra-articular tumor of the synovium. It is known also as synovial lipomatosis, and is characterized by replacement of the subsynovial tissue by mature adipocytes, giving rise to prominent intra-articular villous proliferation of the synovium. Less than 60 cases have been published in the English language medical literature as shown by the database of medical search engines of Pub Med and OVID.¹ The majority are case reports and the largest series of cases included six cases.³ I believe that this is the first case ever reported in Saudi Arabia.

The exact etiology of LA is not known; the majority of cases arise de novo. Other reports described association with previous trauma, chronic rheumatoid arthritis, underlying osteoarthritis, psoriasis, or a Baker cyst.^{2,3} Most cases present as joint pain, intermittent swelling, and joint effusion.² The knee is the most commonly affected joint especially the suprapatellar pouch region. LA has occurred in other anatomical sites including the hip, elbow, shoulder, and wrist. The lesion was rarely reported to involve the synovial surface of the ankle joint.⁴ The majority of cases presented with monoarticular involvement; however, only a few reports described polyarticular involvement by LA.^{3,5,6} Most occurred in patients in their 5th to 7th decades of life;³ however, our case interestingly presented at the young age of 24 years.

Plain radiographs are usually non-specific for LA, but may show degenerative articular changes if there is a secondary osteoarthritis. Ultrasound can demonstrate joint effusion, and may also show villous synovial projections. In most cases, MRI is the diagnostic modality

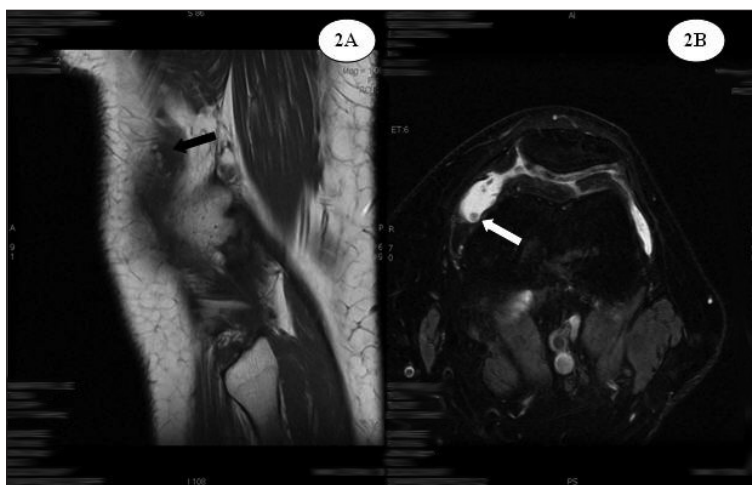


Figure 2. MRI of the left knee. (A) Sagittal T1-weighted image showing small nodular soft tissue lesions of fatty signal intensity (back arrow) within the suprapatellar pouch. (B) Axial proton density fat suppressed weighted image showing suppression of the signal intensity of the lesions (white arrow), similar to subcutaneous fat.

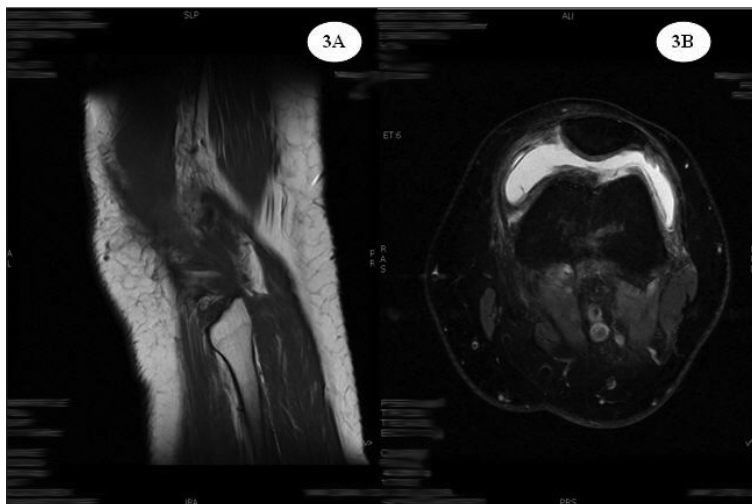


Figure 3. MRI of the left knee. (A) Sagittal T1-weighted image, and (B) axial proton density fat suppressed weighted image showing complete disappearance of the lesions post-arthroscopy.

of choice, as it can demonstrate high signal intensity of fat in LA on both T-1 and T-2 weighted images. In our case, the initial MRI reported only mild effusion with no documentation of lesions. After the histopathologic establishment of the diagnosis of LA, the MRI report was revised by the radiologist in the light of the pathologic diagnosis and close discussion with the orthopedic surgeon. The lesions were determined to be localized. An additional axial T1-weighted sequence, including suprapatellar pouch, is therefore recommended when such

rare soft tissue lesions are suspected. Although such lesions are extremely rare, in cases of persistent knee joint effusion, LA should be entertained in the differential diagnosis. The recommended management for LA is open synovectomy; however, arthroscopic synovectomy can be done with a favorable outcome.

This report confirms the significance of arthroscopy and the histopathologic examination for the confirmation of such a rare intra-articular entity. When such lesions are suspected, additional axial T1-weighted MRI sequences should be made to include the suprapatellar pouch region of the knee joint.

Acknowledgments

I gratefully acknowledge the support of the administrative staff in both College of Medicine, King Khalid University, and Armed Forces Hospital-Southern Region (AFH-SR), and the help of medical record staff in AFH-SR, Khamis Mushayt, Saudi Arabia. My thanks are also extended to Dr. Z. Khan (orthopedics surgeon), Dr. A Kandeel (consultant radiologist) who enabled me to review this interesting case, and also to Mr. Ghazi Bargi (senior histopathology technician), Mr. Samuel Asirvatham (senior radiographer) and Mr. Pravin Jeyapandi (CT scan and MRI radiographer), (AFH-SR) for their technical assistance.

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