Case Report

Lipoma Arborescens: A Review and A Case Report

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ABSTRACT

Lipoma arborescens, also known as villous lipomatous transformation of synovium is an unusual fatty lesion of joint. This disorder is characterized by a diffuse increase in the quantity of subsynovial fat in supra-patellar region which bulges the overlying synovial lining and produces a villous architecture.

Hereby we report a case of Lipoma arborescens in an eleven year old boy with a history of supra-patellar swelling of left knee since a year ago. Also, he had a vague history of trauma before left knee swelling. Radiological and histopathologic features of our case are discussed alongside full review of literature. This disorder is an unusual lesion and occurs mainly in middle aged men and is rare in pediatric age group.

Key words: Lipoma arborescens, Knee joint, Pediatric age group

Introduction

Lipoma arborescens (LA) is also known as villous lipomatous proliferation of synovium (1). The cause of this disease is unknown (2). Although Lipoma arborescens usually involves the supra-patellar portion of the knee joint, however, it has also been reported in the hip, ankle, wrist, shoulder, and elbow (1,2). Although the process is usually localized to one joint, several cases of bilateral knee involvement have been reported (1). It is more common in men than in women (1,2) and is seen mainly in middle aged ones (1), but also is reported in pediatric age group (3).

There are associations with osteoarthritis, joint trauma and diabetes mellitus in some patients (2, 4).

Patients with LA usually have long-standing, slowly progressive swelling of involved joint which may be associated with decreased range of motion and pain (1,2) and symptoms may be present for up to 30 years, however, and acute onset has been reported (1).

Clinical examination reveals soft painful boggy swelling in the supra-patellar pouch (2). Plain radiography may show soft tissue density in the supra-

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patellar pouch (2). According to Ryu, about 38% of patients show bone erosions at the articular margin (5). Arthrography reveals multiple lobulated filling defects and CT scan show a low density villonodular mass (1). The appearance on MRI includes a synovial mass with frond-like structure and fat signal intensity on all pulse sequences (2). Laboratory studies are unremarkable and the joint effusions consist of clear yellow fluid free of crystal (1) and cell (2), although one case of Lipoma arborescens with hemarthrosis of knee has been reported (6). At surgery, the affected synovium has a prominent villous or villonodular architecture and is tan yellow (1). Macroscopically, LA has a frond-like appearance with numerous broad based polypiod or thin papillary villi, composed of fatty yellowish tissue (1,2).

Histologically, the villi are filled with mature adipose cells. Sheets of proliferating fatty tissue are seen underlying these villi. Congested hyperemic capillaries and foci of inflammatory cell infiltration may be seen (1-3). The overlying synovial cells may appear to be enlarged and reactive (2). The clinicopathologic differential diagnosis includes pigmented vilonodular synovitis, synovial chondromatosis, and synovial hemangioma. These lesions can be easily distinguished from LA by their distinct histological features (1). Another disorder that should be included in the differential diagnosis is Hoffa disease (1). Hoffa fat pad is an infra-patellar intra-capsular structure seen in normal population. In Hoffa disease this fatty tissue shows proliferation with same villous configuration as seen in LA (7,8). Lipoma aArborescens is routinely treated by surgical synovectomy but a report of radiosynovectomy with yttrium 90 with good clinical results has been issued (9).

Case report

An eleven year old boy referred due to supra-patellar swelling of left knee since a year ago to our center. A vague history of trauma during football playing was stated by his father. He had no signs of giving away and locking. Also no evidence of pain and tenderness was stated and no complaint of decreased range of motion knee. No history of easy bruising and bleeding tendency was obtained.

Clinical examination was unremarkable except for supra-patellar swelling of left knee with no tenderness, reddening, and warmness.

Six months ago aspiration of fluid and needle biopsy of joint was performed in another center. Report of fluid cytology stated that some chronic inflammatory cells, few neutrophils, and some reactive synovial cells are seen in a granular background. No acid fast bacilli were seen by special staining. Pathology report of needle biopsy was villo nodular tenosynovitis. Laboratory data were unremarkable (normal PT and PTT, WBC: 5700, Hg: 13 and platelet: 221000). Plain X- ray of knee revealed soft tissue mass with no bony erosion (Figure 1). MRI of knee revealed synovial hypertrophy with indentations and fat signal density. Also, joint effusion was noted (Figure 2).

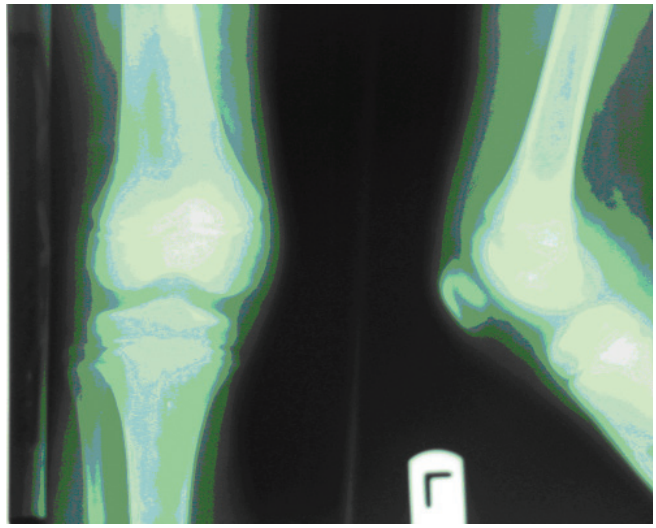

Figure 1. Plain X- ray of left knee joint showing soft tissue swelling with no bony erosions.

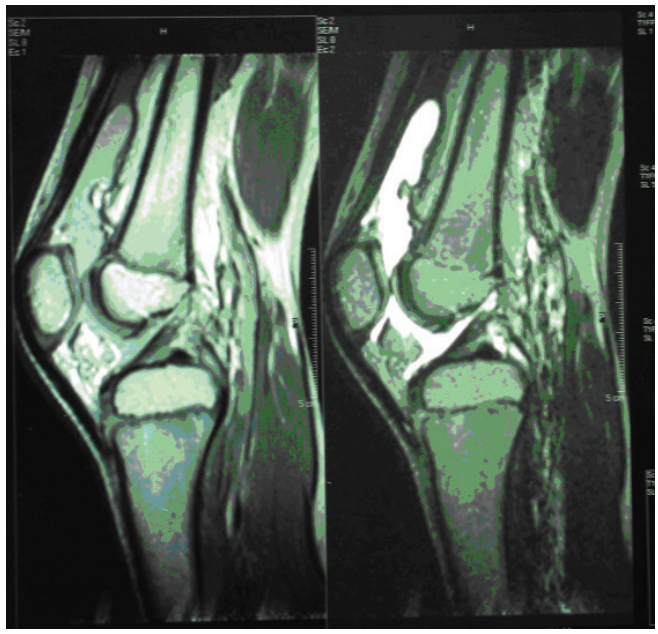

Figure 2. MRI of left knee, showing synovial hypertrophy with indentations and fat signal intensity in supra-patellar area.

He went under surgery (anterolateral incision of left knee). In this regard, 200 ml of semi clear yellow

fluid was present in articular space. Synovium was hypertrophied but no typical projections noted by surgeon. Cytologic examination of fluid revealed: WBC: 1600/ml (30% poly and 0% lymphocyte) and RBC: 1000/ml. Gram stain was negative. Synovectomy specimen was sent to our Lab. Gross examination revealed hypertrophied creamy yellow synovium with appearance of fatty tissue and vague small projections on the surface. Microscopic examination revealed sheets of proliferating mature adipocytes separated by thin fibrous septae into lobules infiltrating villous structures lined by one or more layer of synovial cells which appear unremarkable. Edema and congestion was also noted focally but no significant inflammation was seen (Figures 3). After surgery, the patient was well and was soon discharged from hospital with no complaint.

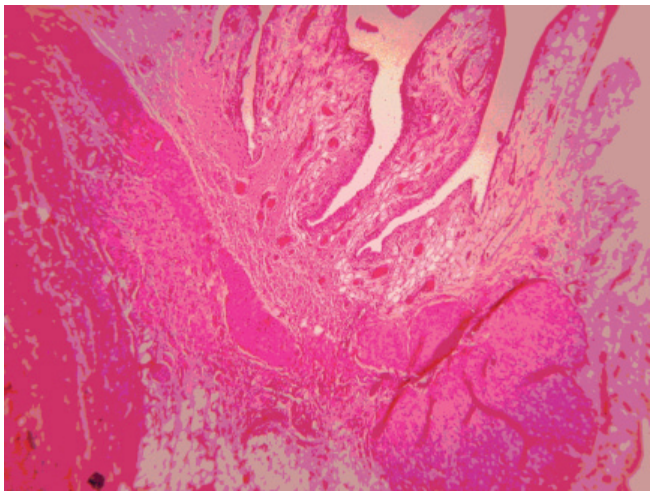

Figure 3. several villous structures infiltrated by mature adipocytes overlying sheets of fatty tissue. (H & E)

Discussion

Lipoma arborescens is a rare condition that is usually found in knee and affects mainly middle aged men. It presents itself as swelling of supra-patellar area of knee that may be bilateral and with some degree of decrease in range of motion and also pain.

Our case was an eleven year old boy who referred with complaint of knee swelling started a year ago, however, he had no complaint of pain, but decreased range of motion was stated by him. Distinct features are seen in CT scan and MRI of these patients showing villonodular mass with fat signal intensity on MRI. Our patient had an MRI with same features but in the final report this diagnosis was not stated by radiologist. It is stated that LA may be seen with conditions such as osteoarthritis, trauma, and diabetes mellitus and in our patient a vague history of trauma existed. He admitted offices of several clinicians and clinical impression of Juvenile Rheumatoid Arthritis was seen in the physicians' notes, so this condition may be erroneously thought as some inflammatory and autoimmune disorders.

After six months, aspiration and needle biopsy was performed by one of the physicians outside our center which may have been totally unnecessary due to findings of imaging. Cytological examination of fluid revealed some inflammatory cells although it is stated that fluid in this condition is free of cells and crystal, but in our case it may be due to secondary causes. Needle biopsy of lesion was diagnosed as pigmented villonodular synovitis in another center which may be due to small sample and villous configuration on microscopic examination of the specimen that was erroneously interpreted by the pathologist. Macroscopically, LA has a frond-like appearance with numerous broad based polypiod or thin papillary villi, composed of fatty yellowish tissue. Histologically, the villi are filled with mature adipose cells. Sheets of proliferating fatty tissue are seen underlying these villi. Congested hyperemic capillaries and foci of inflammatory cell infiltration may be seen.

Synovectomy was performed in our center and during surgery, 200 ml of semi clear yellow fluid containing some white and red blood cells was extruded which is however unusual in this condition. The surgeon did not have impression of LA during surgery. Grossly, we did not see prominent villous projections but histologically villous projections were seen infiltrated by mature adipocytes in their core overlying sheets of fatty tissue. Although rare but Lipoma arborescens should be in mind as differential diagnosis in long-standing swelling of large joints, especially knee joint.

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