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Chondrosarcoma of a rib

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ABSTRACT

Chondrosarcoma of a rib is a very rare malignant tumor of the bone. Most patients were present with an enlarging painful anterior chest wall tumor. We present a case of an asymptomatic 29-years old female with a tumor size of 10 cm × 12 cm on the left anterior chest wall involving the 8th rib. CT scan with intravenous contrast is the gold standard for radiological imaging and planning for surgery. Since chondrosarcoma is less sensitive to chemotherapy and radiotherapy, surgical treatment with extensive resection with a sufficient margin is considered first line treatment.

1. Introduction

Chondrosarcoma is a malignant tumor exhibiting neoplastic chondrogenesis. It often arises in the pelvis or long bones, and is relatively rare for chondrosarcoma to arise in the rib [1–2]. CT with intravenous contrast is the gold standard radiographic study for diagnosis and operative planning [3–4]. Since they do not respond well to chemotherapy or radiotherapy, surgical treatment with early diagnosis and radical excision with widely negative microscopic margins at the initial operation is the treatment of choice [2]. Ten years survival rate after wide resection is 96.4% compared to 65.4% for those who had local excision only [1]. The decision of whether to perform reconstruction is based on lesion location and defect size. Chest wall reconstruction is recommended when at least 3 ribs are resected or the size of the chest wall defect is >3 cm [5]. A case of an asymptomatic 29-years old female with a tumor size of 10 cm × 12 cm on the left anterior chest wall involving the 8th rib is presented through this paper which was later diagnosed histologically as chondrosarcoma with atypical chondroblastoma like areas.

2. Case report

A 29-years old female presented with a swelling on the left lower anterior chest wall for the past 5 years. Initially the swelling was small in size which gradually progressed to reach the present size of around 10 cm × 12 cm. She was asymptomatic.

CT-scan findings show well defined lobulated round heterogenous soft tissue density with hypodense areas (Fig. 2A). Necrosis and peripheral calcifications measuring 8.3 cm × 7.4 cm × 7 cm noted in the anterior aspect of the 8th rib. CT scan suggested neoplastic etiology and chondrosarcoma is to be considered.

2.1. Surgical resections and reconstructions

Surgery was initiated for wide excision and intra-operatively, it was found to be arising from the 8th rib and pushing the diaphragm without invading it. The whole tumor was excised en masse along with 7th, 8th and 9th ribs and a large portion of a diaphragm. Diaphragm was closed with 2–0 interrupted silk sutures and 15 cm × 15 cm prolene mesh placed (as shown in Fig. 1A–C descriptive pictures). Intercostal drain inserted. Patient had an uneventful recovery and being followed up for the last one-year. CT-scan two times post-resection scan is done and there is no recurrence of tumor.

2.2. Histopathology report of excised swelling

Gross: Mass with attached bone on one margin and covered by muscle on one surface. The mass measures 9 cm × 8 cm × 7 cm.

Microscopy: Tumor is cellular in areas with tumor cells producing blue grey chondroid matrix (as shown in Fig. 1B). Binucleate chondrocytes are seen along with cells with abundant eosinophillic cytoplasm, showing pleomorphism and atypia as well as cells with clear cytoplasm. Mitosis is 2/10 hpf. Foci of calcifications (chicken wire pattern) and eosinophillic cartilaginous matrix are also present. Bony trabaculae are seen. An area of secondary aneurysmal bone cyst with cystic areas and haemorrhage seen. Numerous multinucleated giant cells are also present admixed with

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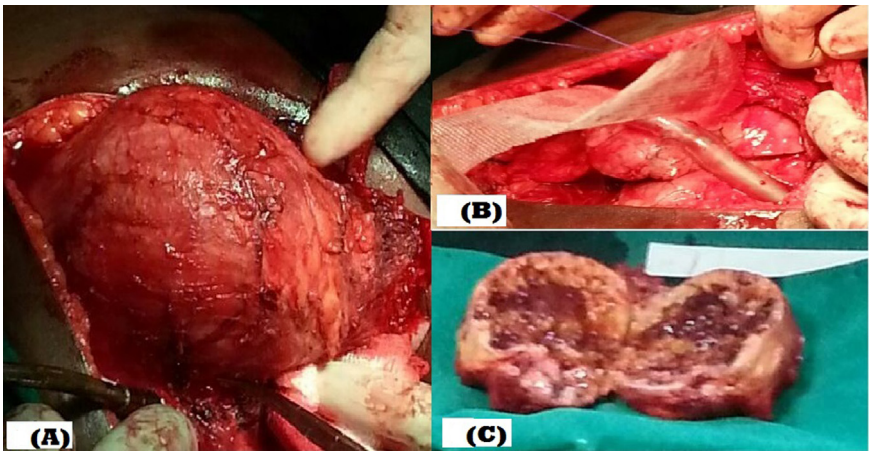

Fig. 1. (A): Intraoperative finding of tumor; (B): reconstruction with 15 × 15cm mesh; (C): cut section of tumor.

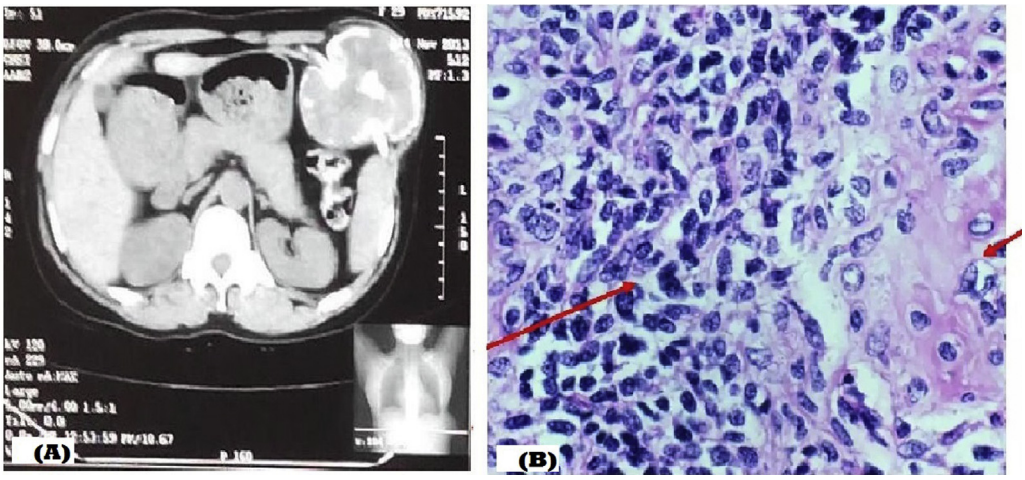

Fig. 2. (A): CT Scan of tumor; (B): HP showing clear cell chondrosarcoma.

tumor cells. Areas of necrosis are seen. The margins are free of tumor cells. Features are those of clear cell chondrosarcoma with atypical chondroblastoma like areas.

3. Discussions

Chondrosarcoma of the rib is a very rare malignant tumor. Most of the patients present with an enlarging painful anterior chest wall tumor. But this patient was asymptomatic. Chondrosarcoma usually presents above the 50-years of age and male are predominant [6] but in the present study the patient was a 29-years old female. CT scan is the imaging of choice and resection is performed based on imaging characteristics. Incisional biopsy is rarely required contrary to previous dictum where biopsy is required prior to surgery. With respect to treatment, chondrosarcoma is not responsive to chemotherapy and radiotherapy and extensive resection with a sufficient margin is considered first line therapy. Mayo group reported in 1985 where 10-years survival rate was 96.4% for those who had wide resection, compared with 65.4% for those who had local excision only [2]. In 1992, the group of memorial Soan Kettering cancer centre reported on their 40-years' experience on primary bony and cartilaginous chest wall malignancies, concluded that the single most important factor predicting survival was completeness of first resection [7].

In the recent past, substantial new insights have been gained about molecular cell biology, molecular cytogenetics, and immunopathology, leading to a better understanding of chondrosarcoma development at the molecular level, which will ultimately lead to better clinical understanding and possibly to the development of targeted treatment [8].

4. Conclusion

Although surgery is effective for chondrosarcoma, it is necessary to prepare a safe surgical field and perform reconstruction by considering the onset location and resection rate. Due to the possibility of late local and systemic recurrence, resected patients should undergo routine lifelong surveillance. Surveillance consists of physical examination and thoracic imaging with either PA/Lateral radiograph or CT scan every 3–6 months for the first 5-years and annually thereafter for a minimum of 10-years.

Conflict of interest

No conflict of interest.

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Consent

Ethics committee approval taken and 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 Editor-in-Chief of this journal on request.

Author contribution

(1) Dr. Mima Maychet B. Sangma – study design, data collections, data analysis, writing, computer typing.
(2) Dr. Simon Dasiah – data analysis, proof reading and review of literature.

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