Intra Articular Knee AV Malformation in A 34 Years Old Female: A Case Report

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Abstract

Introduction: Intra articular AV malformation of knee joint is a rare phenomenon which needs to be differentiated from infective or inflammatory arthropathy, synovial hemangioma, synovial chondromatosis, Pigmented vilonodular synovitis (PVNS) and haemophilia. Modalities for diagnosis are ultrasound with colour doppler, CT, MR imaging and diagnostic arthroscopy. Surgical management of AV malformation requires careful preoperative planning, embolization, judicious removal of tissue and regular follow up as focal lesions have good prognosis with surgical excision but diffuse AV malformations have tendency to recur. We are discussing a rare case of Intra articular knee AV Malformation in a 34 years old female with recurrent knee swelling and pain since childhood.

Keywords: Intra articular, knee, AV malformation,

Introduction

AV malformation of knee joint is a very rare phenomenon. It presents as non-specific recurrent knee swelling with pain. AV malformations, a sub group of vascular malformation,is due to defect in vascular embryogenesis. It is present since birth but their clinical appearance can be seen secondary to trauma, thrombosis, sepsis, hormonal changes or surgical intervention. [1] Modalities for diagnosis are ultrasound with colour doppler, CT, MR imaging, arteriography and diagnostic arthroscopy. We are discussing a rare case of Intra articular knee AV Malformation in a 34 years old female with recurrent knee swelling and pain.

Case Presentation

A 34 year old female presented with acute right knee swelling and pain following the treadmill exercise 3 weeks back. She also gave history of persistent swelling since childhood which used to exacerbate on & off. There was no history of fever, other joint involvement and recent trauma. On examination, knee effusion was present. Range of motion was 10-130 degree and terminally painful. McMurray and anterior drawer tests were negative. Knee was stable and no neurovascular deficit was present. Knee Xrays and blood parameters were within normal limits. To rule out any inflammatory or infective etiology, MRI of the knee joint was advised. On MRI, well defined altered signal intensity lesion was seen in infrapatellar region, circumferentially incasing the patellar tendon but more on lateral side. On T1w images, lesion was hypointense, on T2w it was hyperintense along with few hypointense areas within, which may represent pigmentation or haemorrhage. It also shows heterogenous post contrast enhancement. So, the differential diagnosis was pigmented villonodular synovitis, synovial chondromatosis and Hemangioma. As the lesion was intra articular, initially arthroscopic evaluation and excision biopsy was planned.

On arthroscopic evaluation, menisci, cruciate were intact. An intra articular mass in the region of Hoffa’s fat pad was noted and excised. As the lesion was encasing ligamentum patellae circumferentially, open excision was done in the same sitting. On exposure, reddish discoulouration of tissue...
was found on the lateral side of ligamentum patellae which was removed along with intra articular extension of the lesion. As lesion resembled haemangioma, hemostasis done after tourniquet release. Surprisingly, minimal bleeding was there. To confirm the diagnosis, tissue was sent for histopathological examination and diagnosis was AV MALFORMATION.

**Discussion**
AV malformation in lower extremity is common but intra articular presence is rare [2]. AV malformations are usually congenital in origin but puberty and trauma draws attention to the lesion which is attributed to its growth due to hormonal changes and discomfort following the injury [1, 3]. Clinically it presents as recurrent swelling and pain of mono articular origin which mimic as JUVENILE RHEUMATOID ARTHRITIS [4]. Clinical examination reveals only effusion and X-ray shows no abnormality in initial stage. Ultrasound with colour Doppler can be used for initial assesemnt to know the degree of vascularity of lesion and its ability to differentiate between hemangiomas and vascular malformation [5, 6]. Disadvantage of the same is operator dependency, lesser penetration and limited view. Computed tomography is used most efficiently for the exploration of AV malformation. Non contrast images give details of bony involvement and contrast CT gives idea of vascular malformation with relation to surrounding tissue. With the advent of Three-dimensional reconstruction it defines the location of the nidus better than arteriography [7]. MRI gives better tissue contrast and is superior to CT in evaluation of size and extent of soft tissue lesion. MR imaging and angiography with gadolinium-based contrast material is useful in evaluation of the extent of lesion, its depth and relationship to adjacent structures [8]. T1W images are iso or hypo intense while

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**Figure 1.** Brown coloured tissue resembling hemangioma is seen

**Figure 2.** T1w image showing lesion is hypointense

**Figure 3.** On T2w image, lesion is hyperintense along with few hypointense areas within, which may represent pigmentation or haemorrhage

**Figure 4.** MRI image showing heterogenous post contrast enhancement
T2W and STIR images are hyper intense. Heterogenous signal intensity on T1W images indicate haemorrhage or thrombosis [8]. Fat supressed T2W images and STIR images are useful to know extent of the lesion. On MR angiography, high-flow serpentine and enlarged feeding arteries and draining veins appear as large flow voids on SE (Spin Echo) images or high-signal-intensity foci on GRE (gradient recalled echo) images with absence of a well-defined mass [8]. Decreased narrow signal intensity on T1W images is an indicator of Intraosseous extension of lesion. AV malformations should be differentiated from infective or inflammatory arthropathy, synovial hemangioma, Pigmented vilonodular synovitis (PVNS), synovial chondromatosis and haemophilia. Surgical management of AV malformation requires careful pre operative planning aided by MR imaging, MR angiography / arteriography and diagnostic arthroscopy followed by selective embolization, surgical excision or combination of both [9, 10]. In focal lesions, surgical excision of AV malformation gives good results. On the other side, diffuse AV malformations have recurrence rate of 93%. Excision is preformed 24–48 hours after embolization to prevent excessive blood loss [10]. Histopathological examination is necessary to confirm the diagnosis [2].

Conclusion
Intra articular AV malformation of knee is a rare phenomenon which needs to be differentiated from infective or inflammatory arthropathy, synovial hemangioma, Pigmented vilonodular synovitis (PVNS), synovial chondromatosis and haemophilia. Modalities for diagnosis are ultrasound with colour doppler, CT, MR imaging, MR angiography and diagnostic arthroscopy. Surgical management of AV malformation requires careful preoperative planning, embolization, judicious removal of tissue and regular follow up as focal lesions have good prognosis with surgical excision but diffuse AV malformations have tendency to recur.

References


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