

# Clinical, radiological and pathological correlation of giant cell tumor of rib

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## Abstract:

Giant cell tumor (GCT) is a primary benign neoplasm of bone accounting for 5% of all skeletal tumors. Although considered benign, it has propensity for local recurrence, distant metastasis as well as malignant transformation. GCTs of bone usually arise in the epiphyseal region of the limbs, and rarely it affects the ribs. We report a case 52-year-old male who presented with left sided rib mass. Total excision of rib mass with thoracic reconstruction with prolene mesh was done. Microscopic examination of the mass showed features of giant cell tumor. Authors consider the rarity location of this entity along with unusual clinical presentation worth to publish.

**Keywords:** Giants cell, Benign, metastasis, Epiphyseal.

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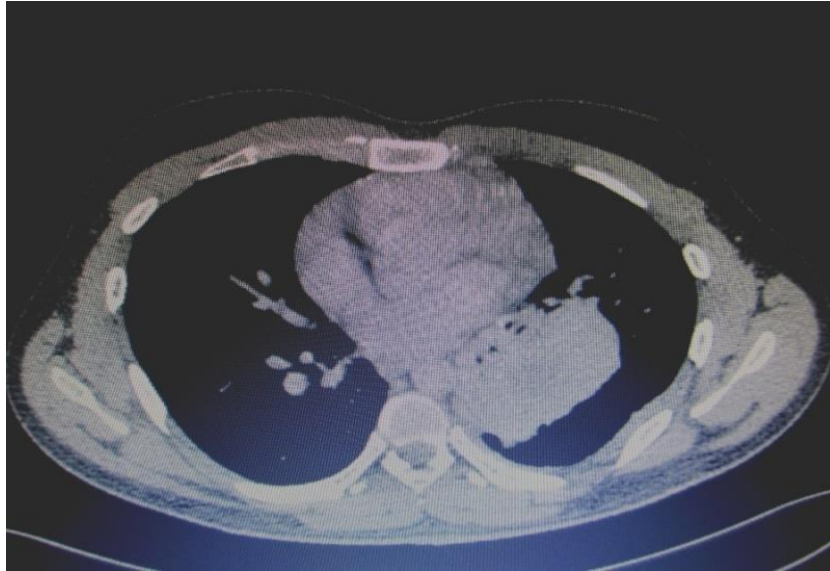
## Introduction:

Giant cell tumor also known as osteoclastoma is a benign but locally aggressive neoplasm with propensity for local recurrence, distant metastasis as well as malignant transformation (1). It typically affects the epiphyseal and metaphyseal region of long tubular bones (2). 75% of these tumors develop around knee joint. About 5% affect flat bones, especially those of the pelvis. Occurrence of a GCT in the axial skeleton is considered a rare incidence with sacrum being the commonest site, while vertebral bodies are involved less often. Giant cell tumor of the rib is exceedingly rare entity with incidence of about less than 1% (3). To date, only a few cases of GCT of the rib have been reported. GCT is seen in adults between 20-30 years and is slightly more common in females. Radical surgery is the treatment of choice (4).

## Case History:

We report a case of 52-year-old male who came with the complaints of left sided non-radiating

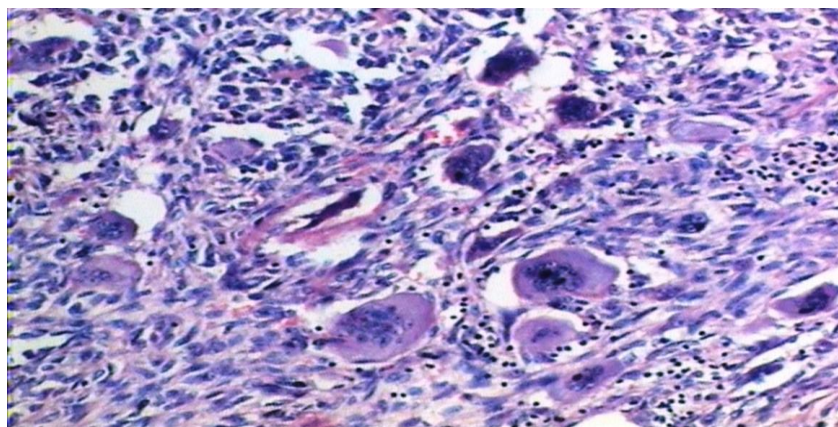
chest pain since 2 months. His medical history was unremarkable. Clinical examination, revealed localized tenderness at the level of fifth rib. Hence he was referred for computed tomography (CT) scan of thorax which revealed a expansile lytic lesion with large heterogeneously enhancing soft tissue component involving posterolateral aspect of fifth rib (fig. 1) with subcentimetric lymph node in mediastinum. Laboratory tests (including serum calcium, phosphorus, acid phosphatase, and alkaline phosphatase) were within normal limits. Left sided thoracotomy with total excision of rib mass with thoracic reconstruction with prolene mesh was done. An encapsulated mass totally measuring 3x3x1cm was received for histopathological examination. Cut section showed greyish whitish firm solid mass with attached part of rib (fig. 2). Microscopic examination revealed features of giant cell tumor characterized by numerous giant cells distributed evenly in a vascular stroma containing spindle cells along with reactive bone formation. Cellular atypia or abnormal mitotic figures were absent (fig 3 and fig. 4).



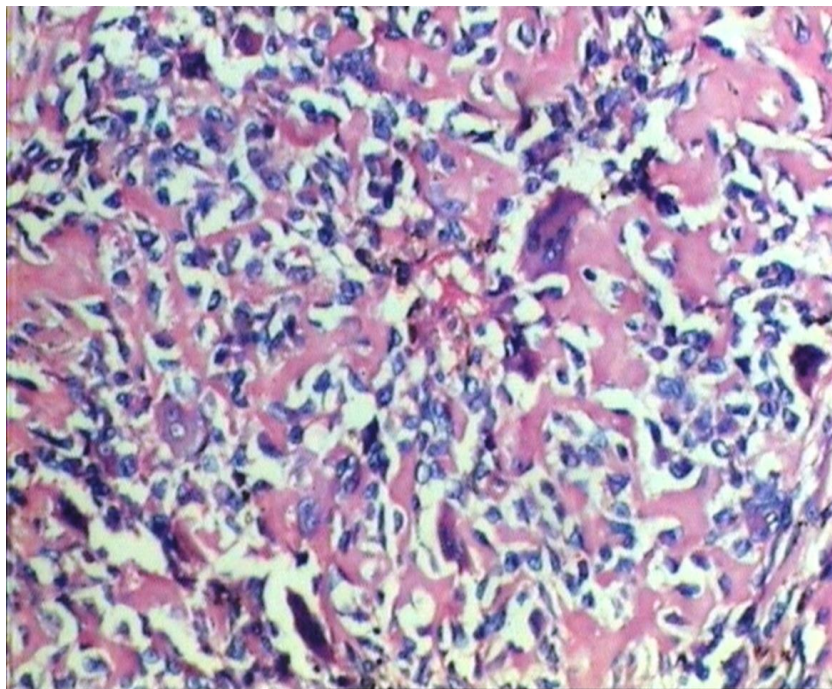
**Figure 1:** Chest CT shows chest wall mass arising from posterolateral aspect fifth rib



**Figure 2:** Encapsulated solid grey white mass measuring 3cmx3cmx1cm with attached part of rib



**Figure 3:** Microscopy shows biphasic tumor composed of numerous evenly distributed giant cells and stromal cells (H&E, X 400)



**Figure 4:** Microscopy also shows reactive bone deposition (H&E, X 400)

#### Discussion:

Giant cell tumor is a primary benign neoplasm of bone accounting for 5% of all skeletal tumors (5). GCTs are usually found in the end of long bones, most often the distal femur, proximal tibia, and distal radius. The rib is a rare site with an incidence of less than one percent (3). Usually it affects the posterior end of the rib (6). In this article, we reported a case of GCT originating from posterolateral aspect of the rib. Because of its rarity, GCT arising from the rib is difficult to diagnose clinically. Clinically it present with insidious onset of pain and swelling at the affected site. This non-specific nature of symptoms many times leads to misdiagnosis of GCT as infection or as chronic sprain (7). When it occurs in rib clinically, it can be mistaken for breast abscess or mediastinal tumor. Hence true cut biopsy is important for correct diagnosis. Histologically close differential diagnosis in our case were other giant cell rich lesions like giant-cell- rich osteosarcoma, giant cell rich soft tissue sarcoma and fibrous dysplasia. GCT show uniform distribution of giant cells while others show irregular distribution with large amount of stroma devoid of giant cells and areas where there is collection of many giant cells. Apart from it giant cell rich osteosarcoma of bone show neoplastic osteoid formation and cellular atypia. Similarly osteosarcoma of soft tissue show malignant morphology. Absence of metastatic bone without osteoblastic rimming rule out fibrous dysplasia. GCT's are aggressive tumors showing local recurrence in 20-40% and pulmonary metastasis in 2% (8). So proper diagnosis and close

follow up of patients by radiological imaging of the involved area and the lung is required. Follow up examination of our patient was uneventful. The treatment choice of patients with potentially completely resectable tumors is surgery (9). Wide resection is employed because of biologically aggressive nature of the tumour. Tumors that are not amenable to surgical resection are treated with moderate-dose radiotherapy (10). Authors consider the rare location of this entity along with unusual clinical presentation in the form of occurrence in 52-year-old male worth to publish.

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