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Osteoclastoma In 11 Year Old Male Child - A Rare Case Report

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Abstract:
Osteoclastoma / Giant cell tumor (GCT) is a benign but locally aggressive bone tumour with a tendency for local recurrence and rarely distant metastasis. It is very uncommon to find the tumor in the immature skeleton and there are only a few reported cases describing the course and consequences of disease in children. The incidence in children younger than 19 years has been reported in several studies and ranges from 1.7% to as high as 10.6% of all patients with GCTs. Here we discuss a case of Giant cell tumor in a 11-year-old male child.
Key Word*: Osteoclastoma, Giant cell tumor, Pediatric orthopaedics, Oncology*

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I. Introduction

Osteoclastoma, is one of the common bone tumors which accounts for around 22% of all benign bone tumors and 4–7% of all primary bone tumors. They are typically found at the end of long bones which is the region around the closed growth plate extending into the epiphysis and to the joint surface. They almost invariably (97-99%) occur when the growth plate has closed and are therefore typically seen in early adulthood. 80% of cases are reported between the ages of 20 and 50, with a peak incidence between 20 and 30. The incidence in children younger than 19 years ranges from 1.7% to 10.6% of all patients with GCTs. We are reporting a rare case of GCT in a 11-year-old male child. The patient was treated with excision and curettage of the bony lesion after radiological and biopsy investigations.

II. Case Presentation

11 years old male, complaints of pain in his left hip since 6 days after sustaining a fall at his residence. Pain was sudden in onset, gradually progressive in nature and aggravates on bearing weight over left lower limb and walking and relieved on taking rest and medications. Patient had an episode of fever 3 days after the fall. Now he presents with walking with a limp over the left lower limb.

On examination :

- 11 year old Male child , moderately built and nourished , BMI = 13.3 kg/m^2
- Antalgic gait over left lower limb
- On inspection - No visible wounds/scars over left thigh
- On palpation – left hip , no local rise of temperature, Anterior joint line tenderness present, Range of movements around B/L hip joints intact and no restriction.
- Measurements – B/L lower limbs equal in segments – No shortening/lengthening.

III. Investigations

- Xray of Pelvis with B/L Hips and full-length left Femur was done. It shows 2x1 cm non-expansile eccentric osteolytic lesion with non-sclerotic margins in Proximal 1/3rd of Left femur eroding the outer cortex with smooth periosteal reaction with periosteal elevation and increased joint space in left hip.
- MRI of Pelvis with both hip joints showed a well-defined eccentric intramedullary lesion in the proximal diaphysis of left femur measuring 20x16x33 mm predominantly hyperintense on T2W1 and mildly hyperintense on T1W1.

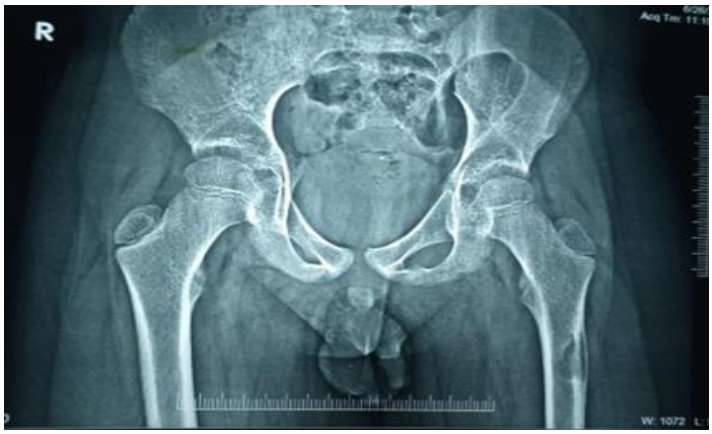

Figure 1 : Pre-Operative Xray Showing Osteolytic Lesion Left Proximal Femur

IV. Management

- Curettage and biopsy of left femur diaphysis was done.
- Intraoperative biopsy done and sent for histopathological reporting, pus culture and sensitivity, AFB/ZN staining.
- Histopathological Examination report suggested features of Giant cell tumor with aneurysmal bone cyst like areas. Section studied shows bony fragments with a tumour containing clusters of osteoclastic giant cells surrounded by round to spindle cells with mild pleomorphism, containing moderate amount of eosinophilic cytoplasm and vesicular nucleus.
- AFB/ZN staining and culture yielded no growth.
- Post operative Xray showed satisfactory curettage of left femoral diaphysis with no fracture.

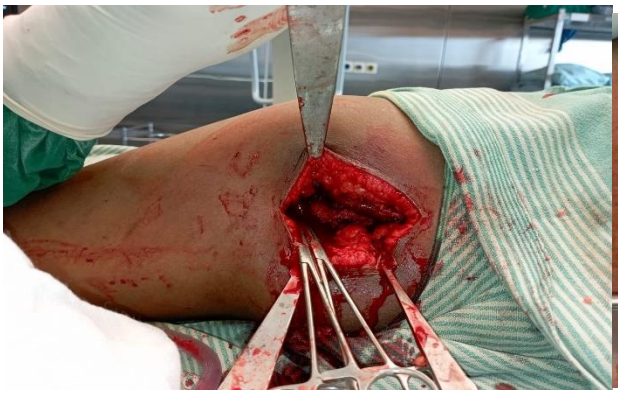

Figure 2a

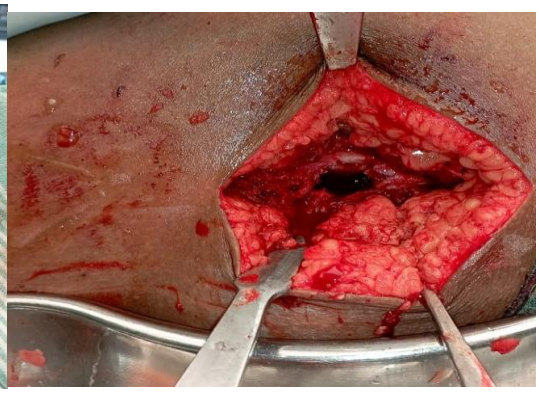

Figure 2b

Intraoperative image shows lytic lesion at the diaphysis of proximal femur through the lateral approach over the lateral aspect of upper thigh. (Figure 2a) . Intraoperative image showing post curettage of the lytic lesion at the Diaphysis of proximal Femur of Left thigh. (Figure 2b) .

Figure 2c

The intraoperative biopsy was performed and the specimen was sent for Histopathological examination, pus culture and sensitivity, AFB/ZN staining.

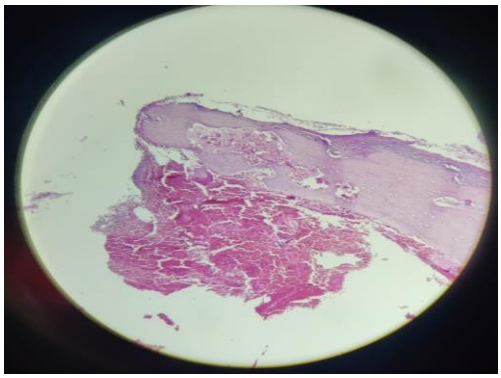

Figure 3

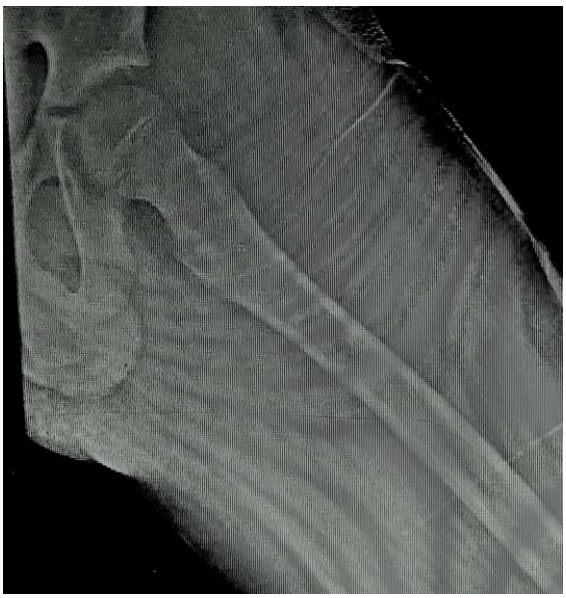

Figure 4

HPE report suggested features of Giant cell tumor with aneurysmal bone cyst like areas. Section studied shows bony fragments with a tumour containing clusters of osteoclastic giant cells surrounded by round to spindle cells with mild pleomorphism, containing moderate amount of eosinophilic cytoplasm and vesicular nucleus. (Figure 3).
AFB/ZN staining and culture yielded no growth.
Post operative Xray showed satisfactory curettage of left femoral diaphysis with no fracture. (Figure 4).

V. Discussion

- Osteoclastoma, is one of the common bone tumors which accounts for around 22% of all benign bone tumors and 4–7% of all primary bone tumors.
- They are typically found at the end of long bones which is the region around the closed growth plate extending into the epiphysis and to the joint surface.
- They are classified as osteoclastic giant cell-rich bone tumors of uncertain behavior.
- They almost invariably (97-99%) occur when the growth plate has closed and are therefore typically seen in early adulthood. 80% of cases are reported between the ages of 20 and 50, with a peak incidence between 20 and 30.
- The origin is thought to be the metaphyseal side of the growth plate since rarely tumors in skeletally immature patients are found in a metadiaphysial location and the growth plate and the open growth plate present a barrier to tumor growth.
- They consist of neoplastic mononuclear stromal cells and numerous non-neoplastic osteoclast-like giant cells.

- This is believed to result from an over-expression in the RANK/RANKL by neoplastic mononuclear stromal cells signaling pathway with resultant hyperproliferation of osteoclasts.
- Classically treatment is with curettage usually combined with local adjuvants such as polymethylmethacrylate (PMMA), phenol or liquid nitrogen or a combination of those.
- Local recurrence is common and occurs in 15-50% of conventional giant cell tumors of bone within 2 years depending on the type of surgical treatment and on the presence of soft tissue extension.
- En bloc resection is associated with a lower recurrence rate but with greater morbidity.
- The newer intraoperative adjuncts such as thermocoagulation, cryotherapy, or chemical treatment of the resection margins have lowered the recurrence rate to an acceptable level.
- About 3-7% of patients with conventional giant cell tumor of bone develop pulmonary metastases with a median interval of about 15 months from the local recurrence. They seem to have a good prognosis.
- Denosumab has been used in the treatment of benign metastasizing disease, in unresectable tumors and in patients where surgery is likely to cause excessive morbidity as well as neoadjuvant therapy to facilitate surgery in locally advanced tumors.

VI. Conclusion

Although osteoclastoma is a rare entity in pediatric age group, it mirrors the behaviour of its adult counterparts in terms of location, treatment, recurrence and course of the disease. It must be considered as one of the possible differential diagnosis of epiphyseometaphyseal lesions in paediatric and adolescent population in spite of its rarity. Here we would like to highlight this particular case of Osteoclastoma in a 11 year old male child and the management of this rare presentation.

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