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Original Research Article

A Rare Case of Manubrium Sterni Chondrosarcoma

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Abstract

Chondrosarcoma is a malignant bone tumour that most frequently arises from pelvis and long bones. Its occurrence in the sternum is exceptionally rare. Here we present the case of a fifty one year-old male who presented to our tertiary care center with gradual enlargement in the size of swelling and pain around the left sternoclavicular joint, extending towards the left clavicle. Further investigations confirmed the diagnosis of chondrosarcoma which was treated with surgical removal and reconstruction.

Keywords: Sternal Chondrosarcoma, Rare Chondrosarcoma, Rare Case Report, Tumour, Chest Wall Tumour.
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Introduction

Chondrosarcomas are malignant in nature, making up for twenty percent of all primary bone tumors [1]. There are approximately 60 cases of chest wall chondrosarcoma reported annually worldwide, representing about 2% of all cases. The incidence of chondrosarcomas originating from the sternum is only about 15% of the total [2]. There are two types of chondrosarcoma based on etiology, primary originating from normal bone and secondary with its origin from preexisting single or multiple osteochondromas and enchondromas [3]. The genes associated with the secondary type are isocitrate dehydrogenase one and two, which play a role in oxidative decarboxylation of isocitrate into alpha-ketoglutarate [4].

WHO classified chondrosarcoma histologically into a two-tier system: atypical cartilaginous/grade one which is locally aggressive with low metastasis risk and grade two and three with higher metastatic potential. However this classification is not specific for chest wall tumors [5]. Chest wall tumors may arise from soft tissues, cartilage or bone. The symptoms depend on the size, location and surrounding structures. There are variable presentations, it can range from slow growing non-painful to aggressively growing painful mass. Diagnosis typically requires imaging studies such as computed tomography (CT) scans, magnetic resonance imaging (MRI), and histological correlation through fine needle aspiration (FNAC).

Our case represents an unusual malignant heterogeneous soft tissue derived primary chondrosarcoma arising from sternum spreading to the left third intercostal space and clavicle. The treatment given was surgical resection for long-term survival and decrease in recurrence rate.

Case Presentation: A fifty-one-year-old male presented to our tertiary center with chief complaints of swelling and pain over the sternum for five months which increased gradually over the time. The patient had no history of trauma, previous surgery or infection. On general examination the patient was calm, conscious and well-oriented to time, place and person. Laboratory examination showed normal values of renal function tests, liver function tests, complete blood count and non-reactive viral markers.

On local examination, there was relatively well-defined mass or lump which measures roughly 4.1cm*3.3cm*3.4 cm on the left lateral body of the sternum extending to the third intercostal (figure 1 and 2). On palpation the mass was not tender. It was immobile and hard in consistency. There was no local rise in temperature. Patient had no difficulty in swallowing food and the mass doesn't move with deglutition. The patient underwent chest X-Ray PA view. It showed a well-defined lesion indicating a tumour arising from axial skeleton structure. Based on X-Ray the patient was advised

for high resolution computed tomography, plain (HRCT) of the chest and MRI of the thoracic area.

On HRCT, a relatively well-defined heterogeneous soft tissue attenuating lesion showing multiple coarse calcifications in anterior aspect of left third intercostal space with sclerosis, irregularity of adjacent left lateral aspect of the body of the sternum representing an organized collection is seen. It measures approximately 4.3cm*3.1cm*3.4cm. On the MRI of the thoracic region, a rather well-defined, heterogeneous soft tissue lesion is seen in the anterior aspect of the left third intercostal space, measuring 4.3 cm by 3.1 cm by 3.4 cm. T1-weighted images show intermediate to low signal intensity, whereas T2-weighted images display hyperintensity in areas containing fluid and myxoid components, alongside low-intensity regions indicative of calcification. The MRI indicates that the lesion has some uneven and ill-defined margins. The left lateral body of the sternum exhibits reactive alterations and sclerosis as well as irregularities that affect the sternoclavicular joint. There is a provascular compartment in the anterior mediastinum, preserved fat planes, and surrounding soft tissue oedema. Around the calcified area, a well-organized soft tissue collection is observed. No evidence of lymphadenopathy or metastasis is observed. Therefore, the MRI findings are consistent with malignant chondrosarcoma without evidence of spread. For further evaluation and confirmation of diagnosis, a fine needle biopsy cell block of chest wall lesion was done. The cell block was prepared with the thromboplastin method, the sections and whole tissue was processed. The microscopic appearance of sections revealed fragments of mature hyaline cartilage with lacunae containing mature chondrocytes. The histomorphology opinion was that it is a chondromatous tumour. Also, fine needle aspiration cytology of the lesion was done with results revealing chondromyxoid matrix which was markedly pluricellular along with it there were clusters of chondrocytes in the smear which had small regular dense nuclei. The was admitted and underwent surgical resection of tumour with clear margins and reconstruction of the second and third rib of left side. Post-operative intravenous antibiotics and analgesics were given. Eventually the pain decreased and the patient was discharged under satisfactory conditions on the fifth day. On follow-up visits the surgical area was unremarkable.

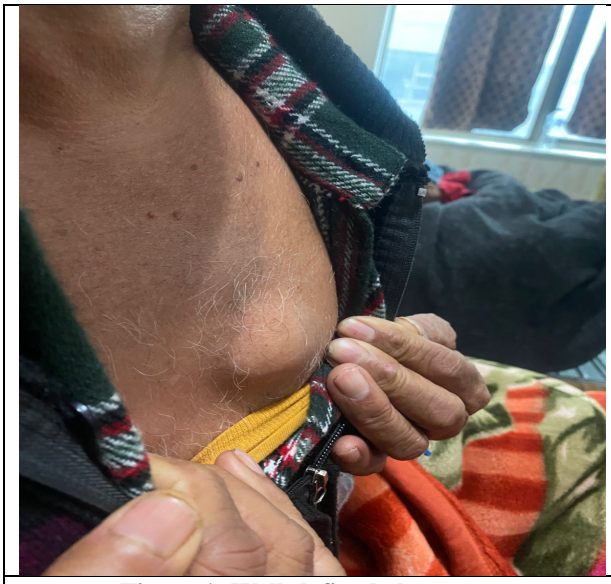

Figure 1: Well-defined chest mass

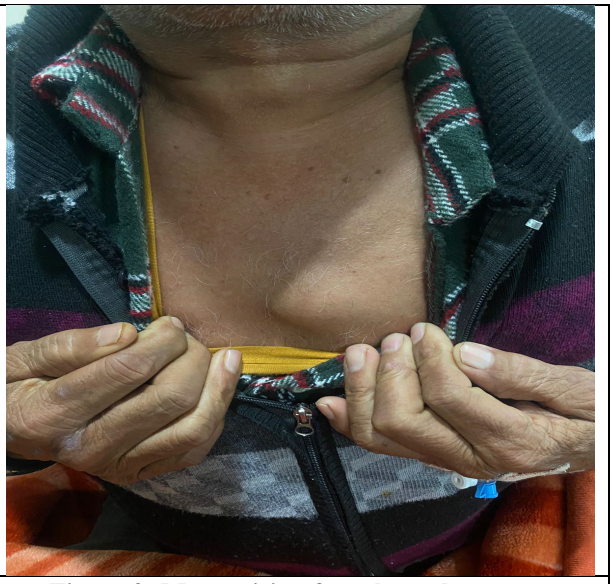

Figure 2: Mass arising from lateral sternum

Discussion

Chondrosarcomas arise from cartilage-producing cells and are rare. The presentation is at the mean age of fifty one, with over seventy percent cases above the age of fourth. Also, the cases are more in males [6]. The patients can present with joint pain which is worse at night. In cases of highly aggressive tumours, pathological fractures can occur due to invasion and weakening of bone [7].

Our case had no invasion of tumour to pleura and muscles in comparison to the case report by Jadhav at. (2003) on chondrosarcoma of sternal origin, in which the patient imaging findings showed spreading to adjacent pectoralis muscle along with cortical bony destruction. Also our patient had less aggressive symptoms.

In contrast to the study by Pavelescu et al. (2022) on giant sternal chondrosarcoma our case didn't suffer from cardiac tamponade and respiratory discomfort as caused in their patient because of

bilateral pleurisy. There was a cutaneous invasion in their case unlike ours. Imaging findings also further delineate the differences between two cases. In the case of Pavelescu et al. CT scan showed destruction of the whole sternum along with compression of ascending aorta, left brachiocephalic trunk and the pericardium, which is characteristic of malignant lesions. In our case the scan impression was of a well-defined heterogeneous lesion with calcifications and sclerosis with no invasion to surrounding tissues. To achieve better prognosis of the patients with chondrosarcoma early detection is essential. The diagnosis can be difficult because of its varied presentations. A combination of investigations such as CT, MRI, and histological findings is necessary. CT will assist in diagnosing calcification, while MRI will evaluate the soft-tissue structures affected by the tumor and help identify edema along with any cortical damage [8].

Chondrosarcomas are categorised into groups which are resistant to both radiotherapy and chemotherapy due to lack of vascularization and mitosis rate, which helps in transporting chemotherapeutic agents [9]. Thus early resection of tumours, especially grade-1 is therapeutic. Delay in treatment can lead to metastasis and decrease the quality of life of patients. In our case surgical resection of the primary tumour with clear margins and reconstruction of ribs was done. The survival rate differs based on the grade and subtype of tumours. For both primary atypical and secondary tumours, five-year survival rates exceed 90%. However, those with high grade and metastasis have a low five-year survival of just 28% [10,11].

Conclusion

Sternal origin of chondrosarcoma is rare and diagnosis can be made by keeping a differential of chondrosarcoma for any chest wall mass. This can be confirmed by imaging and histological findings on time. Surgery remains the mainstay of treatment. This case report contributes to the limited literature on sternal chondrosarcoma in North India.

Clinical Message: The case study highlights the importance of increased awareness and early detection of sternal chondrosarcoma. It emphasises how crucial histological investigation and sophisticated imaging techniques like CT and MRI are to correctly detecting and distinguishing this tumour from other masses of the chest wall. In order to improve long-term results and reduce the likelihood of recurrence, successful care through surgical removal with distinct margins is essential. The article also clarifies the paucity of research on sternal chondrosarcoma in North India, emphasising how crucial it is for medical professionals to consider this uncommon ailment in their differential diagnosis.

References:

1. Limaiem F, Davis DD, Sticco KL. Chondrosarcoma. [Updated 2023 Aug 14]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025 Jan-. Available from:https://www.ncbi.nlm.nih.gov/books/NBK538132/
2. Jadhav SS, Dhok AP, Mitra KR, Onkar PM, Phatak SV. Chondrosarcoma of sternal origin: a rare case. Cureus. 2023 Jun 13;15(6):e40393. doi: 10.7759/cureus.40393. PMID: 37456492; PMCID: PMC10345234.
3. Thorkildsen J, Taksdal I, Bjerkehagen B, Haugland HK, Johannesen TB, Viset T, Norum OJ, Bruland Ø, Zaikova O. Chondrosarcoma in Norway 1990-2013: an epidemiological and prognostic observational study of a complete national cohort. Acta Oncol. 2019 Mar;58(3):273-282.
4. Zając AE, Kopeć S, Szostakowski B, et al. Chondrosarcoma-from molecular pathology to novel therapies. Cancers (Basel). 2021; 13:2390. doi: 10.3390/cancers13102390.
5. Abdulfatah E, Rottmann D, Morag Y, Pantanowitz L, Udager AM, Hao W, Lucas DR. Conventional chondrosarcoma of the rib cage and sternum: clinicopathological and molecular analysis of 27 patients treated at a single institution. Hum Pathol. 2023; [insert volume and issue numbers, if available]. Available from: https://doi.org/10.1016/j.humpath.2023.03.011
6. Giuffrida AY, Burgueno JE, Koniaris LG, Gutierrez JC, Duncan R, Scully SP. Chondrosarcoma in the United States (1973 to 2003): an analysis of 2890 cases from the SEER Database. JBJS. 2009; 91:1063–1072. doi: 10.2106/JBJS.H.00416.
7. Albergo JI, Gaston CL, Jeys LM, Khajuria A, Carter SR, Tillman RM, Abudu AT, Grimer RJ. Management and prognostic significance of pathological fractures through chondrosarcoma of the femur. Int Orthop SICOT. 2015; 39:943–946. doi: 10.1007/s00264-015-2706-x.
8. Rosenberg NP, Leuck I, Schuler C, Delgiovo F, de Araújo ES, Martini PV. Sternal chondrosarcoma. J Pneumol. 2003; 1:29.
9. Christopher DM, Fletcher K, Unni K, Mertens F. Pathology and genetics of tumours of soft tissue and bone. In: World Health Organization Classification of Tumours. Paul K, Sobin LH, editors. IARC Press: Lyon, France; 2002. p. 247–251.
10. Van Praag VM, Rueten-Budde AJ, Ho V, Dijkstra PDS, van der Geest IC, Bramer JA, Schaap GR, Jutte PC, Schreuder HB,

Ploegmakers JJW. Incidence, outcomes and prognostic factors during 25 years of treatment of chondrosarcomas. Surg Oncol. 2018;27: 402–408. doi: 10.1016/j.suronc.2018.05.009.

11. Wang Z, Chen G, Chen X, Huang X, Liu M, Pan W, Yan X, Lin N, Ye Z. Predictors of the survival of patients with chondrosarcoma of bone and metastatic disease at diagnosis. J Cancer. 2019; 10:2457. doi: 10.7150/jca.30388.