Content available at: https://www.ipinnovative.com/open-access-journals

IP International Journal of Orthopaedic Rheumatology

Journal homepage: www.ijor.org

Case Report

Unveiling the unforeseen: Asymptomatic pigmented villonodular synovitis at popliteal fossa

Abdulla Khaleel P[1], Hannan Sheik Kabir[1]*, EG Mohan Kumar[1]

[1]*Dept. of Orthopedics, KIMS ALSHIFA Hospital, Perintalmanna, Kerala, India*

ARTICLE INFO

Article history:
Received 20-05-2024
Accepted 08-06-2024
Available online 02-07-2024

Keywords:
Tumour
Nodular Mass
Pigment villonodular synovitis
Anterior cruciate ligament
Medial meniscus

ABSTRACT

Pigmented villonodular synovitis (PVNS) are rare, locally aggressive, typically benign neoplasms of joints, bursae, and tendon sheaths. Symptoms include pain, stiffness, swelling, recurrent atraumatic hemarthrosis and limitation in range of motion. Our case study presents an asymptomatic PVNS at the popliteal fossa which was purely an incidental finding in a 32-year-old male with a history of trauma while playing football whose MRI was suggestive of Anterior cruciate ligament (ACL), Medial meniscus tear & a focal nodular hypertrophy at posterior aspect of knee. The patient had no significant past history of trauma, swelling, hemarthrosis or similar pain. ACL Reconstruction, Medial Meniscus balancing and marginal excision and biopsy sent for the same. Biopsy suggestive of PVNS (Localised). This case report emphasizes the importance of considering PNVS in the differential diagnosis of soft tissue swelling without pain, swelling or bleeding, and should be considered as a differential diagnosis of soft tissue swellings in the posterior aspect of the knee.

1. Introduction

PVNS are rare, locally aggressive, typically benign neoplasms of joints, bursae, and tendon sheaths.[1–3] Pigmented Villonodular Synovitis is a locally aggressive neoplastic synovial disease (not a true neoplasm) characterized by joint effusions, expansion of the synovium, and bony erosions. The condition usually presents in patients between 30 and 40 years old with recurrent atraumatic knee hemarthrosis subsequently leading to pain and restricted movements of joint. Another name is the Tenosynovial giant cell tumor, with giant cell tumor of tendon sheath (GCTTS) being the localized form of the diffuse type PVNS.[4,5] Uncertain etiology involves inflammation, trauma, toxin, allergy, clonal chromosomal abnormalities and aneuploidy. We report a case of localised asymptomatic PVNS incidentally found at the popliteal fossa.

2. Case Report

32-year-old male, a professional footballer had a history of twisting injury while playing and c/o pain, swelling and instability over the right knee. The patient wasn't able to complete his game and had to be substituted. The pain was sudden in onset, progressive in nature and non-radiating. The pain was associated with a massive effusion of the knee within an hour. The patient wasn't able to bear weight on the affected limb and gross restriction of movements at the knee was seen. He was advised MRI, following which he was suggested for surgery which he refused. He presented to us after 1 month of conservative treatment. On examination of right knee, ROM was 0-90 with Lachmann test Mushy, Pivot shift was nil & Valgus/ Varus stress test negative. McMurray test was Positive. MRI was suggestive of a Complete Tear of ACL and Bucket handle tear of Medial meniscus with a Focal Nodular Hypertrophy at the popliteal

* *Corresponding author*.
E-mail address: imhsheik@gmail.com (H. S. Kabir).

https://doi.org/10.18231/j.ijor.2024.009

fossa 9 (Figures 1, 2 and 3).

The patient was taken up for ACL reconstruction using Ipsilateral Hamstrings with Medial Meniscus tear excision and balancing with Arthroscopic excisional Biopsy of the Nodular mass (3x2cms) at the popliteal fossa were taken with respect to its principles and sent for HPE (Figure 4). The biopsy turned out to be a Tenosynovial Giant Cell Tumor – Localised type.

Figure 1: Sagittal T2WI showing a focal nodular mass in the popliteal area

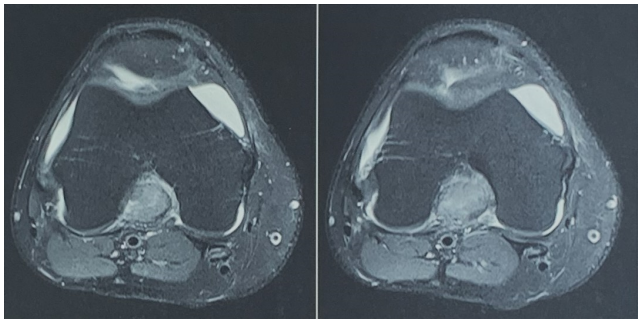

Figure 2: Axial T2WI confirming the mass over the popliteal region

3. Discussion

PVNS may occur at any age but mostly at ages between 30 and 50, with a 2:1 female predominance. The usual presentation is knee swelling, usually slowly progressive with zero to mild pain, and a rare history of trauma.[6,7] Plain radiography is usually free.[7] The MRI is the gold standard to diagnose the masses in or around the knee joint.[8] Local

Figure 3: Sagittal T1WI showingHypertropy mass in the popliteal fossa

Figure 4: Soft tissue lesion posterior to PCL

excision with arthroscopy or arthrotomy is the treatment of choice. Local recurrence was reported to be 10–20% with the reason of inadequate primary resection. PVNS is usually associated with recurrent atraumatic hemarthrosis leading to swelling, restriction of movements, and pain. Our case study showed peculiar features of asymptomatic PVNS that was completely incidental. They are either diffuse (extra-articular) or localised (intra-articular) in origin. 20% of cases are local and 80% are diffuse.[9] Although the most common site of a localised tumor is the anterior aspect of the knee i.e. patellofemoral compartment at the infrapatellar fat pad; our patient showed a rare occurrence at the posterior aspect of the knee i.e. popliteal fossa.

There are very few studies reporting asymptomatic PVNS at the posterior aspect of knee. Various treatment modalities are available for management of PVNS. Surgical options include synovectomy either by arthrotomy or arthroscopy.

In case series of Shekhar A et al documented 10 patients (7 males and 3 females). These patients had symptoms of pain, locking or swelling before diagnosis. All the patients underwent arthroscopic synovectomy.[10]

In Dines' series of Localised PVNS, 3 of 26 patients in their study had the tumor localized in the popliteal fossa, but all were symptomatic.[11]

Samir H. Shah et al documented Bilateral localised PVNS which was again symptomatic.[12]

Malignant tumors, such as synovial sarcoma and benign soft tissue tumors, should be kept in mind in differential diagnosis. Synovial sarcoma lesions usually create reaction and disorders in the adjacent bone. As in our case, benign tumors usually do not cause a reaction in the adjacent bone. Tenosynovial giant cell tumors localized in the knee joint are very rare; they should be kept in mind in the differential diagnosis. MRI is helpful in diagnosis and marginal excision is sufficient in the treatment. Localised PVNS of the knee is amenable to complete resection, and achieving total macroscopic disease removal is crucial. The posterior compartment of the knee is one area which is perhaps better approached arthroscopically than by open surgery, in view of the complex anatomy and vicinity of neurovascular structures and lesser morbidity with the minimally invasive approach. PVNS is a rare disease entity, and posterior location of it is even more uncommon and only sparsely described in the literature.

4. Conclusion

Our aim of the study is to consider localised PVNS in the differential diagnosis of soft tissue swelling without pain, swelling, or bleeding in large joints. It should also be considered as a differential diagnosis of soft tissue swellings in the posterior aspect of the knee.

5. Source of Funding

None.

6. Conflict of Interest

None.

Acknowledgements

Dr. Abdulla Khaleel diagnosed and performed the surgery. Dr. Hannan Sheik Kabir analyzed the case, clinical study and literature search. Dr. EG Mohan Kumar is a major contributor in editing and writing the manuscript.

References

1. Somerhausen NDSA, Van De Rijn M. WHO Classification of Tumours of Soft Tissue and Bone, ed 4n. vol. 5. Lyon, France: International Agency for Research on Cancer (IARC),; 2013. p. 100–1.
2. Somerhausen NDSA, Van De Rijn M. Tenosynovial giant cell tumour, diffuse type. In: Fletcher C, J AB, Hogendoorn P, Mertens F, editors. WHO Classification of Tumours of Soft Tissue and Bone, 4th Edn.. vol. 5. Lyon, France: International Agency for Research on Cancer (IARC),; 2013. p. 102–3.
3. Staals EL, Ferrari S, Donati DM, Palmerini E. Diffuse-type tenosynovial giant cell tumour: Current treatment concepts and future perspectives. *Eur J Cancer*. 2016;63:34–40. doi:10.1016/j.ejca.2016.04.022.
4. Giant Cell Tumor of Tendon Sheath in the Knee. *Electron Physician*. 2016;8(8):2807–9.
5. Suresh SS, Zaki H. Giant Cell Tumor of Tendon Sheath: Case Series and Review of Literature. *J Hand Microsurg*. 2010;2(2):67–71.
6. Zenginkinet T, Faruq AU, Yildirim ANT, Iyetin Y, Ozturan B, Okay E, et al. PD-L1 Status in Tenosynovial Giant Cell Tumors. *Medicina (Kaunas)*. 2022;58(9):1270. doi:10.3390/medicina58091270.
7. Sukeik M, Sharda P, Maheswaran S. Giant cell tumor of the tendon sheath in a knee. *Internet J Orthop Surg*. 2007;9(2):1–3.
8. Beytemür O, Albay C, Tetikkurt US, Oncü M, Baran MA, Cağlar S, et al. Localized Giant Cell Tenosynovial Tumor Seen in the Knee Joint. *Case Rep Orthop*. 2014;p. 840243. doi:10.1155/2014/840243.
9. Dorwat RH, Genant HK, Johnston WH, Morris JM. Pigmented villonodular synovitis of synovial joints: clinical, pathologic, and radiologic features. *AJR Am J Roentgenol*. 1984;143(4):877–85.
10. Shekhar A, Patil SS, Dixit C, Tapasvi SR. Localized pigmented villonodular synovitis of posterior compartment of the knee. *J Orthop Surg (Hong Kong)*. 2017;25(3):2309499017727923. doi:10.1177/2309499017727923.
11. Dines JS, Deberardino TM, Wells JL, Dodson CC, Shindle M, DiCarlo EF, et al. Long-term follow-up of surgically treated localized pigmented villonodular synovitis of the knee. *Arthroscopy*. 2007;23(9):930–7.
12. Shah SH, Porrino JA, Green JR, Chew FS. Bilateral pigmented villonodular synovitis of the knee. *Radiol Case Rep*. 2015;10(4):56–60.

Author biography

Abdulla Khaleel P, Consultant Orthopedic Surgeon

Hannan Sheik Kabir, DNB Resident in Orthopedics

EG Mohan Kumar, Professor and HOD

Cite this article: Abdulla Khaleel P, Kabir HS, Kumar EGM. Unveiling the unforeseen: Asymptomatic pigmented villonodular synovitis at popliteal fossa. *IP Int J Orthop Rheumatol* 2024;10(1):43-45.