NUJHS Vol. 2, No.3, September 2012, ISSN 2249-7110
Nitte University Journal of Health Science

Case Report

A COMBINATION OF PIGMENTED VILLONODULAR SYNOVITIS AND SYNOVIAL CHONDROMATOSIS PRESENTING AS A LARGE LOOSE BODY IN KNEE

Siddharth Shetty[1], Vikram Shetty[2], B.J.P. Shetty[3], Shubha P. Bhat[4]
[1]Assistant Professor, [2]Associate Professor, [3]Professor, Department of Orthopaedics, [4]Assistant Professor, Department of Pathology, K.S. Hegde Medical Academy, Nitte University, Deralkatte, Mangalore - 575 018, Karnataka, India.

Correspondence:
Siddharth Shetty
Assistant Professor, Department of Orthopaedics, K.S. Hegde Medical Academy, Nitte University, Deralkatte, Mangalore - 575 018, Karnataka, India. E-mail : drshettybs@gmail.com

Abstract :

Intra-articular calcific lesions of knee usually manifest as loose bodies with symptoms of recurring episodes of locking and restriction of movement. These loose bodies are a consequence of trauma or degeneration of structures in the joint and occasionally may be of inflammatory or neoplastic condition of the synovium.

Here we present our case as a rare form of presentation where in our patient had a large loose body in the knee with chronic pain and swelling and restriction of the movements of knee. Arthrotomy, loose body excision and total synovectomy of the knee confirmed coexistence of a dual lesion of synovial chondromatosis of the Hoffa's fat pad with diffuse pigmented villonodular synovitis of the knee joint. The patient made an uneventful recovery and full range of knee movement was restored by end 3 months. These benign conditions have inherent risk of recurrence, and in our case, till the last follow up at 14 months after surgery, he has remained asymptomatic with no clinico radiological evidence of any recurrence.

Keywords: Synovial chondromatosis, pigmented villonodular synovitis, loose body in knee, Hoffa's fat pad

The case reported here presents itself with a diagnostic dilemma and having a rare combination lesion makes it worthwhile to be highlighted. Our endeavor in the management was to achieve improved functional outcome of knee and avoid a recurrence as both these conditions have a predilection for recurrence. This combination lesion is a rare entity in itself as there has been no case reported involving the knee joint

Introduction :

Loose bodies in the knee are broadly divided into those that are radiolucent and or radiodense. The calcific loose bodies which are radio dense occur more often and these usually present themselves with a history of repeated locking of the knee and or a swelling. The various conditions that can present themselves as loose bodies in knee are many, to highlight a few common ones are like synovial chondromatosis, Osteochondritis dissecans, tuberculosis, pigmented villonodular synovitis (PVNS) and neuropathic joint.

Access this article online
Quick Response Code

Synovial chondromatosis is a benign disorder of the synovial tissue commonly seen in major synovial joints which does manifest as swelling of the knee with multiple pedunculated cartilaginous excrescences, it is mono articular synovial proliferative disease in which cartilaginous or osteocartilaginous metaplasia occurs[1,2]. Pigmented villonodular synovitis was coined and described by Jaffe, Lichtenstein and Sutro in 1941. It is disorder that involves the synovial tissue of joints, tendon sheaths and presents as either a localized or as a diffuse form. Synovial tissue characteristically appears golden brown coloured due to haemosiderin pigment deposition[3].

The coexistence of both these conditions affecting the synovium in the same knee has not been reported and is the reason for reporting this as a rare entity


Fig1-knee swelling front view fig2- knee swelling side view


Fig3-knee 15 degree extension lag fig4-pre op maximum flexion

Fig5-Radiographs of knee AP and Lat views with radio-opaque shadow inferior to patella

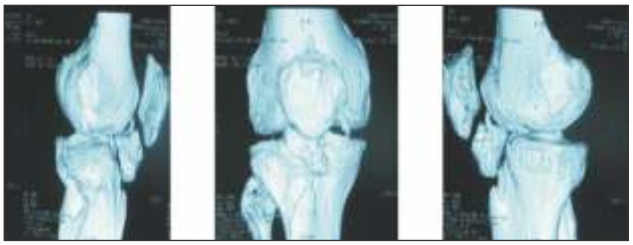

Fig6-CT scan images of knee with radioopaque shadow of the loose body

Fig7- Arthrotomy of knee with golden brown coloured synovium

Fig8-Synovial fluid and tissue samples for HPE

Fig9- excised loose body from Hoffas fat pad with a soft tissue flimsy attachmen

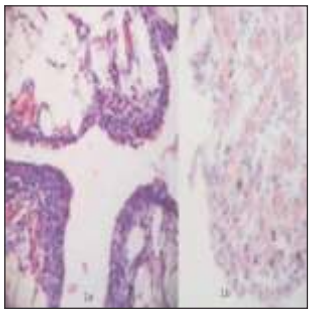

Fig10-Synovial tissue thrown in papillary folds with Subsynovial tissue with hemosiderin pigment laden macrophages & congested blood vessels and inflammation

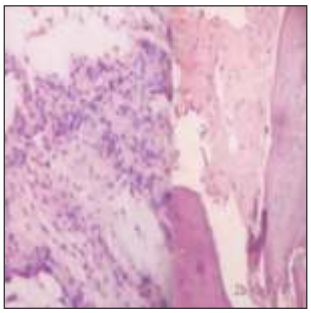

Fig11-Chondroid differentiation and showing mature bony trabeculae

Case History :

A 37 year old manual labourer who presented to the out-patient department with complaints of pain and swelling of 2 year duration, with progressive restriction of active range of movements, impeding activities of daily living and he could neither extend his knee fully nor was he able to squat and sit cross legged.

Patient began to limp and found difficulty at negotiating stairs. Swelling of the knee was noted over the anterior aspect of the knee which progressed gradually over 2 years to attain the present size. He initially noticed loose body in

the knee with recurrent episodes of locking and give way, which later disappeared as the pain and size of the swelling increased. Patient did not have any features of loss of weight, loss of appetite, fever, malaise, and cough. He had multiple episodes of twisting injury of knee while at work which did increase the size of swelling and caused intractable pain, which subsided with analgesics. He did not have any other joint involvement.

He had an antalgic gait with significant wasting of the right thigh and leg muscles. There was suprapatellar fullness with obliteration of parapatellar fossa and a well delineated swelling noted over the infrapatellar area of 3x4 cms. There was local rise of temperature and limb was placed in attitude of flexion of 20 degrees. The suprapatellar fossa had an intra-articular boggy swelling suggestive of synovial hypertrophy and the knee was fluctuant suggestive of an effusion. A separate single bony hard well delineated, tender, mobile, intra-articular swelling was palpable in the infrapatellar region, deep to the patellar tendon, with irregular surface and a size of 3 X 4 cms. He had joint line tenderness of patello-femoral and femoro-tibial articulations with painful range of movements of knee from 20 to 110 degrees associated with crepitus. (Fig- 1, 2, 3, 4, 5)

He was admitted and evaluated with plain radiographs which showed a uniform narrowing of the femoro-tibial articulation with osteophytes on the margins of medial femoral and tibial condyles. A radio-opaque lesion is noted in the infra-patellar region with no loss in contour or any defects in the femoral or tibial condyles.(Fig-6). A Computer tomogram with 3D reconstruction shows a irregular infra-patellar radio-dense lesion intra articular in position with no chondral defects in the bones forming the knee. (Fig-7)

Routine biochemical and haematological evaluation was normal. Patient was counselled regarding the need to undergo a surgical procedure of arthrotomy of knee with excision biopsy of the loose body and biopsy of the synovial tissue with a probable need for synovectomy. Patient underwent arthrotomy of the knee under spinal anaesthesia with tourniquet which showed a golden brown hypertrophied synovial tissue of supra-patellar fossa of knee (fig 8) with sero-sanguinous synovial fluid. A single large bony hard mass with irregular surface with cartilagenous covering was excised from the infra-patellar area which had a flimsy synovial attachment from the Hoffa's fat pad.(fig 9). The appearance of the synovial tissue suggested PVNS. Synovial fluid was sent in 3 separate vials for histo-pathological, hematological, biochemical and microbiological analyses (fig 10). Hoffa's fat pad was excised and total synovectomy of knee and was performed and synovial tissue and the loose body was sent for histo-pathological examination. The joint was lavaged and closed over a suction drain with Jones compression dressing. The patient was immediately put on continuous passive motion machine for passive exercises and also instituted on active range of motion exercises of the knee. He was discharged by end of ten days on suture removal and on achieving pre operative range of knee movements.

The synovial fluid analysis suggested predominant lymphocytosis with biochemical picture of Sugar- 93mg%, Protein- 5.4 g%, and Culture showed no growth. Histo-pathological examination of the loose body showed Chondroid differentiation with mature bony trabeculae suggestive of synovial chondromatosis.(fig11). Histo-pathological examination of the synovial tissue showed synovial tissue thrown in papillary folds and sub synovial tissue with hemosiderin pigment laden macrophages and congested blood vessels and inflammation suggestive of PVNS. (fig12). These reports suggested the patient had a combination lesion of synovial chondromatosis of Hoffa's fat pad and PVNS of the synovial tissue of the knee.

In our case the knee had a coexistence of diffuse PVNS and synovial chondromatosis of Hoffas pad with a large loose body impeding movements of knee. The patient achieved the full range of movement of knee and returned to his vocation by the end of 3 months. He continued with regular follow up for 14 months and since has not had any clinico radiological features of any recurrence, as inherently both these conditions have a propensity for recurrence.

Discussion:

Pignatti G[4] suggested that there was likehood of loose bodies in the knee due to various conditions like PVNS, synovial chondromatosis, intracapsular chondroma, calcific lesions of Hoffas pad, degenerative joint disease, neuropathic joint, fragmentation of menisci with calcification, OCD, Nonunion of intra-articular fracture fragments and CT scan was found useful when compared to radionuclide scintigram for accurate delineation. The case of elbow PVNS as highlighted in the paper was possibly an intermediate form of PVNS associated with synovial chondromatosis.

The papers of Bronstein RD[5] et al and Kanagawa H[5] et al described PVNS of knee presenting as a loose body. Goldman A B[7] et al suggested various differential diagnosis to Pigmented villonodular synovitis. Such as uncalcified synovial chondromatosis, tuberculous arthritis, hemophilic arthropathy. Lee DH[8] et al presented a case of monoarticular tuberculosis of knee which was misdiagnosed as a case of PVNS due to a nodular mass and hemosiderin deposit seen in the synovial tissue on a Magnetic resonance scan

Saddik D[9] et al described on MRI scans various calcific lesions of Hoffa's fat pad, which are consequences of trauma and degeneration, and rarely due to inflammatory and neoplastic conditions of the synovium. Helpert C[10] et al elucidated differential diagnosis of tumours and tumour-like lesions of the Hoffas fat pad, with different intrinsic and extrinsic factors, and suggested MR imaging to correlate with radiographs in lesions with mineralization.

Osti L[11] et al showed that a case of recurrent Synovial chondromatosis of Hoffa's body with loose bodies which was a localized form of synovial chondromatosis without involvement of the rest of the joint which recurred due to incomplete removal of the loose bodies or diseased synovium. Synovial chondromatosis is prone for early recurrences and merely a localized form of lesion does not exclude the chances of recurrence.Cai XY[12] reported a simultaneous pigmented villonodular synovitis and synovial chondromatosis involvement of the temporo-mandibular joint. Clinical examination and magnetic resonance imaging did not reveal the synovial lesions, and the diagnosis was made by arthroscopy and histological examination. The lesions were removed with arthroscopy, and the displaced disc was repositioned. The patient has been symptom-free for 13 months postoperatively.

References :

1. Milgram JW. Synovial osteochondromatosis: a histopathological study of thirty cases.J Bone Joint Surg Am. 1977 Sep; 59(6):792-801.
2. Milgram, J.W.: the classification of loose bodies in human joints. Clin. Orthop. , 124: 282-291, 1977.
3. Jaffe HL, Litchtenstein L, Sutro C. Pigmented villonodularsynovitis: bursitis and tenosynovitis. Arch Pathol 1941; 31: 731-765.
4. Pignatti G, Mignani G, Bachini P, Calderoni P. Pigmented villonodular synovitis of the elbow with a fenestrated fossa: a case report Skeletal Radiol. 1990;19(1):65-7.
5. Robert D. Bronstein M.D. Wayne J. Sebastianelli M.D. Kenneth E. DeHaven M.D. Localized pigmented villonodular synovitis presenting as a loose body in the knee, Arthroscopy. 1993;9(5):596-8.
6. Kanagawa H, Niki Y, Matsumoto H, Kosaki N, Enomoto H, Morioka H, Toyama Y, Suda Y. Localized pigmented villonodular synovitis presenting as a loose body following minor trauma in the knee: a case report. Knee. 2007 Oct;14(5):395-7
7. Goldman A. B, DiCarlo E F. Pigmented villonodular synovitis. Diagnosis and differential diagnosis Radiol Clin North Am. 1988 Nov; 26(6):1327-47.
8. Lee DH, Lee DK, Lee SH, Park JH, Kim CH, Han SB. Tuberculous arthritis of the knee joint mimicking pigmented villonodular synovitis. Knee Surg Sports Traumatol Arthrosc. 2011 Sep 13.
9. Saddik D, Mc Nally EG, Richardson M. MRI of Hoffa's fat pad. Skeletal Radiol. 2004 Aug;33(8),433-44
10. Helpert C , Davies A M Evans N ,Grimer R J. Differential diagnosis of tumours and tumour-like lesions of the infrapatellar (Hoffa's) fat pad: pictorial review with an emphasis on MR imaging. Eur Radiol. 2004 Dec;14(12):2337-46.
11. Osti L , Papalia R ,Del Buono A, Denaro V , Maffulli N. Recurrence of synovial chondromatosis of the Hoffa's body. Knee Surg Sports Traumatol Arthrosc. 2009 Dec; 17(12):1421-4.
12. Cai X Y , Yang C , Chen M J , Yun B. Simultaneous pigmented villonodular synovitis and synovial chondromatosis of the temporomandibular joint: case report. Int J Oral Maxillofac Surg. 2009 Nov;38(11):1215-8