

Chondroblastoma in the Manubrium of Sternum: A Case Report

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ABSTRACT

Tumors of the sternum are rare. Chondrogenic tumors of the manubrium of the sternum are extremely rare. Chondroblastoma of the manubrium of sternum has not been reported previously in the English medical literature. The purpose is to present a rare tumor occurring at an unusual site and its successful management. This case appears to be the first reported case of chondroblastoma occurring at manubrium of the sternum. The present case report will increase awareness of this rare tumor occurring at this unusual site thereby avoiding any chance of misdiagnosis.

KEY WORDS: Chondroblastoma; Manubrium; Tumor.

INTRODUCTION

The chondroblastoma is a rare benign tumor of cartilage, making up less than 1% of all bone neoplasms¹. In 1942, Jaffe and Lichtenstein first described the lesion as a chondrogenic tumor developing at the epiphysis of a long bone and was initially considered to be an osteoclastoma variant.²

It is normally a benign primary cartilaginous neoplasm consisting of foci with polygonal chondroblasts and deposited osteoclastic multinucleated giant cells, which arises in the epiphyses. Men are more affected (60%) than women. Most common symptoms are localized pain & swelling. In the majority of cases, the first symptom is often pain and tumor may have been present for some time before it is discovered.

Although chondroblastomas can occur throughout life, most chondroblastomas occur during active growth of epiphyseal plate so they are most common in children and young adults between the ages of 10 and 20 years.³

A chondroblastoma usually arises in a long bone tibia, femur, and humerus.⁴, more rarely in the axial bone (pelvis, spinal column, ribs, sternum).

Our report describes a case of chondroblastoma in the manubrium of sternum in a 17-year-old boy, which appears to be unique in terms of anatomical location.

To our knowledge, chondroblastoma of the manubrium of the sternum has not been reported previously in the English medical literature. The purpose is to present a rare tumor occurring at an unusual site and its successful management.

CASE REPORT

We report a case of 17 years old male patient with complaints of swelling in upper part of the sternum for last 8 months. It was initially small, but gradually increased in size. As it grew in size, he started having pain in same region which was mild to moderate in nature, aggravated by physical activities. He doesn't give any previous history of trauma, no history of Tuberculosis or such problem in family members. On examination, there was a swelling about 5x6cm at manubrium which was firm in consistency, not mobile and mildly tender. Overlying the swelling was a biopsy scar mark.

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Figure. 1



Figure. 2

CT scan (Figure 1, Figure 2) shows expanded manubrium sterni with erosion in the cortex of manubrium sterni with impression of ? Neoplastic lesion ? osteomyelitis.

Incisional biopsy report was suggestive of chondroblastoma. All the investigations of blood parameters were within normal limit.

Surgery was performed, intra operative finding was of a firm hard highly vascular whitish friable mass involving the manubrium. Excision of manubrium with bilateral Pectoralis major advancement flap closure was done. Post operative period was uneventful. The patient was discharged in 7th POD.



Figure. 3 Intraoperative finding

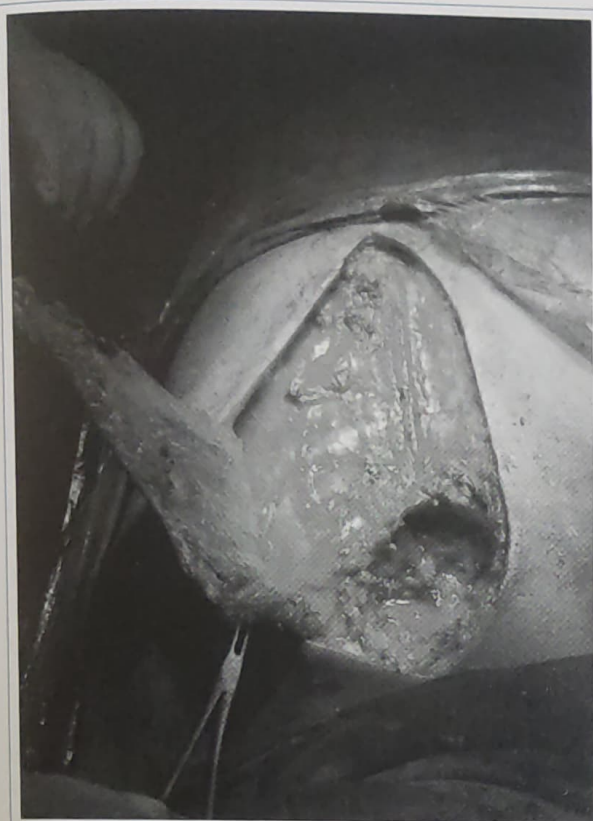


Figure. 4 Defect after removing manubrium



Fig.5 Defect closed by bilateral Pectoralis major advancement flap

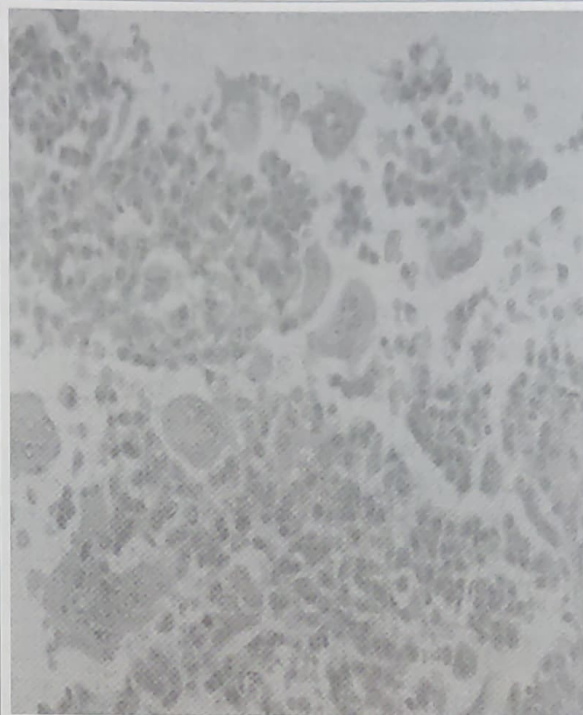


Figure 6. specimen shows tumor cells arranged in sheet with osteoclast like multinucleated giant cells.

Individual cells are uniform, round to polygonal with eosinophilic cytoplasm.

The nuclei shows pleomorphism and hyperchromasia with longitudinal grooves.

DISCUSSION

In 1931, Codman classified it as a chondromatous variant of giant cell tumors, when he described these lesions in the proximal humerus (Codman Tumor)⁵. Chondroblastoma is a rare tumor. It occurs in the second decade of life with a male: female ratio of 2:1^{6, 13}. Chondroblastoma has a predilection for the epiphysis or apophysis of the distal femur, proximal humerus, proximal tibia.. Pain and localized swelling, usually of several months duration are the main presenting complaints in patients with chondroblastoma^{7,14} as was also seen in this patient.

As in our case, on radiological examination, signs of asymmetric epiphyseal destruction with bone expansion and sclerotic margins can be seen..

As far as differential diagnosis of chondroblastoma is concerned, conditions mimicking chondroblastoma radiologically include bone abscess, giant cell tumor, chondromyxoid fibroma, osteoblastoma,

enchondroma, intraosseous ganglion, clear cell chondrosarcoma, osteonecrosis, and subchondral geode. Biopsy of the lesion is hence mandatory to confirm the diagnosis.

The histopathological examination of chondroblastoma reveals relatively benign looking tumor, characterized by highly cellular and relatively undifferentiated chondroblast-like cells that are rounded or polygonal with distinct outlines and multi-nucleated osteoclast-type giant cells arranged singly or in groups.¹⁰

Malignant transformation typically occurs many (usually >10) years after treatment of the initial benign lesion. It occurs in 1-3% of patients. Pulmonary metastases may develop along with the malignant bony lesion.⁸ Annual chest X-Rays must hence be done for 5 years after treatment, for pulmonary metastasis.

Management of chondroblastoma consists of curettage with or without burring and filling up the defect with bone graft and/or bone cement. In our case there was a huge defect after curettage of the manubrium, so we reconstructed the chest wall defect with the help of bilateral pectoralis major flap. Various other surgical techniques, including open and endoscopic curettage, marginal resection, curettage with fat implantation, resection with radio frequency ablation, and osteochondral autograft transfer are available nowadays.¹¹ Despite better and more aggressive treatment methods, recurrence rates range from 8 to 30%, whereas systemic metastasis rates range from 0.8 to 6%.¹² Factors contributing to recurrences include: young age, aneurysmal bone cyst components, aggressiveness, anatomic site, and inadequate surgery.¹²

CONCLUSION

This case appears to be the first reported case of chondroblastoma occurring in the manubrium of the sternum. This case report will increase awareness and possibility of this rare tumor occurring at unusual site thereby avoiding any chance of misdiagnosis. Aggressive curettage as there is not much role of the radiotherapy, bone cement and chest wall reconstruction when the defect is large are preferred treatment methods. In this case, we successfully treated the patient with aggressive curettage making a huge defect at the site of the manubrium followed by the chest wall reconstruction with bilateral pectoralis major advancement flap.

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