CASE REPORT

Giant cell tumour—a very rare differential for a lytic lesion of the medial condyle of the humerus

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SUMMARY

Tumours are rare around the elbow joint, and giant cell tumours are especially rare in this region. A single case report of a giant cell involving the distal humerus was found in the literature and none were found involving the isolated medial condyle. We present a rare case of a 22-year-old woman with progressively increasing painful swelling in her left elbow over a period of 6 months. A plain radiograph revealed an expansile epiphyseometaphyseal, radiolucent lesion in the medial end of the distal humerus, with the rim being thin but still intact. The MRI of the elbow revealed a solid lesion in the medial aspect of the elbow with no breach of cortex. Biopsy of the lesion revealed multinucleated giant cells along with mononuclear cells consistent with a diagnosis of giant cell tumour. Extended curettage with bone cement was performed through an anterior approach. There has been no recurrence of the tumour in 2 years of follow-up; the patient has a good range of elbow movements of 20–110°.

BACKGROUND

Giant cell tumours (GCTs) are locally aggressive bone tumours accounting for about 20% of bony malignancies in Southeast Asia, with a slight female predominance.^{1 2} Less than 5% of these tumours are known to be malignant and pulmonary metastases occur in 1–3% of them. The peak age is 20–40 years and the most common site is the epiphyseal ends of the long bones, especially the distal femur, proximal tibia and distal radius. Tumours of the distal radius are known to be frequently more aggressive.² Historically, treatment was only simple curettage. This treatment alone resulted in more than 50% of recurrences. At present, treatment consists of extended curettage with power burrs and adjuvants such as phenol or cement. With these techniques, most of the published literature still reports recurrences of about 5–15%.^{3 4} Despite being a common bone tumour in Southeast Asia, no case of isolated medial condyle involvement has ever been described in the literature. It was further interesting to learn about the behaviour of tumours in this rare site, as the other known site of GCTs in upper limb—distal radius, are known to be aggressive.

CASE PRESENTATION

A 22-year-old right-handed woman presented to the outpatient department with increasing swelling and pain over the medial end of her left elbow. The swelling, according to the patient, was gradually progressive over the past 6 months and associated

with pain. There was no history of fever, anorexia, or weight loss associated with the swelling. Examination of the patient revealed a visible swelling on the medial aspect of the distal humerus (figure 1). There was no redness or local rise in temperature. The swelling was mildly tender on palpation. Range of motion of the elbow was restricted, from 30° to 90°. There was no sensory loss in the ulnar aspect of the hand. There was no regional lymphadenopathy.

INVESTIGATIONS

We obtained a plain radiograph and MRI of the swelling of the elbow to characterise the lesion. The radiograph revealed an expansile radiolucent lesion in the medial end of the distal humerus (figure 2A, B). The swelling was epiphyseometaphyseal in location. It was not associated with a periosteal reaction or soft tissue component. It belonged to Campanacci grade 2.⁵

The MRI of the elbow revealed a solid lesion in the medial aspect of the elbow with no breach of cortex (figures 3 and 4). No neurovascular involvement was seen.

GCT is very rare at the presented site. The differential diagnosis included infective lesions such as

Figure 1 Clinical photograph at presentation showing a medial swelling in elbow.

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Figure 2 (A and B) Anteroposterior and lateral X-rays showing eccentric expansile lytic lesion in medial condyle.

tuberculosis, metastasis from occult primary, lymphoma, malignant histiocytomas or benign lesions such as cysts. In order to differentiate infection from tumour, and to establish the benign/malignant nature of the lesion, an open biopsy was planned. If the biopsy would have proved tuberculosis, the subsequent surgery would have been less radical with commencement of

Figure 3 T2-weighted images showing increased signal intensity changes in medial condyle with intact cortices marked with arrow.

antitubercular therapy. However, if the biopsy showed a high-grade malignancy, a radical excision would have had to be planned.

To be sure of the definitive treatment, a prior open biopsy was performed and sent for histopathological examination.

Figure 4 T1-weighted images showing a mass lesion in medial condyle of distal elbow marked with arrow.

Figure 5 Histopathology of tumour showing multiple giant cells with mononuclear stromal cells.

Histology sections of the lesion revealed multiple multinucleated giant cells surrounded by mononuclear stromal cells (figure 5). Pus culture revealed no growth. On the basis of the

Figure 6 Intraoperative photograph showing tumour, neurovascular bundle retracted with feeding tube and common flexor origin.

Figure 7 AP and Lat radiograph showing no recurrence at 2 year follow up.

histopathology, a diagnosis of GCT of the medial condyle of humerus was established.

TREATMENT

The patient was planned for extended curettage. An anterior approach was used. A medial collateral ligament and a common flexor origin attachment were secured and removed of their origin. The neurovascular bundle was identified and the tumour was removed. Curettage was performed and was extended with bone cement. Olecranon fossa was spared and ulnohumeral articulation was preserved (figure 6). Medial collateral ligament and common flexor origin were attached to the remaining bone. A drill hole was made through the intact remaining bone. Locked sutures were passed through the proximal portion of medial collateral ligament and common flexor origin, and were passed through the created drill hole. The elbow was found to be relatively stable. The wound was closed under a drain. There were no wound-related complications.

OUTCOME AND FOLLOW-UP

The patient was given a plaster slab for 3 weeks following which elbow mobilisation was started using a hinged elbow brace. The patient gained a good range of functional movement of 20–100°. No evidence of recurrence was seen over 2 years of follow-up (figure 7).

DISCUSSION

The distal humerus is a very rare site for a GCT. Only one case report was found in the literature involving distal humerus⁶ and none were found involving the isolated medial condyle. In treating 93 patients of GCT, Gupta *et al*⁷ did not report a single case of GCT of the elbow.

GCT of the elbow poses a surgical challenge. Recurrence is always a concern in the event curettage is chosen as treatment modality.⁸ En bloc excision and reconstruction are also difficult in this location.

Autograft reconstruction as in cases of the distal radius are not possible. Nor is complete excision, as is possible in the ulna or fibula, without significant functional loss. Allograft has high a complication rate and poor availability. Total/hemi elbow

replacement requires removal of the tumour and replacing of ulnohumeral articulation with stemmed hinged implants. The results of the procedure are not always favourable, particularly after tumour resection. Guo *et al*⁹ showed that 3 of 18 implants post tumour failed or loosened in 5 years and suggested that elbow replacement be used when no other option is viable. Age and cost make prosthetic replacement a difficult choice. Moreover, prosthetic replacement can always be taken up as a second procedure in case of recurrence, instability or residual pain.

Our treatment in this case was based on Campanacci grading.⁵ Campanacci grade 1 and 2 lesions usually do well with extended curettage alone, or with bone graft or cement reconstruction. They also are found to have the best functional results. Campanacci grade 3 lesions require resection of the entire lesion and reconstruction when the extraosseous soft

tissue component is large. This case had a grade 2 lesion and extended curettage was planned. Since the elbow was stable after tumour curettage, no reconstruction modality was considered.

Contributors JP, AM, TB contributed to the idea of the manuscript, writing of the manuscript, collection of data and final proof reading, along with management of the patient.

Competing interests None declared.

Patient consent Obtained.

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Learning points

- ▶ Medial condyle of the humerus is a very rare site for a giant cell tumour.
- ▶ The tumour may not be as aggressive as other known sites of upper limb GCT, such as the distal radius, and bone salvage should be tried before prosthetic replacement.
- ▶ Extended curettage may give good results in lower grade tumours, even in rare sites.

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