Abstract

Introduction
Chondroblastoma is a rare benign bone tumour, which presents as a locally destructive lesion, although metastases is not uncommon. It commonly presents in the second decade of life. It is typically localised in the epiphyses of the long bones. Chondroblastoma is a rare benign tumour which is common in long bones. However, there may be unusual presentations such as those in flat bones (scapula). We report a rare case of chondroblastoma in scapula

Case report
A 17-year-old female was admitted in our institute with complaints of progressive painless swelling of the left scapula for three months. On physical examination there was a firm, large, mild tender mass located at the infraspinous part of the left scapula. Margins were ill defined and gradually merging with the rest of the scapula. Swelling was mobile along with scapula. Through a posterior scapular approach (Das Gupta’s approach), the tumour was excised enbloc along with marginal resection of scapula below the spinoous process. The whole specimen was sent for histopathological examination, which confirmed the diagnosis of chondroblastoma with areas of aneurysmal bone cyst. Postoperative patient recovery was uneventful with complete range of movements.

Conclusion
Radiographic diagnosis of an atypical chondroblastoma is more difficult because of a variety of possible diagnoses, including benign and malignant lesions, classical features may not be appreciable in all the cases, as was seen in our patient. Hence, histopathological examination of lesion is always essential in all cases.

Case report
A 17-year-old female was admitted in our institute with complaints of progressive painless swelling of the left scapula for three months. There was no history of trauma or infection, no history of loss of appetite or loss of weight.

On physical examination there was a firm, large, mild tender mass located at the infraspinous part of the left scapula. Margins were ill defined and gradually merging with the rest of the scapula. Swelling was mobile along with the scapula. Her shoulder movements were normal. There was no pigmentation or venous dilation on the overlying skin. There is ecchymosis over the swelling due to fine needle aspiration cytology (Figure 1).

Plain X-ray showed an expansile, osteolytic lesion in the infraspinous part of the left scapula. Fine needle aspiration cytology showed haemorrhagic fluid with features suggestive of ABC (Figure 2).

CT scan showed an expansile, osteolytic lesion of the left scapula involving the body with soft tissue involvement. The lesion over the left scapula.

Figure 1: Clinical picture of the lesion over the left scapula.
components and cystic areas, thinning and erosion of overlying cortex and narrow zone of transition (Figure 3). The lesion measured about 6.1 × 4.2 × 5.5 cm. No evidence of calcification was seen within the lesion. Features were suggestive of ABC or telangiectastic osteosarcoma.

Magnetic resonance imaging (MRI) with contrast showed a complex cystic mass lesion of the left scapula body medial blade infraspinatus location involving the infraspinatus muscle measuring 4.5 × 6.8 × 6.8 cm (Figure 4). There is destruction of scapula extending into the subscapularis muscles. The lesion showed a soft tissue intensity solid component and cysts showed fluid–fluid layering, the dependent showed minimal T1 hyperintensity. Multiple thick septation and loculations were noted. Solid components showed moderate post contrast enhancement. Rest of scapula spinous and glenoid process appeared normal. Probable diagnosis was suggestive of ABC, round and spindle cell tumours arising from scapula or infraspinatus muscle.

Through a posterior scapular approach (Das Gupta’s approach), the tumour was excised enbloc along with marginal resection of scapula below the spinous process. The whole specimen was sent for histopathological examination which confirmed the diagnosis of chondroblastoma with areas of ABC. Postoperative patient recovery was uneventful with complete range of movements (Figure 5).

Pathological findings were as follows: grossly cut sections showed solid grey white areas with grey brown haemorrhagic areas, friable and multiple cysts were identified, exuded haemorrhagic fluid (Figure 6). Microscopy showed a solid tumour composed of a mixture of sheets of mononuclear cells and giant cells. These mononuclear cells are round to polygonal, have oval bland nuclei, few show longitudinal grooves with a clear cytoplasm, distinct cytoplasmic borders and occasional mitoses. Interspersed among these are multinucleated osteoclastic giant cells, irregular zones of focal calcification (‘chicken wire’) and areas of chondroid differentiation. Also seen are ABC-like areas.

The patient had been followed up for two years with painless and complete range of motion with an X-ray showing no recurrence or lung metastasis. She has gone back to work.

![Figure 2: Plain X-ray showing lytic lesion in inferior angle of left scapula.](image)

![Figure 3: CT scan shows an expansile lytic lesion in the infraspinous part of left scapula.](image)

![Figure 4: MRI (1.5 tesla) with contrast shows an expanding lesion in axial view. Heterogeneous on high intensity on T2 weighted image.](image)

![Figure 5: Post operative recovery of patient.](image)
Case Report

Benign chondroblastoma is a neoplasm of chondrogenic origin predominantly occurring in the epiphysis of cylindrical bones, locally destructive lesion although metastases may occur. The first description of chondroblastoma was given by Codman in 1931, who designated it as an 'epiphyseal chondromatous giant cell tumour'. Jaffe and Lichtenstein differentiated in 1942 the chondroblastoma from giant cell tumours and established the term 'benign chondroblastoma'. Benign chondroblastoma with a secondary ABC in the inferior angle of the scapula has rarely been reported in literature. They can be secondarily involved by an ABC in 10%-15% of cases. Secondary involvement of a chondroblastoma by an ABC is more likely in patients older than 20 years.

The histological diagnosis of typical chondroblastoma is usually not difficult due to their characteristic appearance with rounded or polygonal chondroblasts, multinucleated giant cells, and eosinophilic chondroid extracellular matrix with focal (chicken wire) calcification. Scalloping or expansion of cortical bone may be present. Fine calcifications, either punctate or in rings, may be visible. Cysts are present about 20% of the time and both MRI and CT can define the fluid levels. CT is also useful for defining the relationship of the tumour to the joint, integrity of the cortex, and intralesional calcifications. Diagnosis of chondroblastoma can be arrived at by radiographs when the age of the patient and location of the lesion are seen, which are suggestive of the lesion. Nonetheless, it is important to be aware that radiographic diagnosis of an atypical chondroblastoma is more difficult because of a variety of possible diagnoses, including benign and malignant lesions in the area of predilection.

The above-mentioned imaging features were highly suggestive of a benign, cystic but locally invasive process. The differential diagnosis included is mainly ABC, chondroblastic osteosarcoma, chondrosarcoma and fibrous dysplasia. Generally, ABCs present with pain and swelling of relatively rapid progression. The period between onset of symptoms and treatment is six months or less. Symptoms related to compression of adjacent structures may occasionally be present. In ABC, the feature is more sharply defined margins and has peripheral eggshell calcification indicating that the peristeme is intact around the soft tissue component (a benign radiographic feature). Intralesional fluid-fluid levels are common to both chondroblastomas and ABCs and are, therefore, not generally helpful for distinguishing the two entities. Histological examination is required to make this determination.

Conventional chondroblastic osteosarcoma most frequently (70%-80% of cases) affects tubular bones in the appendicular skeleton, particularly osseous structures around the knee (50%-75% of cases) and they usually arise in the metaphysis, and initial manifestation within the epiphysis is rare. The imaging features reflecting pathohistologically showing lace-like ostoid, abundant hyaline cartilage components, including the coexistence of bone and cartilage forming tumour matrix on radiographs, presence of lobular structure of high signal intensity on T2-weighted images, and peripheral rim and septal enhancement patterns on MRI. In these cases, the diagnosis must be made histologically in the face of conflicting radiographic data. Histologically, its difference from chondroblastoma may be extremely subtle because despite its clinically benign behaviour, chondroblastoma itself is a mitotically active, primitive tumour. Chondroblastic osteosarcomas are rare, but their accurate diagnosis is important because like their more common conventional counterparts, they may metastasise. In case of chondrosarcoma, which appears most commonly in metaphysis and the predilection age is moderately old with 30–60 years old. However, chondrosarcoma, osteosarcoma and fibrous dysplasia can’t be excluded completely. So biopsy is necessary to confirm the diagnosis.

Usually the treatment of benign chondroblastoma with ABCs is intralesional curettage resection and bone grafting with possible use of adjuvant liquid nitrogen or phenol. Here, we went for en bloc resection. Excision of the tumour is sufficient in most cases. In this context, the present case appears to be unique due to (1) the scapular location of the tumour; (2) diagnostic challenges and (3) treatment options.

The need for a combined and extended clinical, radiological and histological approach to the correct diagnosis of benign chondroblastoma with secondary ABC is emphasised. Chondroblastoma is a very uncommon condition. However, there may be unusual presentations in flat bones. As shown in the present patient, most of the classic criteria such as typical location and radiological appearance are not met in this case. However, the occurrence of metastatic and malignant behaviour of chondroblastoma is extremely

Figure 6: Intra operative tumor mass.

Discussion

Benign chondroblastoma is a neoplasm of chondrogenic origin predominantly occurring in the epiphysis of cylindrical bones, locally destructive lesion although metastases may occur. The first description of chondroblastoma was given by Codman in 1931, who designated it as an ‘epiphyseal chondromatous giant cell tumour’. Jaffe and Lichtenstein differentiated in 1942 the chondroblastoma from giant cell tumours and established the term ‘benign chondroblastoma’. Benign chondroblastoma with a secondary ABC in the inferior angle of the scapula has rarely been reported in literature. They can be secondarily involved by an ABC in 10%-15% of cases. Secondary involvement of a chondroblastoma by an ABC is more likely in patients older than 20 years.

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The need for a combined and extended clinical, radiological and histological approach to the correct diagnosis of benign chondroblastoma with secondary ABC is emphasised. Chondroblastoma is a very uncommon condition. However, there may be unusual presentations in flat bones. As shown in the present patient, most of the classic criteria such as typical location and radiological appearance are not met in this case. However, the occurrence of metastatic and malignant behaviour of chondroblastoma is extremely
rare. Hence, we recommend that all patients with chondroblastoma need detailed evaluation\textsuperscript{1,11,12}.

Diagnosing the case of a chondroblastoma in scapula can be challenging. Certain tumours may present in an unusual fashion. Chondroblastoma are rarely seen in flat bones and present without any classical radiological findings. Radiologically, all classical features may not be appreciable in all the cases, as was seen in our patient. Hence, histopathological examination\textsuperscript{6–9} of the tumour is always essential in all cases.

Conclusion
Therefore, we strongly suggest multiple sections of specimen to get a distinct histological diagnosis. However, the occurrence of metastatic and malignant behaviour of chondroblastoma is extremely rare. Excision of the tumour with a regular follow-up and thorough looking for any local recurrence or metastasis is the key to successful management of such cases.

Consent
Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

References