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Case Report

Radiology Section

Synovial Haemangioma of the Knee Joint: An Uncommon Condition with Typical MRI Findings

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ABSTRACT

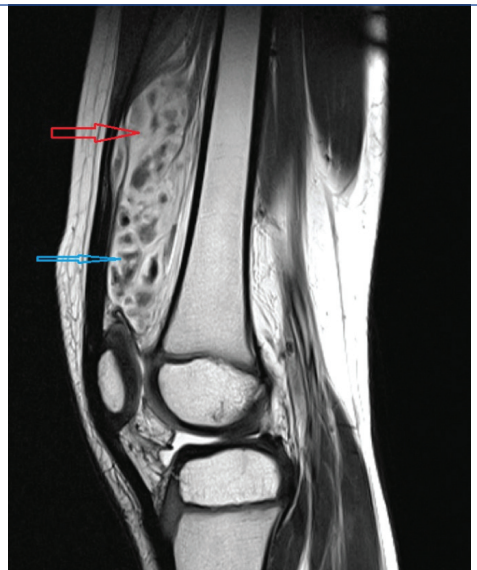
Synovial haemangioma is a rare condition mostly affecting the knee joint. In cases of non-specific symptoms the diagnosis of a synovial haemangioma should also be kept in mind in order to avoid delay in diagnosis. Magnetic resonance imaging is the main diagnostic tool to evaluate patients with synovial haemangioma, showing characteristic patterns. A case report of synovial haemangioma of the knee is presented. Magnetic Resonance Imaging (MRI) demonstrated typical signal characteristics and enhancement pattern.

Keywords: Benign tumour, Patellofemoral joint,Signal characteristics, Synovial cavity

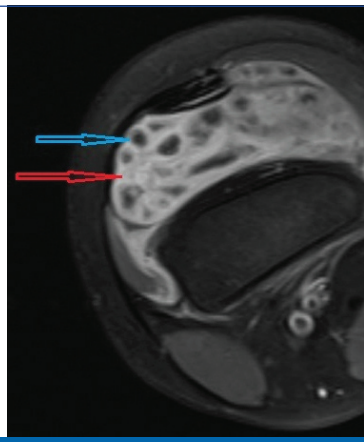
CASE REPORT

A six-year-old boy presented with right knee swelling for a period of one year without pain or restriction of joint motion. The laboratory findings and physical examination were normal, except for mild swelling in the suprapatellar region. Subsequently knee MRI was performed on a 1.5 Tesla scanner. Proton Density Fat Saturated (PDFS) sequences in three orthogonal planes, sagittal T2 and T1 weighted sequences were obtained. Post-contrast axial and sagittal T1-weighted fat saturated images were also included.

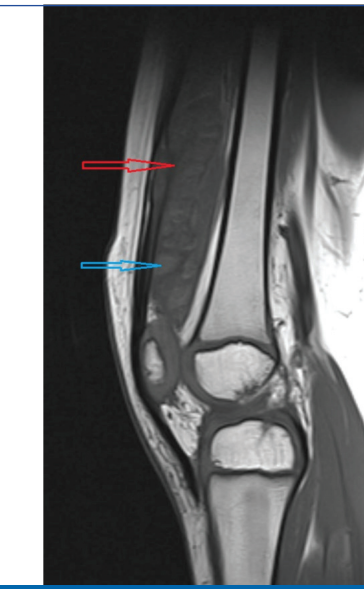
A well defined lobulated lesion measuring ~6.8×2.1×5 cm (Cranioc audal×Anteroposterior×Mediolateral) was seen in the suprapatellar recess of knee anterior to the lower third of femur extending into synovial cavity of patellofemoral joint compartment. It appeared heterogeneously hyperintense on PDFS/T2 weighted images and isointense on T1 weighted images with multiple small PDFS/T2 hypointense regions within it [Table/Fig-1-3]. Multiple small T1 hyperintense foci, suggestive of haemorrhage were also noted within it [Table/Fig-3]. The lesion showed intense heterogeneous post contrast enhancement [Table/Fig-4a,b]. Adjacent bones and muscles appeared normal. Minimal fluid was seen in the lateral patellofemoral compartment.



[Table/Fig-1]: Sagittal T2 weighted image showinglobulated T2 hyperintense (red arrow) lesion in the suprapatellar recess of knee with multiple small T2 hypointense (blue arrow) regions within it.

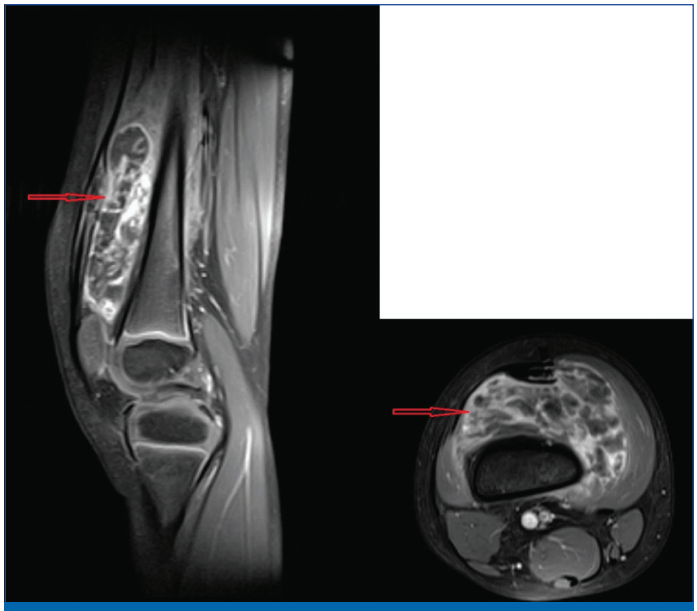


[Table/Fig-2]: Axial PDFS image showing hyperintense (red arrow) lesion with multiple hypointense (blue arrow) regions within it.



[Table/Fig-3]: Sagittal T1 weighted image showing T1 isointense (red arrow) lesion with internal areas of hyperintensity (blue arrow) suggestive of haemorrhage within it.

Lesion was surgically excised and histopathological evaluation revealed thin walled erythrocyte filled vascular spaces lined by endothelial cells within a dense connective tissue matrix, indicative of a haemangioma. No evidence of any swelling, pain or restricted joint motion was found at follow-up examination done three months later.



[Table/Fig-4]: a) Sagittal and b) axial post contrast T1FS images demonstrate intense heterogeneous enhancement (red arrows).

DISCUSSION

Synovial haemangioma is an uncommon benign tumor of the joints affecting children and young adults. In most of the cases it affects the knee joint; however it has also been described affecting other joints including the elbow, ankle and wrist [1]. Patients usually present with joint swelling and pain [2-4]. Other symptoms include tenderness, restricted motion and joint effusions (haemarthrosis). As the majority of patients present with non-specific symptoms and signs, diagnosis is frequently delayed.

Plain radiographs could show the joint effusion, soft tissue masses, phleboliths and bone erosions. Ultrasonographic examinations can show the vascular nature of the lesion. Computed tomography may demonstrate the lesion but the findings are not specific and there is radiation risk.

MRI is the best modality in evaluating soft tissues and should be considered as the diagnostic method of choice. Synovial haemangioma appears as an intra-articular lobulated mass which is not sharply defined.The lesion shows low to iso-intensity on T1 weighted sequence and heterogeneous high intensity with low-intensity septa or spots within it on T2 weighted and fat suppressed sequences. After contrast administration, the lesion shows marked heterogeneous enhancement. These MRI features are fairly characteristic of synovial haemangioma [5-7].

The differential diagnosis includes Pigmented Villonodular Synovitis (PVNS), synovial sarcoma, haemophilic arthropathy, synovial osteochondromatosis or lipoma arborescens which can be distinguished clinically or after MRI interpretation [5,7,8]. PVNS shows intermediate signal on T1-weighted images, low signal on T2-weighted images with areas of high signal due to inflamed synovium or joint fluid and variable enhancement on contrast-enhanced T1-weighted images. It has low signal on Gradient-Echo (GE) sequences and sometimes blooming artifacts due to haemosiderin from chronic haemorrhage. Synovial sarcoma shows markedly heterogeneous appearance on T2 weighted sequences due to areas of necrosis and cystic degeneration showing very high signal, relatively high signal soft tissue components and areas of low signal intensity due to dystrophic calcifications and fibrotic bands. MRI in haemophilic arthropathy shows thickened synovium with low signal due to haemosiderin susceptibility effect, synovial enhancement due to synovitis, joint effusion with cartilage loss and erosions. MRI appearance of synovial osteochondromatosis depends on the presence of synovial proliferation, formation of loose bodies and degree of mineralisation. Typical appearance of lipoma arborescens is a frond-like synovial mass following the signal intensity of fat on all sequences, usually outlined by concurrent joint effusion. In doubtful cases, histopathological evaluation should be carried out for confirmation [6].

Surgical removal of synovial haemangiomas is needed for preventing cartilage damage due to recurrent haemarthrosis. Smaller lesions are removed arthroscopically, while large diffuse lesions may be removed arthroscopically or per arthrotomy [9,10].

CONCLUSION

In patients with a history of recurrent knee swelling and pain, synovial haemangioma should be considered to avoid diagnostic delay. Magnetic resonance imaging showing characteristic patterns is the main diagnostic tool to evaluate such patients and should be used as an initial procedure.

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