CASE REPORT

An Unusual Cause of Elbow Pain – A Case Report

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Abstract:

Giant cell tumours are common bone tumours usually benign which arise at the metaphysis and extend towards the epiphysis of bone. A case of giant cell tumour in the distal humerus which is a rare site is presented here. Radiological investigations and biopsy in a 20 year old male who presented to our orthopedic department with elbow pain, led to a diagnosis of giant cell tumour at the medial epicondyle of humerus. Literature is reviewed regarding the common sites of giant cell tumours along with the treatment modalities currently followed. Giant cell tumour should be kept in a mind as a rare cause of elbow pain.

Keywords: Giant Cell Tumour, Medial Epicondyle, Distal Humerus

Introduction:

Giant Cell Tumours (GCT) is common and comprises 18-23% of benign bone neoplasms and 4-9.5% of all primary bone neoplasms [1]. They commonly (97-99%) follow growth plate closure and are therefore typically seen in early adulthood, with 80% of cases reported between the ages of 20 and 50, with a peak incidence between 20 and 30 [1]. They are, usually benign arising from metaphysis and typically extending into the epiphysis of the long bones. There is overall a mild female predilection, especially when located in the spine, however malignant transformation is commonly seen in men (Male: female ratio of 3:1) [1]. They typically occur as single lesions. Distal humerus is an unusual site for GCT .The objective of this study is to present a case of GCT in the elbow, which may present as an unusual cause of pain.

Case Report:

A 20 year old male presented to the orthopedic outpatient department with complaints of left elbow pain and swelling (Fig. 1). History revealed an incidental occurrence of an accident 3 months ago involving the left elbow following which he developed swelling and pain in the elbow. Investigations performed outside included an MRI and biopsy. A plain radiograph taken at our radiology department revealed an expansile lytic lesion over the medial epicondyle of humerus with thinning of the overlying bone (Fig. 2). The zone of transition was sharp and no periosteal reaction was seen. MRI revealed a lytic lesion involving the medial epicondyle of humerus with involvement of the articular surface. The matrix of the lesion showed fluid levels within. Expansion of the underlying bone was present with areas of cortical break. Other structures including radius, ulna radiolunar joint and neurovascular bundle were normal (Fig. 3).

Following this a trucut biopsy of the lesion was performed and cytology revealed clusters of spindle shaped stromal clusters and mixed with numerous osteoclast type of giant cells showing no atypi (Fig. 4). Background showed hemorrhage with no evidence of malignancy.The biopsy was conclusive of the lesion being a giant cell tumour. The patient was treated with a bolus dose of injection Zolindronic acid 4mg I.V and advised to repeat the dose once in a two months for a total duration of 6 months. Concurrently patient has been advised treatment with tablet Alandronate 70mg, weekly once for total duration of 6 months.

Patient is to be reviewed after 6 months for assessing reduction in the size of the tumour, followed by surgical treatment.

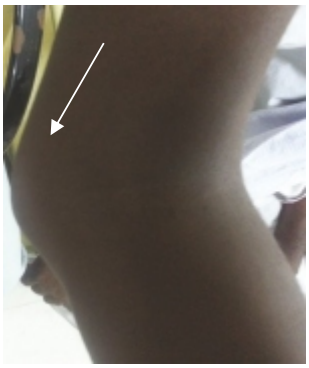

Fig.1: Photograph showing the Swelling at the Distal End of Humerus

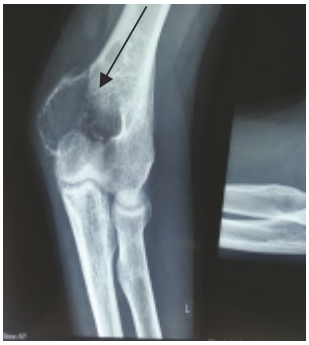

Fig. 2: X-ray showing Expansile Lytic Lesion over the Medial Epicondyle of Humerus with Thinning of Overlying Bone

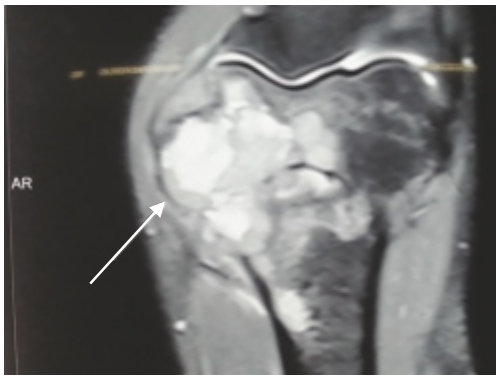

Fig. 3: T2W MRI Image showing Lytic Foci at the Medial Epicondyle with Fluid Level within the Lesion

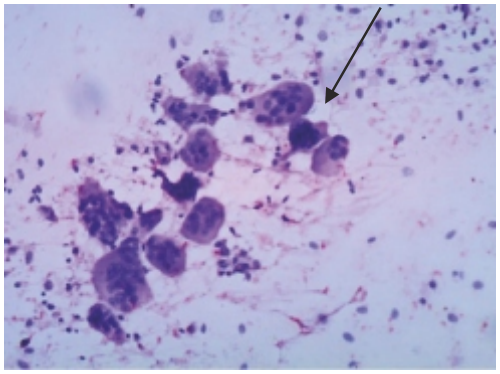

Fig. 4: Cytology revealed Clusters of Spindle Shaped Stromal Clusters and Mixed with Numerous Osteoclast Type of Giant Cells showing No Atypia.

Discussion:

GCT is a common skeletal tumour. GCT affects all races, but prevalence is unusually high in China and southern India (state of Andhra Pradesh) [2]. On histology, there is a prominent and diffuse osteoclastic giant cell component in giant cell tumours and have been referred to in the past as osteoclastomas. Though the presence of giant cells may lead towards the diagnosis, this finding is not specific, and similar histological appearance may be demonstrated by numerous lesions [3]. Clinical and radiological correlation along with histological evaluation of the mononuclear component is required to rule out other entities. A large number of giant cells in a diffuse distribution against a background of mononuclear cells should be seen in a true GCT. These mononuclear cells are predominantly round, oval or polygonal and may resemble normal histiocytes. The fusion of these cells may result in giant cell formation. The nuclei of the stromal cells are indistinguishable from those of the multinucleated giant cells, a feature that can be helpful in distinguishing GCT from other lesions in the pathological differential

diagnosis. In women with increased endogenous or exogenous hormone levels owing to pregnancy or use of oral contraceptives [4] the mitotic figures in the mononuclear cells may be abundant.

These lesions may be associated with secondary Aneurysmal Bone Cyst (ABC) formation but also contain solid areas with the typical histologic appearance of GCT [1]. Primary ABC contains only hemorrhagic cystic areas and hence identification of these areas helps differentiation from GCT. GCTs are low grade tumours. Approximately 5-10% of GCTs are malignant .Sarcomatous transformation may be seen in radiotherapy treated inoperable tumours [1].

The most common specific location of GCT is about the knee (50–65% of cases) [4]. The single most common site is the distal femur (23–30% of cases), followed by the proximal tibia (20–25%), distal radius (10–12%) sacrum (4–9%) and proximal humerus (4–8%) [4].

Other, less frequent sites of involvement include the proximal femur (4% of cases), innominate bone (3%), vertebral bodies (3–6%), distal tibia (2–5%), proximal fibula (3–4%), hand and wrist (1–5%), and foot (1–2%). Multiple locations: ≈ 1% (multiple lesions usually occur in association with Paget disease) [1].

Involvement of the humerus comprises approximately 6% of all GCTs, but almost all of these are located in the proximal humerus with distal humeral lesion being exceedingly rare [5].

Typical radiological findings include eccentrically located lytic lesions in the epiphysis that do not penetrate the joint. The rim of the lesion is usually not sclerotic and can extend into the surrounding tissue, which indicates a poorer prognosis. On the basis of radiological findings differential diagnosis includes aneurysmal bone cyst, non-ossifying fibroma, primary hyperparathryroidism with brown tumours, chondromyxoid fibroma, chondroblastoma, clear cell chondrosarcoma and telangiectatic osteosarcoma. Surgical treatment mainly consists of extended curettage or en-bloc resection.

Studies have shown that curettage should be supplemented with a combination of chemical cautery, cryotherapy or electrical cautery followed by methylmethacrylate cement in order to prevent recurrence [7]. Previous studies have shown haemosiderin deposits in up to 60% of cases on MRI and although these findings are neither sensitive nor specific, it may be a useful adjunct in determining a diagnosis [6].

Bisphosphonate treatment is known to control osteolysis associated with skeletal metastasis. Paget's disease, osteoporosis, multiple myeloma [8], and bisphosphonates have also been used to control osteolysis occurring as a result of fibrous dysplasia and Langherans cell histiocytosis [9]. Two recent studies have reported the use of bisphosphonates in GCTB. Tse *et al* [10] studied 24 patients treated with either pamidronate or zoledronic acid given preoperatively and found that only one of 24 patients (4.2%) developed local recurrence following this treatment; this contrasted to the control group who had a recurrence rate of 30%.

Conclusion:

This case report presents a rare occurrence of giant cell tumour in distal humerus of a young adult along with the investigations performed and treatment given. Giant cell tumour should be kept in a mind as a rare cause of elbow pain.

References

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