Chondroblastoma of the proximal humerus.
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Section: Paediatric radiology
Imaging Technique: MR
Case Type: Clinical Cases
Authors: Charity R
Patient: 13 years, male

Clinical History:
Shoulder pain. Plain radiographs show a lytic lesion in the epiphysis of the proximal humerus.

Imaging Findings:
The boy presented with a 7 month history of increasing right shoulder pain. He was otherwise well and there was no history of trauma. On examination there was no external swelling or inflammation. There was mild diffuse tenderness over the shoulder. Active movements were severely restricted by pain, but he had almost a full range of passive shoulder movement. Neuro-vascular status was normal. Plain radiographs of the shoulder showed a lytic lesion occupying most of the epiphysis (Fig 1). The lesion had a sclerotic rim and did not breach the cortex. An MRI scan showed a homogenous epiphyseal lesion breaching the growth-plate and extending into the metaphysis (Fig 2). The radiographic appearances were considered to be diagnostic of a chondroblastoma so the lesion was treated by curettage without prior biopsy. Histology of the tissue confirmed the diagnosis.

Discussion:
Chondroblastoma is a rare primary tumour of bone (1%) consisting of chondroblasts in a chondroid matrix. It is considered to be almost exclusively benign (99%), although rare cases of pulmonary metastases or malignant transformation have been reported. The vast majority occur between the ages of 10 and 20 years (75% of cases) and thus the growth-plate is usually open at the time of diagnosis. It is more common in boys (2:1). Almost all (98%) arise in the epiphysis, although extension into the metaphysis is not uncommon. 70% arise in the long bones with principle sites being the proximal humerus (18%), proximal tibia (17%), distal femur (16%) and proximal femur (16%). The tumour is always solitary.
Characteristic radiological findings are of a single epiphyseal lytic lesion, roundish in shape, with a well-defined border. It is rare to see cortical breaching or periosteal reaction. A thin rim of sclerosis surrounds 60% of these tumours. Characteristic punctate densities, 0.5-3mm in size, representing calcification, are present on radiographs in 25-60% of chondroblastomas.
In children, a well-circumscribed epiphyseal lesion that crosses an open growth plate is virtually diagnostic of chondroblastoma. In older patients the principle differential diagnosis for a benign-looking epiphyseal lesion is a giant cell tumour; these tend to be larger, occupying more than half of the epiphysis, and lack the sclerotic rim and stippled densities seen with chondroblastomas.
MR imaging characteristically shows a lobulated low signal intensity rim around the lesion, bone marrow oedema and low signal intensity foci within the tumour corresponding to areas of calcification.
Treatment is usually by curettage, with or without bone grafting, but recurrence rates of 5-20% have been reported.
following this.

**Differential Diagnosis List:** Chondroblastoma of the proximal humerus.

**Final Diagnosis:** Chondroblastoma of the proximal humerus.

**References:**

Oxtoby JW, Davies AM.

MRI characteristics of chondroblastoma.

Figure 1

Description: Lytic lesion in epiphysis. Origin:
Description: Epiphyseal lesion shown to be breaching physis (growth-plate) and invading the metaphysis. Origin: