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Case Study

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A case of chondrosarcoma with costovertebral location in the posterior mediastinum: Resection and stabilization

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Abstract

Chondrosarcoma, a primary malignant bone tumor, rarely occurs in the vertebrae. We report a 29-year-old female with a 6 × 4.2 cm chondrosarcoma in the posterior mediastinum originating from the left 9th costa vertebral junction involving vertabrea corpus. Surgical resection performed involving posterior thoracotomy, 8–9th rib resection, 8–9th thoracal vertebrae partial corpectomy, laminectomy, spinal instrumentation, and chest wall stabilization. Pathology confirmed chondrosarcoma with safe margins. The patient remained recurrence-free for 9 years. This case highlights the importance of wide-margin surgical resection and multidisciplinary approaches for long-term survival in chondrosarcoma patients.

Keywords

Chondrosarcoma, rare tumor, chest wall resection, chest wall stabilization

Introduction

Chondrosarcoma, the second most prevalent primary malignant bone tumor, constitutes 30% of primary malignant chest wall tumors.[1] It arises from cartilage, primarily found in the anterior chest wall or sternum. Surgery is the mainstay treatment due to resistance to chemotherapy and radiotherapy. Complete excision with wide surgical margins, typically at least 4 cm from the tumor tissue, is recommended to prevent local recurrence and metastasis. Although chondrosarcoma primarily occurs in the pelvic and extremity bones, its occurrence in the vertebrae is exceedingly rare.[1] This article presents a rare case of chondrosarcoma originating from the costovertebral junction in the posterior mediastinum and the subsequent surgical treatment.

Case report

A 29-year-old female presented with persistent backache. Physical examination revealed no significant findings or active neurological symptoms. X-ray imaging showed no abnormalities on the posterior–anterior view but revealed an opacity adjacent to the heart shadow on the lateral view. Further imaging via computed tomography (CT) and contrast-enhanced thoracic vertebra magnetic resonance imaging (MRI) revealed a 6 × 4.2 cm mass originating from the posterior aspect of the left 9th rib, extending into the soft tissue and foramen (Figure 1).

Under general anesthesia, the patient underwent intubation with a double-lumen endobronchial tube and was positioned prone to surgery. A posterior thoracotomy was performed from the left 8th intercostal space, followed by a vertical incision at the T8–9 spinous processes level. With orthopedic collaboration and neuromonitoring, the mass was dissected from surrounding tissues, extradural invasion was observed, and partial resection of the 8th, 9th, and 10th ribs was performed, ensuring a minimum 4-cm surgical margin. Left radixes of T8-9-10-11 were ligated, and T8-9 partial corpectomy with left laminectomy was executed. After excision of the mass, posterior spinal instrumentation was conducted, followed by repair of the chest wall defect with titanium plates fixed vertically due to vertebral excision (Figure 2(a)). Postoperative pathology confirmed a 6 × 4 cm chondrosarcoma with safe surgical

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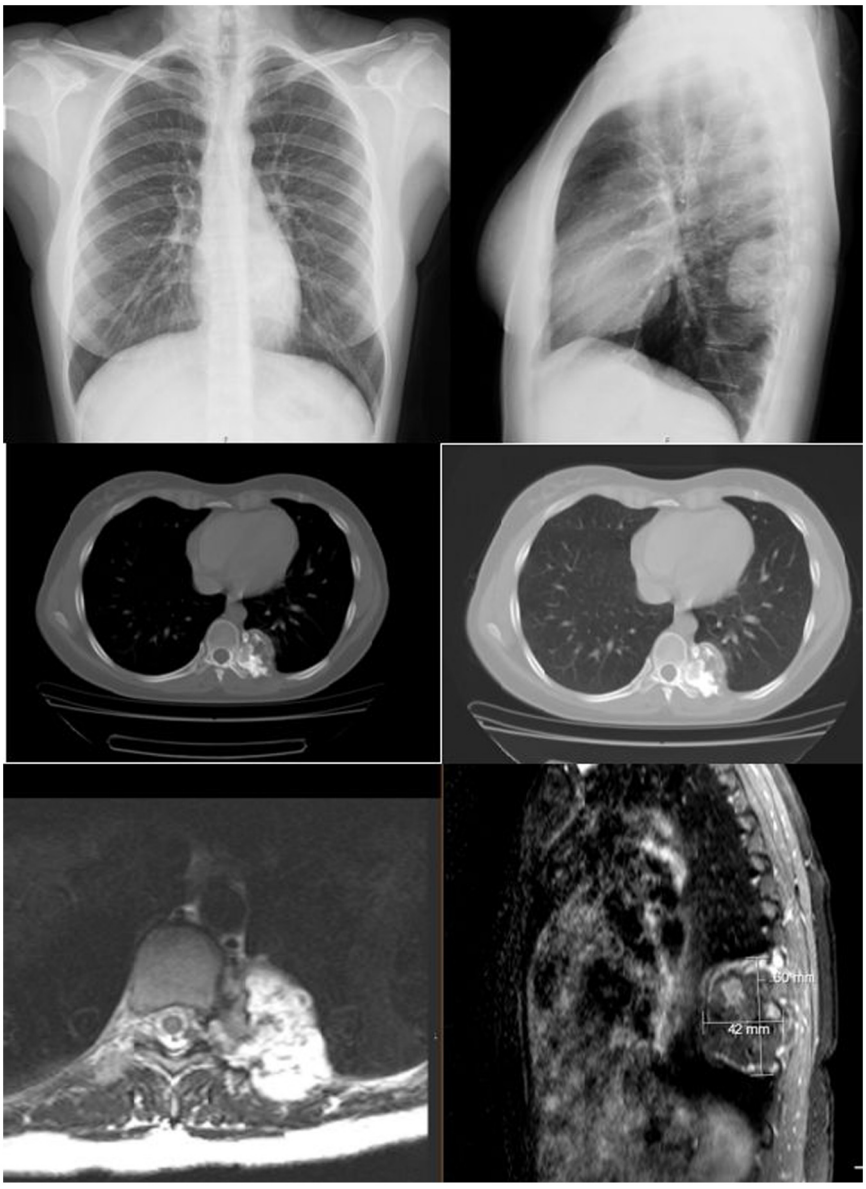


Figure 1. Preoperative imaging.

margins. The patient was discharged without complications on the 6th postoperative day and remained recurrence-free during a 9-year follow-up (Figure 2(b)).

Discussion

Primary malignant chest wall tumors, particularly chondrosarcomas, are rare, commonly originating from pelvic or extremity bones.[1,2] However, cases involving the vertebrae in the posterior mediastinum have been reported sporadically.[1,3,4] Symptoms vary but may include chest pain and swelling, along with neurological manifestations in vertebral involvement. Imaging modalities such as CT and MRI are crucial for diagnosis and surgical planning.[3] Surgical resection with wide margins is the preferred treatment due to chondrosarcoma's resistance to chemotherapy and radiotherapy. In cases with positive margins, adjuvant radiotherapy may be considered. Successful outcomes, as demonstrated in our case, underscore the significance of multidisciplinary approaches and specialized spine surgery expertise.[1,5]

Conclusion

In this specific case, long-term recurrence-free survival was observed through en-bloc resection with adequate surgical margins. However, for statistically significant long-term outcomes, a larger cohort of patients is required.

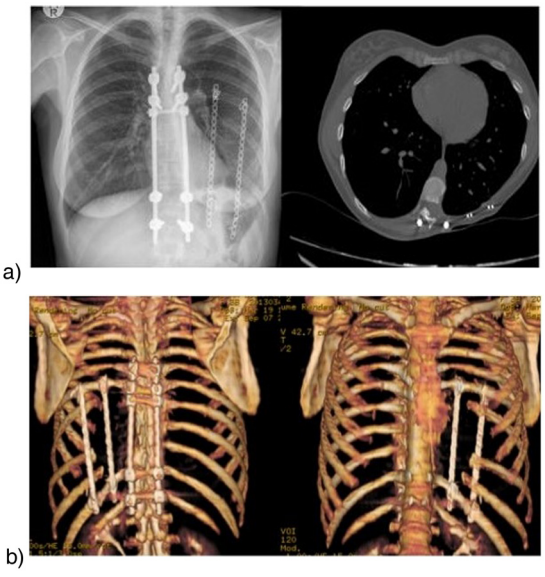


Figure 2. (a) Early postoperative imaging. (b) 9th year postoperative imaging.

Authors' contribution

Fatma Mutlu: conceptualization, methodology, software, formal analysis, investigation, resources, writing, and editing; Ömer Akçalı: validation, resources, and writing; Aydın Şanlı: conceptualization, methodology, validation, investigation, supervision, resources, writing, and editing.

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Ethical approval

Not applicable.

Informed consent

Verbal informed consent was obtained from all individual participants included in the study.

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