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Lipoma arborescens: Case review of a rare synovial lipomatosis

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Abstract
Lipoma Arborescens is a rare, chronic, gradually progressive intra-articular lesion of benign nature. It is seen in most commonly in the knee but can also be seen in shoulder, elbow and wrist joints. It is characterized by villous proliferation of Synovium and replacement of Sub synovial tissue by mature adipocytes. We report a 20 years old male patient. We elaborate clinical features, role of investigations, differential diagnosis and treatment options available.
Case report: We present you a 20 years old male patient diagnosed with lipoma arborescens of knee joint.
The MRI report of right knee showed synovium which appeared markedly thickened and showed post-contrast enhancement with fat containing non-enhancing frond-like synovial masses outlined by concurrent joint effusion. These frond like masses were found predominantly in suprapatellar pouch.
This patient underwent open synovectomy which showed multiple grey yellow papillary like excrescences seen arising from underlying flat piece of synovium.
Approximately 80 cc of lobulated globules were removed and was sent to histopathological examination which confirmed synovial lipomatosis (Hoffa's disease) associated with chronic lymphoplasmocytic synovitis. On 3 months follow up the patient had complete symptomatic relief.

Keywords: Hoffa's disease, lipoma arborescens, synovial lipomatosis, frond-like

Introduction
Lipoma Arborescens (Diffuse articular lipomatosis) is rare articular lesion characterized by Subsynovial villous proliferation of adipocytes most commonly involving supraptellar pouch.
A German Surgeon Albert Hoffa first described Lipoma Arborescence in 1904. In Latin, arborescence means "tree-like appearance"
Lipoma Arborescens is chronic disease of unknown Aetiology.
Arthroscopic removal or open synovectomy are treatment options available.

Case report
Our patient was 20 years old male patient with long standing right knee pain and swelling over right knee for period of 4 years.
Patient has mechanical symptoms such as locking of knee occasionally. Patient had history of trauma 4 years ago and was treated by general practioners conservatively with NSAIDS without any favourable outcome.
On inspection patient had swelling over Right knee and over right suprapatellar pouch. No tenderness was elicited over Right knee. Patellar tap was negative. Instability tests were negative over right knee joint. Patient had no bony crepitus. Range of movements was complete over the knee joint.

Radiographs of knee joint were normal
MRI revealed thickened synovium and had post-contrast enhancement, few fat containing frond like synovial masses which appeared hyperintense in T_1W image, hypointense on T_2W image and PDFS phases and showed no post contrast enhancement.

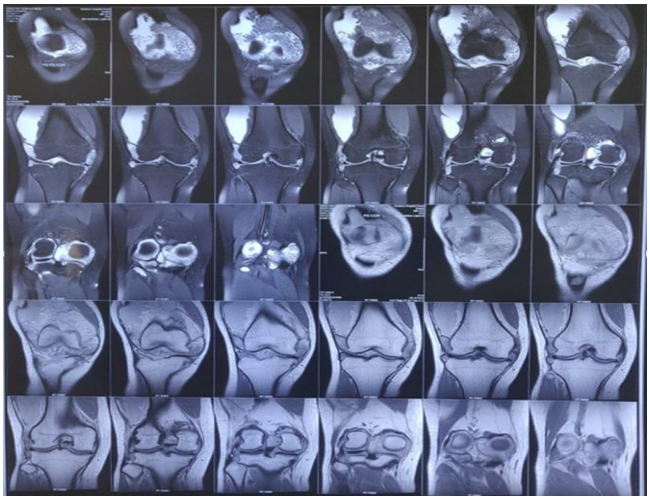

Fig 1: MRI FILM 1

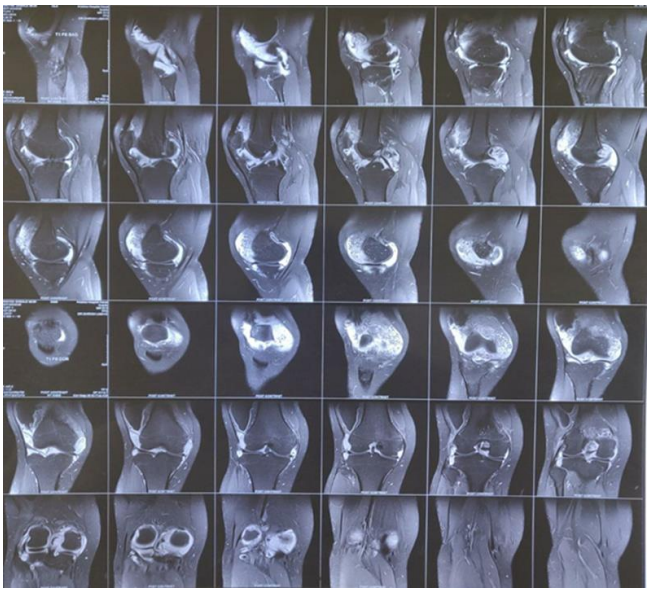

Fig 2: MRI FILM 2

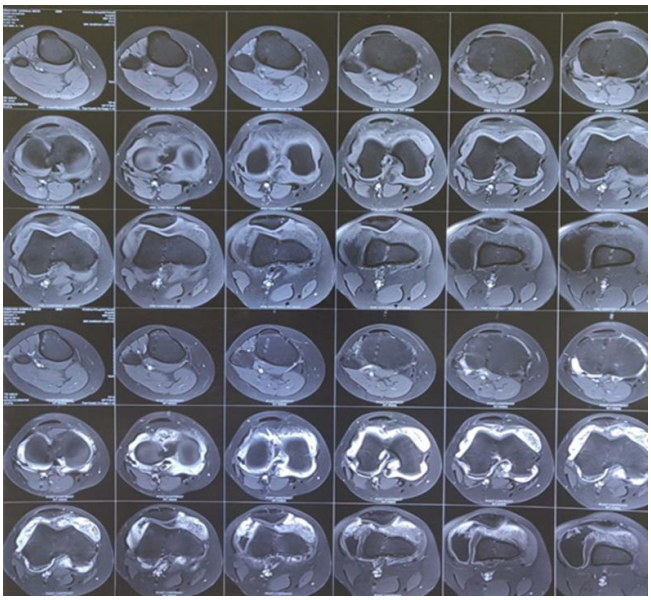

Fig 3: MRI FILM 3

The frond –like lesions were noted in suprapatellar pouch and no associated ligament or meniscal injuries were noted.
Patient was screened for Rhuematoid Arthritis and results were negative.

Since, MRI findings were consistent with Lipoma arborescens patient was posted for open synovectomy under spinal anesthesia after all pre-operative work-up which was normal.
Open synovectomy was performed. Approximately 80 cc of mass was removed and was sent for histopathological Examination.

Fig 4: Intraoperative Picture 1

Fig 5: Intraoperative Picture 2

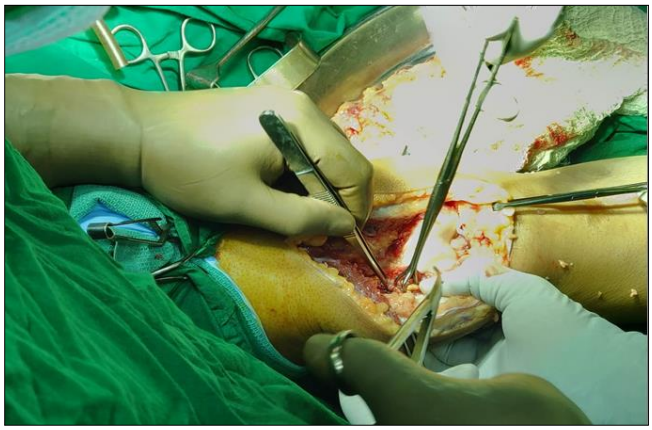

Fig 6: Intraoperative Picture 3

Histopathological examintaion reports showed hypertrophic villous projections of fat lined by synovial cells, variable

scattered inflammatory cells which confirmed synovial lipomatosis associated with chronic lymphoplasmocytic synovitis

Fig 7: Histopathological slide

Patient was started with controlled passive movement exercises on post-operative day 2, active range of motion exercises were started on post-operative day 11. Patient was discharged on POD11

Complete Range of motion was achieved by the end of 1 month

On 3 months follow-up patient had complete symptomatic relief.

Fig 8: Clinical picture 1

Fig 9: Clinical picture 2

Fig 10: Clinical picture 3

Fig 11: Clinical picture 4

Discussion

Patients with lipoma arborescens typically present with one or more of following symptoms: slowly progressive swelling, intermediate episodes of joint pain, limited range of motion and locking. Only rarely can a soft tissue mass be identified on palpation. Most patients have no history of recent trauma. The symptoms are cyclic with intermittent excerbations caused by mechanical trapping of lipomatous Villi inside the joint space.

The diagnosis of lipoma arborescens is based on typical findings of MRI, but because of clinical appearance in this case other more common pathologies had to be excluded by using laboratory tests, joint fluid aspiration and other imaging studies. In general, the laboratory findings are non-specific. The joint fluid aspirate is negative for crystal and microbes and is mainly used to exclude other cause of joint swelling.

Plain radiograph sometime show a soft-tissue density, non-specific bone erosion.

On ultrasonography, a frond like hyperechoic mass is seen that waves during manipulation of joint

Ct scanning shows a villous synovial mass of density similar to fat. The signal is not enhanced with intravenous constrast administration.

MRI is the diagnostic imaging modality of choice. The findings have a high degree of accuracy in identification of and anatomic characterization and give a correct evaluation of size and grade which can be used for choosing the most appropriate therapy. The most typical finding is marked effusion with degenerative changes like chondropathy, osteophyte formation and other signs of osteoarthritis.

A biopsy was considered essential for making a final diagnosis initially but now a typical MRI findings are sufficient.

Macroscopically, the lesion has a grey-yellowish aspect and shows villous proliferation. Histologically, the villi are filled with mature fat cells and enlarged hyperaemic capillaries may be present. The underlying synovial membrane may contain mononuclear chronic inflammatory cells and synivial cells may appear to be enlarged and reactive along with abundant eosinophilic cytoplasm.

Lipoma arborescens forms part of differential diagnosis of chronic joint swelling: including pigmented villonodular synovitis, synovial osteochondromatosis, rheumatoid arthritis, intra articular or synovial lipoma, synovial hemangioma, amyloid arthropathy and xanthoma. Intraarticular lipoma and synovial osteochondromatosis show similar characteristics on MRI. Treatment options include arthroscopic or open synovectomy.

Conclusion

We conclude that Lipoma arborescens is a rare entity which is progressive in nature and needs surgical intervention to prevent degeneration of joint and patient has complete symptomatic relief after open synovectomy.

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