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Case Report

A rare presentation of recurrent chondroblastoma of scapula, acromion and lateral end of clavicle

Sandeep Kumar Yadav[1], Aakash Kumar Choudhary[1], Prabodh Kantiwal[1], Rajesh K Rajnish[1], Saurabh Gupta[1], Abhay Elhence[1], Sushil Kumar[1], Deepak Vedant[2]

[1]Department of Orthopaedics, All India Institute of Medical Sciences (AIIMS), Marudhar Industrial Area, 2nd Phase, M.I.A. 1st Phase, Basni, Jodhpur, Rajasthan 342005, India; [2]Department of Pathology, All India Institute of Medical Sciences (AIIMS), Marudhar Industrial Area, 2nd Phase, M.I.A. 1st Phase, Basni, Jodhpur, Rajasthan 342005, India

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Abstract: About 1% of primary bone tumours are chondroblastoma, which develop from secondary ossification centers of long bones, preferably. The scapula, clavicle, and acromion are the rarest sites for this tumour. The recurrence rate is 14-18%, depending on the site of origin. There are various treatment options, but extended curettage and bone grafting are the main treatment modalities for chondroblastoma. In cases of recurrence, marginal excision and wide local excision are the treatments used. Here we report a recurrent tumour in that location that was removed by wide local excision. After 2 years of follow-up, there were no signs or symptoms of recurrence noted. This case is notable for its rare site of occurrence and successful surgical management without any episodes of reoccurrence after a 2-year follow-up period.

Keywords: Chondroblastoma, scapula, recurrent, wide local excision, chickenwire

Introduction

Jaffe and Lichtenstein first used the name "benign chondroblastoma" to characterize a rare neoplasm that prefers the long bones' epiphyses and set it apart from giant-cell tumours of the bone. About 1% of primary bone tumours are chondroblastoma, which seem to develop from secondary ossification centers of long bone, preferably. There is no region of the axial or appendicular skeleton that can be excluded, despite the fact that the hip, shoulder, and knee are the most frequently affected areas. The majority of lesions appear during the epiphyseal development phase of long bones in adolescence. Involvement of flat bones such as the scapula and acromion are quite rare. Patients initially experience localized pain and discomfort, followed by swelling and restricted movement of the nearby joint. The majority of patients preferred treatment of choice is extended curettage and bone grafting. Other modalities of treatment for chondroblastoma are marginal excision, en-block resection, and wide local excision. **Table 1** providing with review of literature of chondroblastoma of scapula and acromion.

Case summary

A 41-year-old male patient came to the outpatient department of the tertiary care centre with complaints of pain in his right shoulder for 8 years. Pain increased with passive range of motion at the shoulder joint. There was no history of trauma or falls. Previously, two failed attempts at surgery were made in order to get relief in the form of extended curettage and bone grafting.

On examination, a well-defined swelling of firm to hard consistency was elicited over the spine of the scapula. It was associated with localised tenderness and restricted range of motion at the shoulder joint. Laboratory findings were non-significant, with haemoglobin 11.6 g/%, total leucocyte counts of 8000/mm^3, erythrocyte sedimentation rate of 8 mm at 1 hour, and C-reactive protein level of 1 mg/dl.

Table 1. Review of literature of chondroblastoma of scapula and acromion

	Case source	Age/Sex	Course and treatment	Outcome
1	Wellmann et al. (1969) [1]	17 year/male	1. Initially misdiagnosed as fibrous dysplasia on biopsy, the tumour expanded uncontrollably for ten years, destroying the scapula and invading the shoulder joint. 2. Forequarter amputation. 3. 14 years after amputation, pulmonary metastases. Lobectomy was used to remove it.	1 year following the lobectomy alive with respiratory symptoms
2	Wirman et al. (1979) [2]	38 year/male	Pulmonary metastases 33 years after the initial surgery.	9 years after the pulmonary metastasis, he died
3	Resendes et al. (1991) [8]	31 year/male	Not mentioned.	Not mentioned
4	Holt et al. (1995) [4]	29 year/male	Open biopsy followed by en block resection.	Not mentioned
5	Ozkoc et al. (2006) [7]	53 year/male	En-block resection of tumour.	Multiple metastatic lesions in lungs during 36 months follow up
6	Ozkurt et al. (2008) [5]	41 year/male	Excision & curettage and autologous bone grafting.	No recurrence till 58 months follow-up
7	Arikan et al. (2016) [6]	37 year/male	Excision of acromion and autologous iliac crest bone grafting.	No recurrence till 25 months follow-up
8	Herget et al. (2019) [3]	38 year/male	Excision of tumour and reconstruction of acromion with contralateral iliac crest bone graft and fixation with T plate.	No recurrence till 17 months follow-up

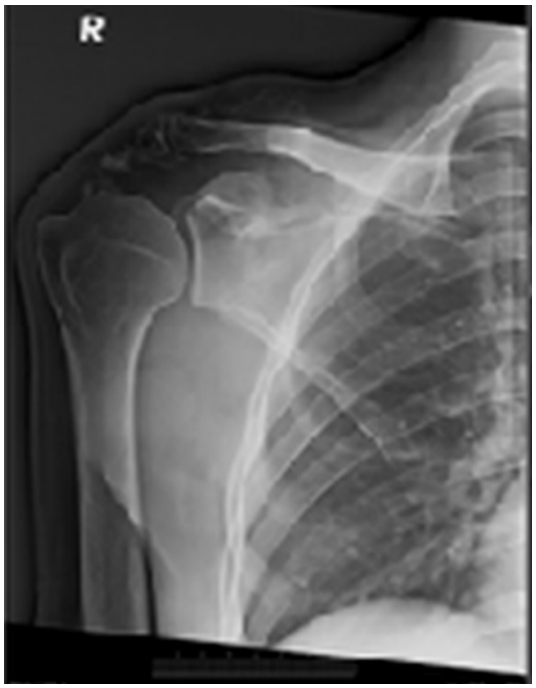

Figure 1. Plain radiograph of shoulder anteroposterior view showing osteolytic lesion with sclerotic margins on spine of scapula, lateral end of clavicle, and acromion.

Roentgenography revealed an osteolytic lesion with sclerotic margins at the spine of the scapula, lateral end of the clavicle, and acromion (**Figure 1**).

Magnetic resonance imaging (MRI) showed large, focal, well-defined heterogeneously enhancing mass in the subcutaneous plane, abutting the spine of the scapula, measuring approx. 5.6 × 8.5 × 2.7 cm in anteroposterior, transverse, and super-inferior dimensions (**Figure 2**).

Histologic examination by core-needle biopsy showed benign tumor cells arranged in a trabecular and singly scattered pattern. The cells were monomorphic, round to oval, exhibiting occasional nuclear grooving and nuclear indentation with eosinophilic cytoplasm and sharp cytoplasmic borders. The tumor was embedded in a chondroid-like matrix and admixed with multinucleated osteoclast-like giant cells. No nuclear atypia, necrosis, or mitosis were seen. Microscopic features were suggestive of chondroblastoma of the right scapula, acromion, and lateral end of the clavicle (**Figure 3**). Histopathologic examination did not reveal any metastasis.

Results of all metabolic, radiological, and histopathologic workups could exclude the diagnosis of brown tumour, giant cell tumour, aneurysmal bone cyst, osteosarcoma, osteoid osteoma, and osteomyelitis. In our case, the patient had already been operated twice for the same in the form of extended curettage and bone grafting. After confirmation on biopsy, the patient was diagnosed with recurrent chondroblastoma of the spine of scapula, and acromion. The patient was planned for a wide local excision of the tumour for recurrent chondroblastoma of the right scapula and acromion and underwent the same (**Figures 4** and **5**). The postoperative period was uneventful. Patient follow-up radiographs were assessed after 2 years and showed no signs of re-occurrence (**Figure 6**).

Discussion

Jaffe and Lichtenstein first used the name “benign chondroblastoma” to characterize a rare neoplasm that prefers the long bones’ epiphyses and set it apart from giant-cell tumours of the bone. Chondroblastoma is a rare type of primary benign bone tumour. It makes up about 1% of all primary benign bone tumours. It was most typically occurring in the epiphysis of long tubular bones in young people, with the most common places being the proximal tibia or femur, distal femur, and proximal humerus. In older persons, the location is more variable, and tumours may affect nontubular bones such as the craniofacial skeleton or bones of the hands and feet. Scapula and acromion involvement, as in our case, is highly unusual [3]. The male gender is predominant, and the peak incidence occurs during the second decade of life [9, 14]. In a review of literature, we have found only 8 cases published to date.

The normal clinical presentation is progressive discomfort and local tenderness, followed by swelling and reduced range of motion of the surrounding joint [6]. The symptom that occurs most frequently is pain, which generally lasts less than a year [13]. The main complaint in our case was pain. He had a palpable mass on the acromion and scapula, and his range of motion was slightly restricted.

Surgery is the preferred treatment for chondroblastoma. The most commonly used method is curettage and bone grafting, which frequently

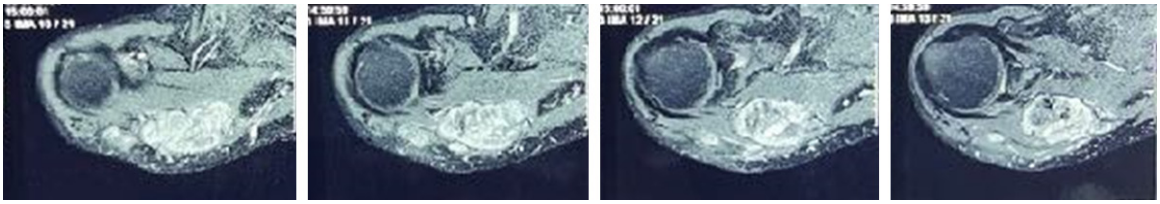

Figure 2. T2-weighted axial section MRI of shoulder showing large, focal well defined heterogeneously enhancing mass in the subcutaneous plane, abutting the spine of scapula, measuring approx. 5.6 × 8.5 × 2.7 cm in anteroposterior, transverse, and superoinferior dimensions.

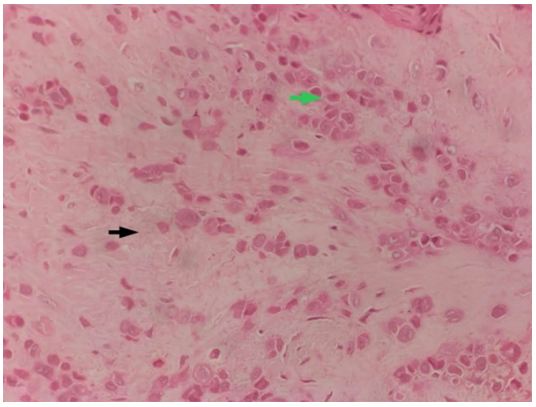

Figure 3. Histopathologic 40× magnification showing uniform round to polygonal chondroblasts arranged in "chickenwire" pattern (green arrow) with scattered multinucleated giant cells with focal areas of chondroid matrix (black arrow).

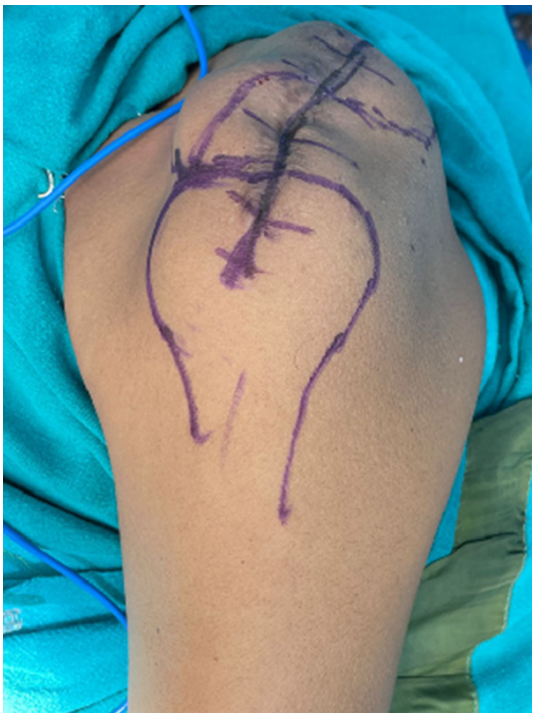

Figure 4. Clinical image of surgical site marking.

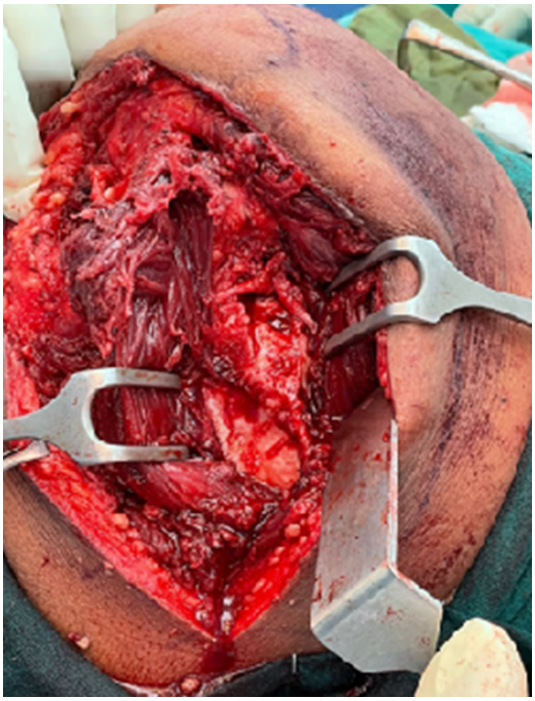

Figure 5. Intraoperative image following tumour resection.

produces satisfactory outcomes [6]. Another treatment option is intralesional excision, the marginal excision, wide local excision and radical excision. Chemical (phenol) and electric cauterization or cryosurgery are examples of complementary therapy. The rate of local recurrence, on the other hand, is quite high, ranging from 14% to 18% depending on the initial location [10-12]. After curettage and reconstruction with bone graft or polymethylmethacrylate bone cement, the recurrence reflection fluctuates between 10 to 35% [13].

Ozkurt et al. reported aggressive chondroblastoma of the acromion. There was no recurrence after 58 months of follow-up in patients treated with excision and curettage and autologous bone grafting [5] and Herget et al. reported no recurrence after 17 months of follow-up in

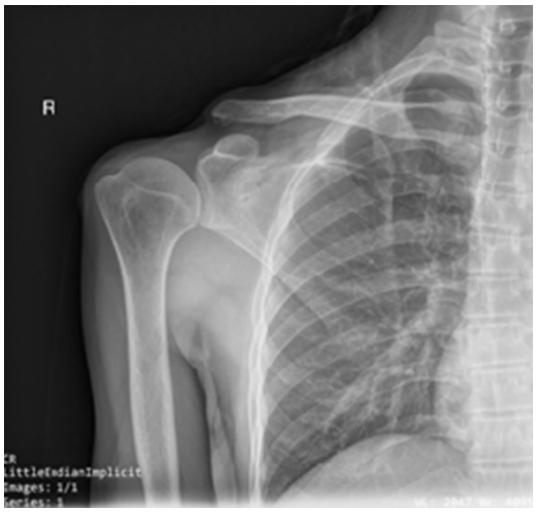

Figure 6. 2 year post-operative follow-up radiograph showing no sign of re-occurrence.

patients treated with excision of tumour and reconstruction of the acromion with contralateral iliac crest bone graft and fixation with T-plate [3].

In the majority of patients, the treatment of choice is the extended curettage and bone grafting. In our situation, the patient had operated 2 times already for the same in the form of extended curettage and bone grafting. So, since our case was recurrent chondroblastoma, the options of treatment were marginal excision and wide local excision. In this case, tumour was removed by wide local excision. Patient follow-up radiographs were assessed after 2 years and showed no signs of re-occurrence (**Figure 6**).

Conclusion

Chondroblastoma at the scapula and acromion is the most uncommon location encountered, with only eight cases had been recorded worldwide to date. Extended curettage and bone grafting remain to be the mainstay of the treatment modality. Recurrence rate is quite high depending upon the site of primary osseous lesion detected.

Disclosure of conflict of interest

None.

Address correspondence to: Aakash Kumar Choudhary, Department of Orthopaedics, All India Institute of Medical Sciences (AIIMS), Marudhar Industrial Area, 2nd Phase, M.I.A. 1st Phase, Basni, Jodhpur, Rajasthan 342005, India. Tel: +91-8890057541; E-mail: aakashchoudhary38@gmail.com

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