Acta Orthop. Belg., 2007, **73**, 541-543

CASE REPORT

Giant cell tumour of the anterior arc of a rib presenting as a breast lump : A case report

Muddassir RASHID, Syed Zafar ABBAS, Ibne AHMAD, Faisal HAQUE, Faisal SHADAB

From Jawaharlal Nehru Medical College Hospital, A.M.U., Aligarh India

Giant cell tumour (GCT) of the anterior arc of a rib is a very rare occurrence and quite often the diagnosis is delayed. We report a case of GCT of a rib arising from the anterior arc which presented as a breast lump. The diagnosis of GCT was considered in the differentials only when percutaneous biopsy revealed multinucleated osteoclastic giant cells. Further diagnosis was confirmed by spotted oblique radiographs and computed tomography (CT). Surgical excision with repair of the chest wall by a mesh was done. The postoperative histopathological examination of the resected specimen confirmed the preoperative diagnosis of giant cell tumour. The present article aims to aware the reader about such rare presentations of GCT, which should be included in the differential diagnosis of a tumour originating from the anterior arc of the rib.

Keywords : Giant cell tumour ; anterior arc ; rib ; breast mass ; CT.

INRODUCTION

Giant cell tumour (GCT) commonly occurs in the long bones. Rarely a GCT can occur in ribs where it usually involves the posterior element. Involvement of the anterior arc of a rib is very rare with only few cases recorded anecdotally in the literature. This article highlights such a rare presentation of GCT, which should be included in the differential diagnosis of a tumour originating from the anterior arc of the ribs.

CASE REPORT

A 28-year-old female presented with gradually increasing swelling of her left breast over the past 18 months. There was no history of discharge from the breast or any significant trauma in the past. On physical examination the swelling was 15 cm × 11 cm in size, mildly tender and hard in consistency with a smooth surface. The margins were indistinct, with normal overlying skin (fig 1). The swelling moved with the respiratory movements of the chest. Initial diagnosis of a breast mass was made and percutaneous needle biopsy was advised, which showed osteoclast-like multinucleated giant cells and spindle shaped mononuclear cells consistent with a giant cell tumour. A radiograph of the

■ Muddassir Rashid, Resident.
■ Syed Zafar Abbas, MD, Senior Reader.
■ Ibne Ahmad, MD, Consultant, Professor.
■ Faisal Haque, MD, Consultant.
■ Faisal Shadab, DMRD, Resident.

Department of Radiodiagnosis, Jawaharlal Nehru Medical College Hospital A.M.U., Aligarh, India.

Correspondence : Dr Muddassir Rashid, 301 Rifa Apartments, Medical Road Dodhpur, Aligarh, U.P, India 202002.

E-mail : beighmuddassir@yahoo.com, beighmuddassir@gmail.com.

No benefits or funds were received in support of this study

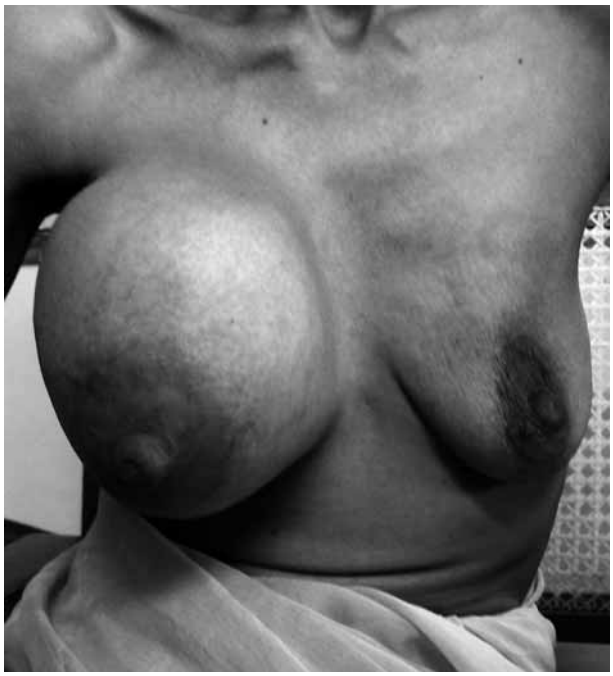

Fig. 1. — Clinical photograph of the patient showing a large right sided breast lump, as can be compared with the opposite breast. The overlying skin and nipple appear normal.

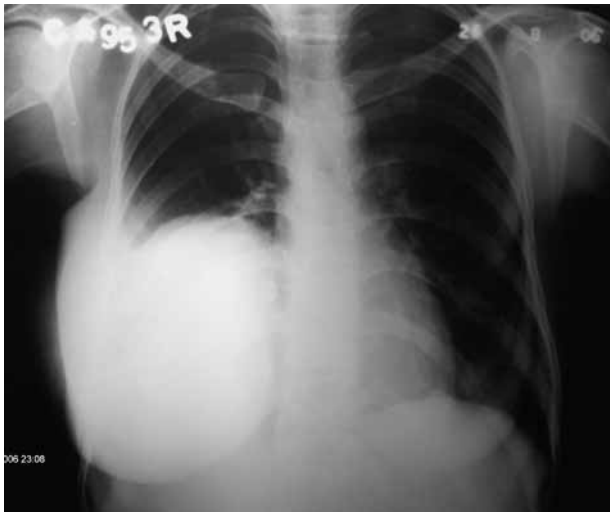

Fig. 2. — Posteroanterior radiograph of the chest showing a soft-tissue mass in the right lower zone. On this radiograph the exact origin of the mass could not be elicited.

chest was performed which revealed a soft tissue density mass overlying the right lower hemithorax (fig 2).

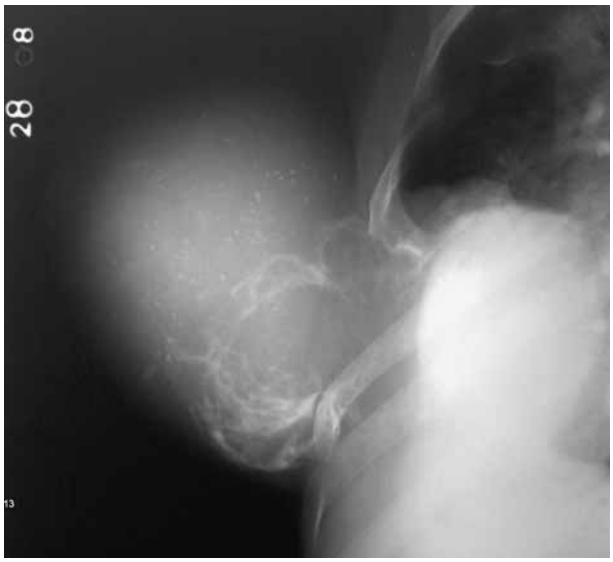

Fig. 3. — Oblique spotted radiograph highlighting an expansile lytic lesion of rib anteriorly.

Further investigations included an oblique spot radiograph which showed an expansile lytic lesion arising from the anterior aspect of the right fourth rib with associated soft tissue and evidence of calcification (fig 3). Computed tomography revealed an expansile lytic lesion having a soft tissue centre and a peripheral rim of cortical bone. The mass had both intrathoracic and extrathoracic components (fig 4).

The patient underwent surgical excision of the lesion and the defect in the thoracic wall was covered with a Marlex mesh. Histopathological examination of the mass showed spindle shaped mononuclear cells with uniformly dispersed multinucleated giant cells. The pathological diagnosis was consistent with the preoperative diagnosis of giant cell tumour.

DISCUSSION

Giant cell tumour is an uncommon neoplasm of bone, with the epiphyseal portions of long bones being the sites of predilection (*10*). GCT rarely involves the ribs, with the epiphysis of the head and the tubercle being the most common sites of involvement (*3, 5, 6*). Individual cases have been

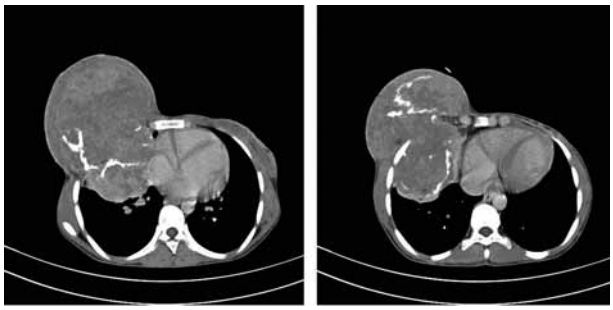

Fig. 4. — CT Scan of thorax showing an expansile lytic lesion of the right fourth rib having a soft tissue component with peripheral rim calcification. The mass is seen abutting the pericardium, however during surgery it was easily separable.

reported in the scapula, sternum and ribs (*1, 9*). Giant cell tumour of a rib in its anterior segment is a rare occurrence and only few cases have been reported in the literature (*2, 4, 8*). Because of its rarity, GCT arising from the ribs is difficult to diagnose, especially when the tumour is located in the anterior arc of the ribs. Our case initially presented as a breast mass and suspicion that it could be a GCT was raised only when a percutaneous biopsy revealed multinucleated giant cells. The diagnosis was made with appropriate clinical, radiological and pathological correlation. The other primary bone tumours that contain osteoclast-like giant cells include chondroblastoma, chondromyxoid fibroma, giant cell osteosarcoma, giant cell reparative granuloma and brown tumours of hyperparathyroidism.

Although GCT is described as benign, it has a high rate of local recurrence and can metastasize to the lungs. Thus, wide surgical excision and curettage with regular follow-up remains the mainstay of management. In one series 81% of recurrences occurred within two years (*7*), although it is generally agreed that the recurrence rate can be markedly reduced with appropriate technique. Preoperative planning includes appropriate radiological assessment of the extent of the lesion. For the posteriorly located tumours close to the vertebral column, MRI is useful and is superior to CT, to see for any intraspinal extension of the mass in which case both laminectomy and thoracotomy may be required to achieve complete resection. On the other hand MRI is inferior to CT in demonstrating cortical destruction and mineralized structures. The presence of a shell of bone around the tumour is an important clue to its benign character.

We conclude that GCT, although a rare tumour, should be included in the differential diagnosis of a tumour originating from the anterior arc of the ribs. The appropriate clinical, radiological and pathological assessment may help in making the diagnosis and avoid delay in management of the patient. Further we recommend an aggressive surgical resection as the first choice of management for this type of tumour owing to its high potential for local recurrence and more rarely for metastasis.

REFERENCES

1. **Bay JO, Bignon YJ, Gros P *et al.*** Giant cell tumor of the sternum. Report of a case with a 17q isochromosome. *Rev Rhum Engl Ed* 1999 ; 66 : 49-52.
2. **Brenner P, Warbanow FK, Krause-Bergmann A, Berger A.** [Rare differential diagnosis of breast tumour. Giant cell tumour of the ribs.] (in German) *Langenbecks Arch Chir* 1997 ; 382 : 64-68.
3. **Bonnet D, Barriere JR, Zimmermann JM *et al.*** [Giant cell tumors of the ribs. Apropos of a case.] (in French) *Rev Pneumol Clin* 1992 ; 48 : 79-85.
4. **Gupta V, Mittal R.** Giant cell tumor of rib : rare location on the anterior aspect. *Arch Orthop Trauma Surg* 2000 ; 120 : 231-232.
5. **Hanna RM, Kyriakos M, Quinn SF.** Case report 757. *Skeletal Radiol* 1992 ; 21 : 482-488.
6. **Hochberg LA.** Primary tumours of the rib : review of the literature and presentation of 11 cases not reported previously. *Arch Surg* 1953 ; 67 : 566-594.
7. **Hutter RVP, Worcester JN, Francis KC, Foote FW, Stewart FW.** Benign and malignant giant cell tumor of bone. A clinicopathological analysis of the natural history of the disease. *Cancer* 1962 ; 15 : 653-90.
8. **Jae Seung Shin, In Sung Lee, Aeree Kim, Baek Hyun Kim.** Giant cell tumor originating from the anterior arc of the rib. *J Korean Med Sci* 2002 ; 17 : 849-851.
9. **Park YK, Ryu KN, Han CS, Kim YW, Yang MH.** Giant cell tumor of the scapula associated with secondary aneurysmal bone cyst. *J Korean Med Sci* 1991 ; 6 : 69-73.
10. **Unni KK.** *Dahlin's Bone Tumours. General Aspects and Data on 11087 cases*. 5th ed, 1996. Lippincott Raven Press, Philadelphia.