Synovial Hemangioma of the Knee: A Case Report

Clinical history: A 11 year old boy presented with history of pain and swelling in the knee joint predominantly along the anterior aspect, progressively increasing over past few months. There was mild decreased range of movement since past few weeks. There was no history of antecedent trauma.

MR imaging findings: Large lesion with lobulated contour noted in the suprapatellar bursa in the midline and extending laterally beneath the myotendinous unit of vastus lateralis. The lesion shows low signal intensity on T1WI (Fig 1, blue arrow), bright signal on T2WI (Fig 3) and STIR sequences. Multiple small flow voids are noted in the lesion suggestive of phleboliths(yellow arrows in Fig 3). On post contrast study, it shows patchy enhancement on early phases with gradual intense enhancement on delayed images(Fig 2). Fine internal septae are seen in the lesion. It is seen to receive blood supply from the branches of popliteal vessels.

The lesion abuts the cortex of femur and patella with no evidence of destruction of the bony cortices.

Diagnosis: Synovial Hemangioma

Discussion: Synovial hemangiomas are rare benign vascular tumors frequently noted around the knee. Other reported sites include elbow, wrist, ankle, temporo-mandibular joint and tendon sheaths. They can be focal or diffuse in their involvement of the joint. The average age of onset is early adolescence.
Minimal trauma or spontaneous hemorrhage may occur which often results in swelling and pain. The initial clinical presentation of synovial hemangiomas often includes pain, joint swelling and recurrent joint effusions, with or without limitation in range of motion. They can also present with mechanical symptoms mimicking internal derangement.

*Imaging:*
Radiographic findings of a synovial hemangioma are non-specific. Occasionally phleboliths may be seen on a plain radiograph. In case of long standing hemangiomas, findings of degenerative changes like hemophilic arthropathy are seen. Computed tomography (CT), though provide limited information in actual characterization of the soft tissue, it can confirm the presence of a soft tissue mass, identify phleboliths if present, and delineate any adjacent osseous change related to local mass effect.

MRI allows superior contrast resolution and multiplanar capability and is the modality of choice in the imaging evaluation of synovial hemangiomas (or any soft tissue tumor in general). This is true because MRI has the distinct ability to accurately identify the extent of the lesion and its relationship to surrounding tissue and structures. On T1-weighted images, synovial hemangiomas display low to intermediate signal intensity as compared to surrounding muscle and fat tissue, whereas T2-weighted images appear as high signal intensity. Thin, fibrofatty septa are characteristically seen separating the serpentine vascular components. The identification of tiny, rounded signal voids is compatible with the presence of phleboliths, which are common. Gadolinium-enhanced MRI provides clear demarcation of the frequently lobulated borders of the lesion, to include demonstration of any extra-articular involvement. The vascular mass can be differentiated from joint fluid or adjacent muscle with the use of intravenously administered gadolinium.

*Differential Diagnosis:* The differential diagnosis of synovial lesions of the knee includes: pigmented villonodular synovitis (PVNS), synovial chondromatosis and osteochondromatosis.

*Conclusion:*
- Synovial hemangioma is a rare condition and mostly affects the knee joints. Recurrent bloody effusions without a history of trauma should alert the surgeon to this diagnosis.
- Magnetic resonance imaging is the main diagnostic tool to evaluate patients with a suspected synovial hemangioma.
- In any event, treatment should be initiated as early as possible to reduce the risk of damage to the cartilage.

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N.B: This case is authentic and from the archives of Radiance Diagnostics. For any queries/suggestions / feedback write to us at radiance@radiancediagnostics.in. Case of the month can also be accessed anytime online at VIEW BOX at www.radiancediagnostics.in