CASE REPORT

Giant Cell Tumour of The Proximal Ulna

Muhammad Saeed Minhas and Ghulam Mehboob

ABSTRACT

The report describes a rare case of giant cell tumour of proximal end of ulna occurring in 22 years old lady. Pain and gradual increase in swelling was noticed for last 7 months. X-ray showing complete absorption of proximal ulna. The tumour was excised en-bloc; reconstruction by fibular graft and fusion of elbow in functional position was performed. Postoperatively neurovascular status was normal. Patient is tumour-free and having stable elbow after 5 years of resection and reconstruction.

Key words: *Giant cell tumour. Proximal ulna. Wide excision. Reconstruction. Fibular graft. Elbow fusion.*

INTRODUCTION

Giant cell tumour of bone is a locally invasive tumour that occurs close to the joint of a skeletally mature bone. It is generally considered to be benign, acts as locally aggressive and may metastasize to lymph nodes and lungs. Seventy five to ninety percent of giant cell tumours are located at the epiphysis of long bones and in most series common sites are proximal tibia, distal femur and fallowed by distal radius.[1] 10-25% are found in sacrum, patella, vertebra, tarsal, metatarsal, metacarpal and skull bones. Giant cell tumour of bone represents 5% of all primary bone tumours in the West.[2] The reported incidence in Asian population is about 20-26%.[3,4] There is female predominance and the age at presentation is usually 20-50 years of age. In the largest series of cases of giant cell tumour of bone from India and China analyzed by Shankman *et al.* 42 (2.43%) out of 1728 giant cell tumour of bone were localized in distal end of the ulna and none in proximal ulna.[5]

Typically the tumour appears to be an expanded radiolucent lesion located in the epiphyseal end of the tubular bone. The tumour extends mainly proximally and distally involving articular surface and metaphysis of the bone. As the bone expands the surrounding cortex is thinned. The radiolucencey of a giant cell tumour is due to massive destruction of the cortical and cancellous bone without any calcification or periosteal reaction. Although giant cell tumours of bone are common in distal radius, proximal humerus and distal humerus but its occurrence in proximal ulna is extremely rare as reported in this case.

Department of Orthopaedic Surgery, Jinnah Postgraduate Medical Centre, Karachi.

Correspondence: *Dr. Muhammad Saeed Minhas, H-5, Tooba Apartments, DHA Phase-I, Karachi.*
E-mail: drminhas@hotmail.com

Received October 14, 2009; accepted January 07, 2010.

CASE REPORT

A 22 years old lady presented in May 2004 with swelling of left upper forearm posteriorly and medially. The swelling had progressed slowly over 7 months. Patient was taking analgesics off and on and local applications by traditional non-qualified practitioners before proper medical consultation. She was complaining of restricted and painful movements of elbow. On examination, the swelling was present on posterior aspect of elbow more prominently bulging of the olecranon, overlying skin being normal without any engorged or visible veins. Swelling was tender, firm in consistency, local temperature was normal. She was having a limited range of movements (ROM) of 20-90 degree. The neurovascular examinations were normal. Axillary lymph nodes were not palpable. Results of chest radiography and screening laboratory tests were normal.

A plain radiograph of left elbow showed an expansile osteolytic lesion involving proximal ulna completely, expanding posterior-medially and laterally pushing radius (Figures 1, 2). Tumour size was around 9.5 cm in length and 5.5 cm in width. Presumptive clinico-radiological diagnosis was made as giant cell tumour of proximal ulna. Needle aspiration biopsy was performed which showed giant cell lesion. Patient was operated in June 2004; wide excision of the proximal ulna was done along with normal bone of shaft of ulna and complete removal of articular surface of ulna along proximal radio-ulnar joint and contaminated skin tract of needle biopsy. Resected tumour size was 12.5 x 9.5 x 4.5 cm. Non-vascularized autogenous fibular graft was taken before the resection of proximal ulna and it was placed in defect and splinted with intramedullary Kirschner (K) wire. Radiohumeral joint was also stabilized by K wire. Post-operatively wound healed well, skin and neurovascular was intact. Limb was placed in 45 degree flexion and cast was applied postoperatively for 8 weeks. Brace was applied for further 8 weeks till solid fusion was achieved. Histopathology of the resected specimen revealed large number of osteoclast like giant cells with nuclear

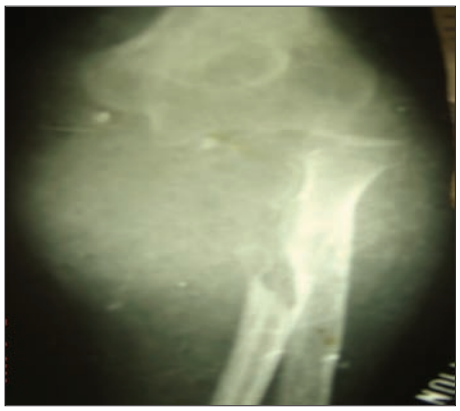

Figure 1: Antero posterior X-ray of giant cell tumour of proximal ulna.

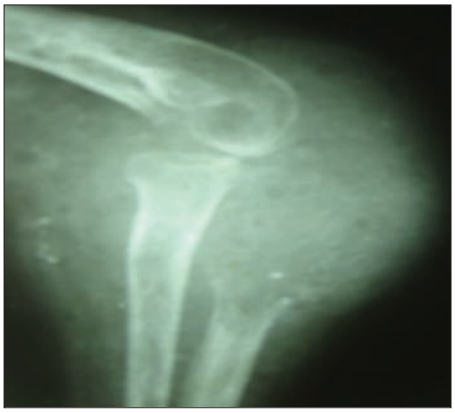

Figure 2: Lateral X-ray of giant cell tumour of proximal ulna.

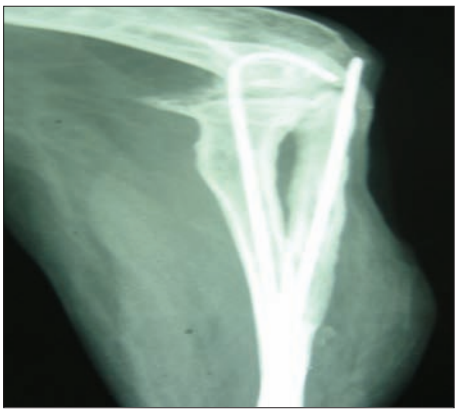

Figure 3: X-ray left elbow lateral view 5 years postresection and reconstruction.

pleomorphism. Features were consistent with malignant giant cell tumour of proximal ulna with clear margins.

Patient was in regular follow-up in last 5 years and last examined in September 2009; she was pain free and having a fixed and stable elbow at 45 degree flexion. She is a working lady and delivered and raised 3 children during this period. Recent X-ray of left elbow shows bony fusion and no tumour recurrence or metastasis after 5 years of primary resection and reconstruction of elbow (Figure 3).

DISCUSSION

Giant cell tumour (GCT) of bone is common in Eastern part of the world and the most common site is around knee and wrist. Proximal ulna is extremely rare site and one case of recurrent malignant giant cell tumour of proximal ulna is reported in which initial 2 surgeries were performed as curettage and bone grafting, 3rd time resection of proximal ulna was performed, but patient died after few months of resection.[6] One case of giant cell tumour of proximal ulna is also mentioned by Dahlin in a series of 429 cases of giant cell tumour.[7]

Pain is the leading symptom in giant cell tumour of bone and relates to the mechanical insufficiency resulting from bone destruction. Pathological fracture is seen in 12% of patients at the time of diagnosis.[8] Bump or soft mass is seen, resulting from cortical destruction and tumour progression outside the bone. Although giant cell tumour is common tumour in this part of the world, but patients usually present late and initially consult local doctors and traditional bone setters. As in this case, tumour was sub cutaneous but patient was getting treatment by traditional bone setter and presented to the specialist with complete ballooning of proximal ulna and involvement of articular surface. X-ray showing purely lytic lesion, bone contour expanded with faint and thin cortex and involvement of articular surface, making joint preservation difficult or impossible. Resection and bone grafting are strongly recommended for GCT which appears to be expanding and perforating the thinned cortices as giant cell tumours are potentially malignant and 60% of the lesion re-occurs after curettage and 10% metastasize to the lung.[9]

In this case considering the age of patient her professional requirement as working on an island in fisher man family and extensive involvement of the proximal ulna bone and articular surface, en bloc resection was considered as the treatment of choice. Lackman selected 'en bloc excision' and used fibular autograft for reconstruction of such defects.[2] En bloc resection of the proximal ulna and fibular reconstruction as joint fusion is a simple and very effective method without involvement of too much metal and prosthesis. This technique of resection and reconstruction are therefore, reserved for those cases with complete involvement of proximal bone and with involvement of articular surface. The most important factor that predicts prognosis is the adequacy of tumour resection. It is accepted that recurrence rate after intra lesional curettage is higher (27-41%) than that after wide excision (0-7%).[9] It is preferred to do wide excision and reconstruction than curettage and bone graft as first procedure in these types of cases. Enneking's and Campanacci's surgical staging and radiographic classifications are helpful in planning the initial surgical treatment, because they have observed that a number of the active lesions and most of the aggressive lesions have a higher incidence of local recurrence when treated by curettage alone.[10] This case was clinically and radiologically aggressive and the primary procedure planned was wide resection and reconstruction, sacrificing the elbow movements. The interval between surgery and local recurrence reported, is an average of 19 months duration.[8] In this case, it was a regular follow-up of over 5 years with no recurrence or metastasis and a stable elbow.

REFERENCES

1. Park Y, Ryu KN, Han CS, Bae DK. Multifocal metachronus giant-cell tumour of the ulna: a case report. *J Bone Joint Surg* 1999; **81**:409-13.

2. Lackman RD, McDonald DJ, Beckenbaugh RD, Sim FH. Fibular reconstruction for giant cell tumour of the distal radius. *Clin Orthop* 1987; **218**:232-8.
3. Sung HW, Kuo DP, Shu WP, Chai YB, Liu CC, Li SM. Giant-cell tumour of bone: analysis of two hundred and eight cases in Chinese patients. *J Bone Joint Surg Am* 1982; **64**:755-61.
4. Reddy CR, Rao PS, Rajakumari K. Giant-cell tumours of bone in South India. *J Bone Joint Surg Am* 1974; **56**:617-9.
5. Shankman S, Greenspan A, Klein MJ, Lewis MM. Giant cell tumour of ischium: a report of two cases and review of literature. *Skeletal Radiol* 1998; **17**:46-51.
6. Sanjay BK, Nagi ON, Gupta BD. Giant cell tumour of the proximal end of the ulna. *Arch Orthop Trauma Surg* 1991; **110**:208-9.
7. Dahlin DC, Unni KK, editors. Bone tumours: general aspects and data on 8542 cases. 4th ed. Springfield: *Charles C Thomas Publication*; 1986.p.120.
8. Campanacci M, Baldini N, Boriani S, Sudanese A. Giant-cell tumour of bone. *J Bone Joint Surg Am* 1987; **69**:106-14.
9. Rock MG, Pritchard DJ, Unni KK. Metastases from histologically benign giant-cell tumour of bone. *J Bone Joint Surg Am* 1984; **66**:269-74.
10. Enneking WF, Spanier SS, Goodman MA. A system for the surgical staging of musculoskeletal sarcoma. *Clin Orthop Relat Res* 1980; **153**:106-20.