Giant cell tumour of tendon sheath: A rare case in the left elbow of a 8-year-old girl

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Section: Musculoskeletal system
Area of Interest: Musculoskeletal joint Paediatric
Procedure: Diagnostic procedure
Imaging Technique: MR
Special Focus: Neoplasia Inflammation Case Type: Clinical Cases
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Patient: 8 years, female

Clinical History:

An 8-year-old girl with good health complained of subacute onset of left elbow pain and denied any history of trauma.

Imaging Findings:

Magnetic resonance imaging (MRI) of the left elbow revealed a relatively encapsulated localised 1cm x 2cm x 1.5cm nodular lesion in the olecranon fossa, showing intermediate T1 signal. T2 hypointense rim is noted, with relative heterogeneous content (Fig. 1, 2). No significant corresponding contrast enhancement is demonstrated. There is mild joint effusion with synovial thickening and enhancement. No associated cortical erosion or abnormal marrow signal is seen.

Discussion:

Localised extra-articular giant cell tumour of tendon sheath (GCTTS) is classically seen to wrap around the tendons of the hand and fingers. The intraarticular form, also known as nodular synovitis, is similar to pigmented villonodular synovitis (PVNS) except in the degree of involvement of the affected joint, being more localised within the joint. Diffuse extra-articular GCTTS lesions are bigger and more aggressive and are found in an extra-articular location around large joints [1].

GCTTS usually affects people between 30 to 50 years and is more often seen in women. It is rare in children.

The extra-articular GCTTS usually presents with an increasing painless mass in the extremities, especially in digits on hand and foot. There is no specific symptom for GCTTS in the elbow [2, 3]. Therefore, the diagnosis of GCTTS would be difficult. Occasionally, the disease can lead to compression neuropathy and secondary osteoarthritis due to its mass effect.

In our case, the 8-year-old girl presented with elbow swelling and elevated inflammatory markers, which raises concern for underlying infective changes instead of neoplastic cause. Plain radiograph is usually not very helpful in
the diagnosis of the disease.

Magnetic resonance imaging (MRI) is highly sensitive for identification and diagnosis of these lesions. It is usually seen as an oval, solitary mass with lobulated contours. It is intermediate or slightly hyperintense on T1-weighted images relative to skeletal muscle, whereas on T2-weighted images it shows variable signal intensity. It contains low signal intensity components due to haemosiderin deposits which are much more apparent on gradient echo images.

However, a definitive diagnosis can be made with pathological examination. It consists of fibrous tissue that contains pleomorphic cell population, including lipid-laden foam cells, multinucleated giant cells, and round or polygonal stromal cells, often with deposits of haemosiderin.

The standard of treatment for GCTTS is total excision of the tumour. When the tumour is localised, total excision is usually curative with a low rate of recurrence.

In conclusion, the occurrence of GCTTS of the elbow in a paediatric patient is an exceptional case as compared to those reported in previous literature. It is extremely difficult to make a proper diagnosis especially when it occurs in atypical sites or age groups. As the condition always presents with a lump, it should be considered as a differential diagnosis if the mass is found around joints. MRI would be useful for diagnosis when the symptoms of GCTTS are non-specific. Histopathological examination would remain the method for the definite diagnosis.

**Differential Diagnosis List:** Localised form of giant cell tumour of tendon sheath, Fibroma of tendon sheath, Organising haematoma, Pigmented villonodular synovitis (PVNS), Ganglion cyst

**Final Diagnosis:** Localised form of giant cell tumour of tendon sheath

**References:**


Description: Predominant hypointense nodular lesion at the olecranon fossa

Origin: Department of Radiology and Organ Imaging, United Christian Hospital, Hong Kong
**Description:** T1 hypointense nodular lesion at the olecranon fossa without corresponding contrast enhancement  
**Origin:** Department of Radiology and Organ imaging, United Christian Hospital, Hong Kong