IMAGES IN PAEDIATRICS.....

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Synovial haemangioma presenting as a recurrent monoarticular haemarthrosis

A 10 year old African-American male was referred to rheumatology for evaluation of recurrent right knee swelling and warmth. His symptoms started at 18 months of age without antecedent trauma. Despite spontaneous resolution of his initial symptoms, over the next 8 years he experienced episodic swelling, warmth and later stiffness. In between episodes, the patient was able to play sports and ambulate without difficulty. He had no symptoms in any other joints, no constitutional symptoms and no chronic medical conditions.

His general physical examination was unremarkable. Synovitis was limited to the right knee, which was moderately swollen and warm to touch. There was no ligamentous laxity. Quadriceps muscle tone was equal bilaterally with no soft tissue masses identified. The patient had full passive range of motion in his right knee. Bedside ultrasound using a linear array transducer at 7.5 MHz revealed a complex, cystic appearing structure in the suprapatellar aspect of the joint (fig 1). Sonographic guided arthrocentesis yielded 5 ml of bloody, non-clotting fluid. Cell count of the synovial fluid revealed 150 390 red blood cells/mm³ with 3975 white blood cells/mm³ (21% segmented neutrophils and 42% lymphocytes).

Figure 1 Bedside ultrasound image of the patient's right knee. This transverse view was obtained using a linear array transducer at 7.5 MHz. Of note is a complex, cystic appearing structure in the suprapatellar aspect of the joint.

Figure 2 MRI images of the right knee. Top images are coronal sequences (from left to right: anterior to posterior) and bottom images are axial sequences (from left to right: proximal to distal). On T2 weighted images there was a hyperintense signal of the tumour with areas of interspersed fat noted on fat-suppressed imaging.

Synovial fluid cultures were negative. Serological testing was unremarkable. Radiographs demonstrated an effusion with a calcified punctuate suprapatellar body but no leg length discrepancy. MRI of the knee revealed a space occupying process in the suprapatellar bursa demonstrating intermediate signal intensity on T1 weighted images and areas of interspersed high signal consistent with fat. On T2 weighted imaging there was a hyperintense signal with the areas of interspersed fat detected on fat-suppressed imaging. The top images in fig 2 are coronal sequences (from left to right: anterior to posterior) and bottom images are axial sequences (from left to right: proximal to distal). There was some irregularity of the patellar cartilage but no focal cartilaginous defects or osseous destruction. These changes were characteristic of a synovial haemangioma, and the patient was referred to orthopaedics for tumour removal.

Synovial haemangioma is an unusual cause of recurrent knee swelling and haemarthrosis first described by the French surgeon J Bouchut in 1856. Recent case series suggest detection occurs during the first decade of life. A slight female predominance has been reported. Patients typically present with episodic swelling, pain and stiffness. Haemarthrosis is a frequent finding. Occasionally a palpable mass, quadriceps muscle atrophy and loss of range of motion occur. The most frequent site of involvement is the suprapatellar pouch. Most

imaging modalities reveal non-specific changes with the exception of MRI. To our knowledge, this patient was the first with the disorder to undergo ultrasonographic imaging, yet these findings were not specific enough to make a diagnosis. MRI mirrors the histological features of the tumour, especially on T2 weighted images. The treatment of choice is synovectomy, with the goal of preventing degenerative changes from recurrent haemarthrosis or altered joint biomechanics. An open approach is favoured given concerns about intraoperative bleeding and the limitations of arthroscopic radical resection if the lesion is not pedunculated.

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