

Case Report

Early Presentation of Primary Lipoma Arborescens with Discussion of Differential Diagnosis

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ABSTRACT

Lipoma arborescens was first described in 1957. It is a rare benign intraarticular synovial disorder. Lipoma arborescens has been observed in patients aged between 9 and 68 years. We present a biopsy proven case of lipoma arborescens of knee in an early adolescent boy with the discussion of differential diagnosis.

Keyword: early, adolescent, lipoma, arborescens, knee.

INTRODUCTION

Lipoma Arborescens is undoubtedly rare, but the availability of MRI has led to a marked increase in the numbers of reported cases over recent years. Less than hundred cases have been reported. [1] The exact incidence is unclear, but Vilanova et al. review of 12,578 consecutive knee MRIs found 32 patients with LA [2] and Iovane et al. found 9 out of 6387. [3] This gives incidence of between 0.14% and 0.25% of scanned knees; the incidence within the asymptomatic population will be much lower. Recurrence of LA is rare. [4]

CASE PRESENTATION

History: A 14 year old boy came with a complaint of gradual onset swelling over left knee and anterolateral aspect of thigh since 6 months. Mild pain on knee flexion was present. There was no history of trauma, fever, morning stiffness,

involvement of other joints or any known comorbidities.

Examination: The general physical examination was unremarkable. Local examination revealed diffuse swelling over left knee joint particularly on the superolateral part. Patellar tap was positive. Synovial thickness noted on lateral side. There was no local rise of temperature or distal neurovascular deficit. Range of motion of hip and knee was normal.

His laboratory tests which included complete blood analysis, HIV, HBsAg, rheumatoid factor and synovial fluid analysis for acid fast bacilli were normal.

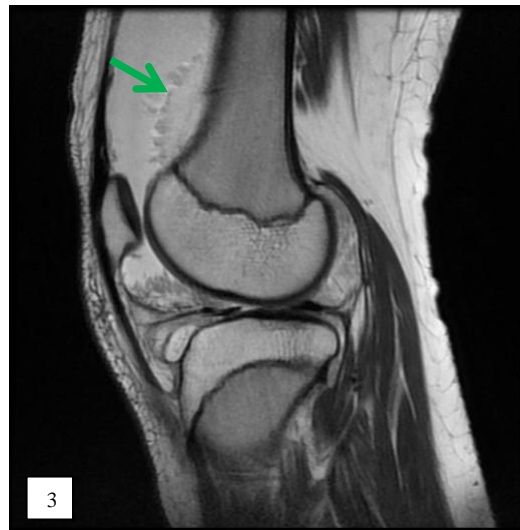
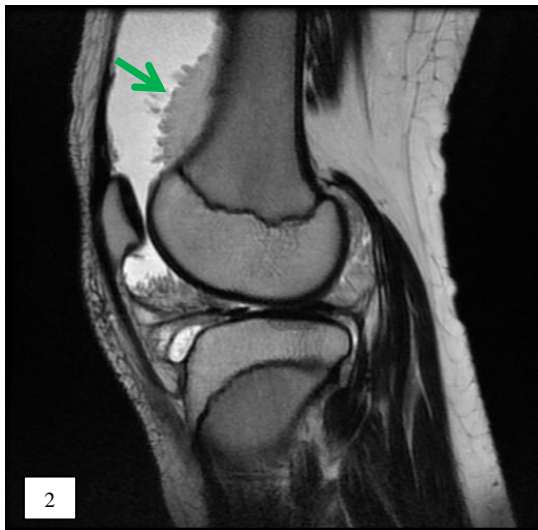
Imaging findings: Xray AP and Lateral view revealed a soft tissue mass like lesion in the suprapatellar region, visualised bones appeared normal with maintained joint space. The Patient was then referred to MRI for further detailed evaluation.

Coronal T1 weighted image (Figure 1) showed high signal intensity

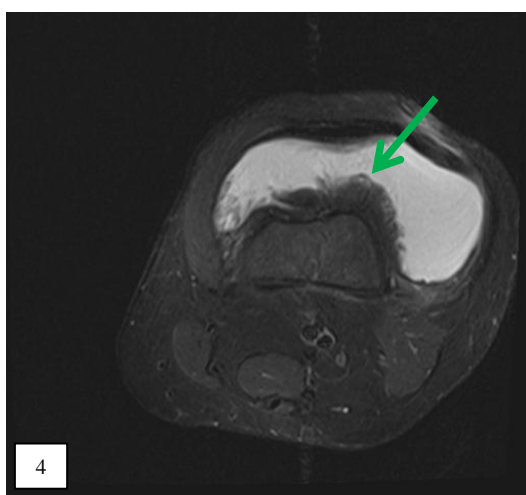
frond like synovial thickening in the suprapatellar bursal region with effusion. Saggital T2 (Figure 2) and saggital proton density images (Figure 3) showed intermediate to high signal intensity of the villous projections similar to subcutaneous fat. Axial T2 STIR (Figure 4) and coronal fat suppressed proton density images (Figure 5) revealed complete suppression of signal intensity of villous projections in suprapatellar bursal region.



Figure 1: Coronal T1 weighted image showing high signal intensity frond like synovial thickening in the suprapatellar bursal region with effusion.



Sagittal T2 (Figure 2) and saggital proton density images (Figure 3) showing intermediate to high signal intensity of the villous projections similar to subcutaneous fat.



Axial T2 STIR (Figure 4) and coronal fat suppressed proton density images (Figure 5) showing complete suppression of signal intensity of villous projections in suprapatellar bursal region.

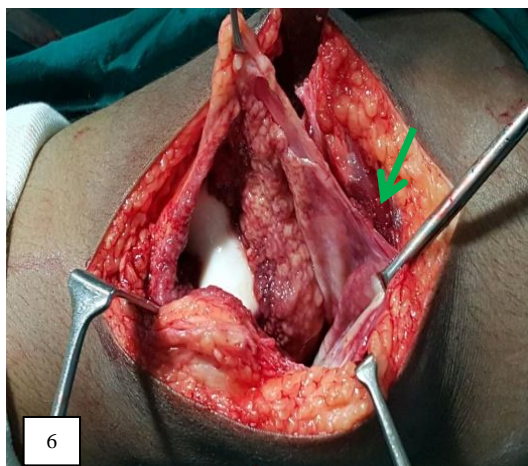


Figure 6. Intraoperative image showing multiple globular and villous projection of synovial covered tissue in the knee joint

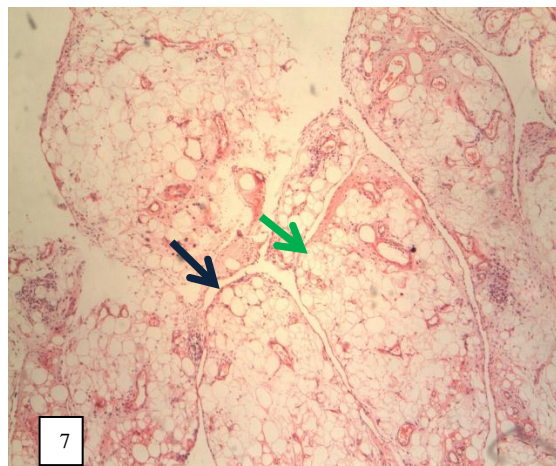


Figure 7. Villous transformation of synovium With diffuse infiltration of stroma by mature adipocyte (blue arrow), few cell thick synovium (green arrow)

Based on classic MRI findings of frond like synovial villous projections with associated fatty signal and joint effusion on various MRI sequences, a diagnosis of Lipoma arborescens was made.

Patient underwent open total synovectomy, intraoperative findings revealed multiple globular and villous projection of synovial covered tissue (Figure 6) with effusion. A synovial biopsy was taken and a specimen sent for histopathological examination which revealed villous transformation of synovium with diffuse infiltration of subepithelial stroma by mature adipocytes, a few cell thick synovial layer (Figure 7). Findings of imaging were confirmed on histopathology and a diagnosis of primary lipoma arborescens was made.

DISCUSSION

Lipoma arborescens is usually regarded as nonspecific reactive and secondary process to traumatic or inflammatory stimuli, involving the synovial membrane. However, according to Vilanova, a minority of lipoma arborescens may appear in joints with no other associated changes, and these lesions could be categorized rather as primary lipoma arborescens. [2]

Clinically presentation is with painless joint swelling, frequently with an associated effusion. It occurs equally both

in men and women. [5] Knee is the most common joint involved but the condition has also been described in the wrist, shoulder, elbow and hip. It can be mono, bi- or polyarticular and can affect patients of all ages (although it is most common in the 5th decade and above). [2]

Radiographs show a soft tissue lesion in the suprapatellar pouch often associated with osteoarthritic changes.

Ultrasound reveals frond-like projections of the mass which move in real time with an associated joint effusion. [6]

Magnetic resonance imaging is the gold standard investigation to diagnose lipoma arborescens. [4] It produces high contrast multiplanar images which depict deep cortical bone, marrow, ligaments, tendons, fat, menisci and articular cartilage in one image. In addition to these, it is non-invasive without the use of ionizing radiation. [7]

Imaging differential consideration includes pigmented villonodular synovitis, synovial chondromatosis, synovial haemangioma, synovial lipoma, rheumatoid arthritis. MRI imaging should narrow down the possibility.

Pigmented villonodular synovitis is a benign inflammatory lesion with extensive intraarticular highly vascular synovial proliferation. MRI shows lobulated intraarticular masses of synovial tissue in a joint with effusion.

Predominantly low signal intensity on all sequences is characteristic due to the presence of iron. Marked signal loss can be seen in the periphery of lesions [magnetic susceptibility of hemosiderin]. High signal areas due to fat, effusion, oedema, inflammation can be seen.

Synovial chondromatosis is characterised by formation of multiple cartilage nodules, which may detach and become free intraarticular bodies. MRI shows homogenous lobulated intraarticular mass isointense to muscle on T1 and hyperintense to muscle on T2 with or without osteochondral bodies of low signal intensity.

Synovial haemangioma are rare benign vascular malformations that occur in relation to joint. MRI shows lobulated/diffuse intraarticular mass which shows intermediate signal intensity on T1, marked hyperintensity on T2 and fat suppressed images. Marked enhancement of the lesion can be seen on post gadolinium contrast study.

Synovial lipoma on MRI shows hyperintense solitary rounded sessile/pedunculated lesion on both T1 and T2, no joint effusion or synovial changes. On arthroscopy it lacks villous fronds.

Rheumatoid arthritis is a chronic systemic connective tissue disease. MRI shows pannus which is a tumour like focal proliferation of inflammatory tissue with destruction of cartilage and bone and appears of intermediate to low signal intensity on T1 and T2. Subchondral oedema and effusion appears hypointense on T1 and hyperintense on T2. Rice bodies noted in dependant position which appears iso to hypointense on T1 and hypointense on T2.

CONCLUSION

Lipoma arborescens is a rare benign intraarticular disease. Magnetic resonance imaging is the gold standard investigation to diagnose lipoma arborescens. [4] Either open or arthroscopic synovectomy is usually recommended in LA. The lesion is accessible through arthroscopic ports. Arthroscopy is the method of choice as it reduces soft tissue trauma and speeds up postoperative rehabilitation. If treatment is not provided in timely manner then the condition can progress to cause damage to the affected joint and severe symptoms (pain, inflammation) in the joints can decrease the quality of one's life.

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