

A case of localized pigmented villonodular synovitis presenting as loose body in the knee joint

Abstract

Introduction: Pigmented Villonodular Synovitis is a rare, benign condition which is locally aggressive and can undergo malignant transformation. It is characterized mostly with a hyperplastic synovium, large effusion and bone erosions. On an average it is clinically correctly identified after 4.4 years of presentation. It mostly involves the smaller joints and in larger joints commonly seen in the knee joint.

Case Report: 49 years old male presented with right knee pain since 3 months, insidious in onset, localized in nature, with difficulty in walking and sitting for a long time with no episode of injury on the right knee. The patient had one episode of instability with occasional episodes of locking. Clinically there was retro patellar tenderness with full range of movement of the knee. MRI showed a lesion measuring approximately 1.5*1.5*0.5 cm in the retropatellar space suspected to be a loose body. Arthroscopically a localized soft tissue growth was noted in the retropatellar space which was resected. Histology of the resected lesion demonstrated localized PVNS.

Conclusion: The findings in this case suggest that localized PVNS may be mistaken as a loose body radiologically and there must be a high suspicion of PVNS in a localized abnormal growth in the knee joint.

Keywords: PVNS, loose bodies, localized, knee

Volume 1 Issue 4 - 2014

Capt Sarthak Patnaik, Karthik Chandrasekhar, Arun GR, Pradeep Kumar, Santosh Sahanand, David V Rajan
Ortho One Orthopaedic Speciality, India

Correspondence: Capt Sarthak Patnaik, Ortho One Orthopaedic Speciality, 657, Trichy Road, Singanallur, Coimbatore, Tamil Nadu 641005, India, Tel 9437008558

Received: October 26, 2014 | **Published:** December 24, 2014

Introduction

Pigmented Villonodular Synovitis is a rare, uncommon benign condition which is characterized mostly with a hyperplastic synovium, large effusion and bone erosions. On an average it is clinically identified after 4.4 yr of presentation.¹ Its local involvement is very rare and mostly involves the smaller joints and in larger joints commonly the knee joints. The difficulty stems from the insidious onset, progressive nature and the non-specific presentation of the disease along with its subtle radiographic presentation. PVNS is also difficult to differentiate from other inflammatory conditions such as Rheumatoid arthritis, osteoarthritis, and neoplastic process of the synovial lining.² It was first defined by Chassaignac in 1852.³ Simon described the first localized form in knees in 1864 and thereafter named by Jaffe in 1941⁴⁻⁷ who further subdivided it into diffuse and local. The annual incidence of PVNS is 1.8 individuals per million.¹ Most reported localized lesions of the knee are confined to the menisci, posterior cruciate ligament and plica.^{7,8} We report a case that is localized to the retropatellar space of the right knee which mimics a loose body clinically and also in magnetic resonance imaging. The localized growth was resected and histopathologically confirmed as a pigmented villonodular synovitis.

Case Report

A 49 year old man presented with right knee pain since 3 months, which was insidious in onset, localized and progressive in nature with difficulty in walking and sitting for a long time. There was no episode of injury or night cries. The patient had one episode of instability with occasional episodes of locking. Other joints were normal. On clinical examination there was a mild swelling of the right knee joint, with retro-patellar tenderness. Results of Lachman test, anterior and posterior drawer tests, and varus and valgus stress

tests were normal. Radiographic findings suggested a normal report (Figure 1). Sagittal T1, T2, coronal PD fatsat, axial T2 MRI of his right knee showed a well-circumscribed single loose body in the retropatellar fossa measuring 1.5*1.5*0.75 cm (Figure 2 & 3). The differential diagnosis at that time included loose body, synovial hemangioma, hematoma, localized PVNS, fibroxanthoma, and less likely a malignant lesion. The patient was considered for arthroscopic removal of the loose body under spinal anaesthesia. With arthroscopy in the anterolateral portal, a diagnostic scope of the knee joint was performed in search of the loose body at all corners of the knee joint when a small nodular swelling was seen in the retropatellar space just below the patella (Figure 4A). The swelling was 1.5 cm in diameter and was probed to find out that it was fixed to the underlying surface. It was then punctured with the help of a needle, a yellowish coloured tissue was removed from the swelling (Figure 4B) which was sent for histopathology. Postoperative histopathology report suggested villous projection and a nodular proliferation of round to polyhedral cells having eosinophilic cytoplasm with round to oval nuclei, haemosiderin laden macrophages, foam cells and multinucleated giant cells suggestive of PVNS (Figure 5). The patient recovered in a routine and uncomplicated manner. At his last follow-up examination 6 months postoperatively, the patient was completely asymptomatic and has returned to his day to day activity.

Discussion

Localized PVNS of the knee joint mostly presents as knee pain and swelling. In some they present as locking and giving way when they involve the menisci.⁸ The localized form is most commonly seen in the small joints, though uncommonly seen in the large joints, it is most commonly involved in the knee joint. The disease is insidious, slowly progressive and patients generally present later in life with pain.⁹

As per Myers et al.,¹⁰ estimation of the annual incidence of PVNS is 1.8 patients per million populations with the localized form being less severe than the diffuse form. The localized PVNS undergoing an arthroscopic procedure is estimated with only one case per 2,500.¹¹ Localized form of PVNS is commonly seen in the third and fourth decade of life.¹² Radiologically it is difficult to diagnose a localized form of PVNS¹³ whereas it is clearly seen in the MRI.¹⁴⁻¹⁶ In our case the PVNS localized form explains the retropatellar tenderness for his age.

solitary swelling is not a loose body in 3rd - 4th decade. Because of the uncommon presentation of the tumor, it is very easy to miss the swelling considering the search for a loose body inside the knee joint.



Figure 1 Plain x-ray – no evidence of loose body.

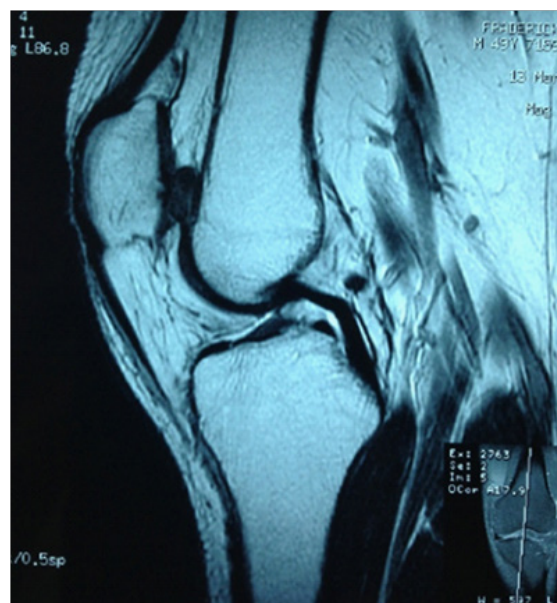


Figure 3 MRI Sagittal – loose body inretropatellar space with cartilagenouerosion of the patella.

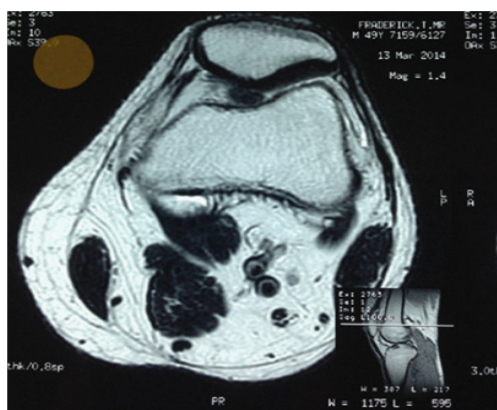


Figure 2 MRI Axial image – single loose body.

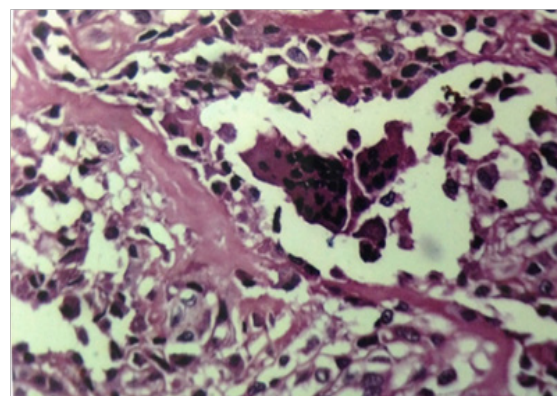


Figure 4 Histopathology shows active proliferation of fibroblastic and histiocytic element showing an evident macrophagic activity with phagocytosis of abundant blood pigment (hemosiderin) and lipids.

MRI showed a characteristic mass with focal hypo intense areas on both T1 and T2 weighted images which resembled like a loose body adding to the suspicion considering the age of the person. The MRI findings of PVNS are generally not specific. Histologically, it is characterized by an active proliferation of fibroblastic and histiocytic element showing an evident macrophagic activity with phagocytosis of abundant blood pigment (hemosiderin) and lipids. Arthroscopy is an effective diagnostic tool and can also be used for therapeutic purpose. Previous report of arthroscopic treatment of localized PVNS treatment showed lower recurrence rate.¹⁷⁻¹⁹ Review of the literature has made it simpler to consider that this uncommon presentation as a loose body and diffuse retropatellar tenderness is unique in its presentation and at the same time we would like to state that all

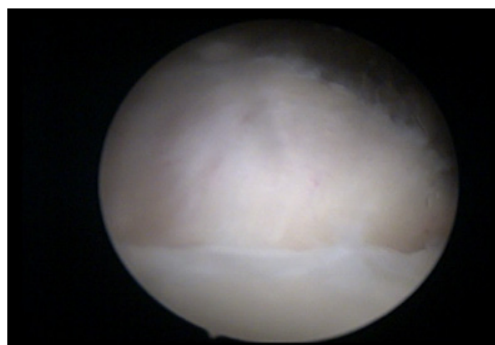


Figure 5A Arthroscopic photograph showing nodular swelling in the retropatellar area.

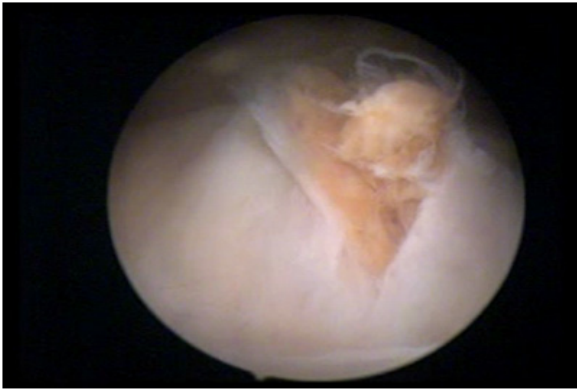


Figure 5B Arthroscopic photograph of the knee showing proliferation of the synovial tissue.

Conclusion

Localized Pigmented Villonodular Synovitis can present in various ways. A clinician should always rule out PVNS in his differential diagnosis when there is a chronic knee pain in 3rd - 4th decade of life. Arthroscopic diagnosis and resection is the best method of treatment for PVNS since it gives a better picture of the joint and it is at least as effective as synovectomy and is less aggressive.

Acknowledgement

I would like to take this opportunity to thank the Pathology department, my mentor, Ortho One and also my friends Dr. Suneet, Dr. Mohit and Dr. Nisha for their extended support.

Reference

- Cotten A, Flipo RM, Chastanet P, Desvigne-Noulet MC, Duquesnoy B, et al. (1995) Pigmented villonodular synovitis of the hip: review of radiographic features in 58 patients. *Skeletal Radiol* 24(1): 1-6.
- Eustace S, Harrison M, Srinivasen U, Stack J (1994) Magnetic resonance imaging in pigmented villonodular synovitis. *Can Assoc Radiol J* 45(4): 283-286.
- Byers P, Cotton R, Deacon O, Lowy M, Newman P, et al. (1968) The diagnosis and treatment of pigmented villonodular synovitis. *J Bone Joint Surg Br* 50(2): 290-305.
- Palazzo E, Cywiner-Golenzner CH, Guerin CL, Amouroux J (1991) Synovite villonodulaire et pigmentation. In: De Seze S et al. (Eds.), *Actualités rhumatologiques*. Expansion Scientifique Française 39-49.
- Pimpalnerkar A, Barton E, Sibly F (1998) Pigmented villonodular synovitis of the elbow. *J Shoulder Elbow Surg* 7(1): 71-75.
- McMaster P (1961) Pigmented villonodular synovitis with invasion of bone. *Can Med Assoc J* 84(12): 667-668.
- Schwartz HS, Krishnan U, Pritchard D (1989) Pigmented villonodular synovitis. A retrospective review of affected large joints. *Clin Orthop Relat Res* 247: 243-255.
- Luis Muscolo D, Arturo Makino, Costa-Paz, Miguel Ayerza, (1995) Localized Pigmented Villonodular Synovitis of the Posterior Compartment of the Knee: Diagnosis with Magnetic Resonance Imaging. *Arthroscopy* 11(4): 482-485.
- Flandry F, Hughston VC (1987) Pigmented villonodular synovitis. *J Bone Joint Surg Am* 69(6): 942-949.
- Myers BW, Masi AT (1980) Pigmented villonodular synovitis and tenosynovitis: A clinical epidemiologic study of 166 cases and literature review. *Medicine (Baltimore)* 59(3): 223-238.
- Lopez Vazquez E, Lopez Periz JL, Vila Donat E, Martinez Garcia JB, BruPomer A (1988) Localized pigmented villonodular synovitis of the knee: Diagnosis and arthroscopic resection. *Arthroscopy* 4(2): 121-123.
- Rao AS, Vigorita VJ (1984) Pigmented villonodular synovitis (giant cell tumor of the tendon sheath and synovial membrane) a review of eighty-one cases. *J Bone Joint Surg Am* 66(1): 76-94.
- Flandry F, McCann SB, Hughston JC, Kurtz DM (1989) Roentgenographic findings in pigmented villonodular synovitis of the knee. *Clin Orthop Relat Res* 247: 208-219.
- Mandelbaum BR, Grant TT, Hartzman S, Reicher MA, Flannigan B, et al. (1988) The use of MRI to assist in diagnosis of pigmented villonodular synovitis of the knee joint. *Clin Orthop Relat Res* 231: 135-139.
- Palumbo RC, Mathews LS, Reuben JM (1994) Localized pigmented villonodular synovitis of the patellar fat pad: A report of two cases. *Arthroscopy* 10(4): 400-403.
- Beguin J, Locker B, Vielpeau C, Souguieres G (1989) Pigmented villonodular synovitis of the knee: results from 13 cases. *Arthroscopy* 5(1): 62-64.
- Bartlett MJ, Jonathon Lavelle (2000) Localized Pigmented Villonodular Synovitis Presenting as Recurrent Dislocation of the Patella. *Arthroscopy* 16(7): 767-769.
- Christopher M Jobe, Anwar Raza, Lee Zuckerman (2000) Pigmented Villonodular Synovitis: Extrasynovial Recurrence. *Arthroscopy* 27(10): 1449-1451.
- Y Mori, H Hino, A Fujimoto, H Okumo (1989) Pigmented Villonodular Synovitis of Patellar Plica. *Arthroscopy* 5(4): 340-341.