

CASE REPORT

Synovial sarcoma of the chest wall; a case report and literature review

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ABSTRACT

Background: Chest wall sarcoma (CWS) is a rare and complex malignant tumor. CWS is an aggressive and heterogeneous tumor that represents a formidable challenge to clinicians. Synovial sarcoma of chest wall is a rare entity, and there are no sufficient data on its incidence and management.

Case Presentation: Here, we present a 35-year-old lady who received four cycles of chemotherapy for left breast cancer and excision of lateral chest wall superficial mass. The current imaging of the patient revealed a large CWS invading the pleura and was in very close proximity to the left lung and pericardium, with ribs destruction. The patient underwent resection of four ribs, the whole left breast and axillary lymph node, followed by chest wall reconstruction using plates. The patient underwent resection and reconstruction as she revealed no evidence of metastasis. The procedure went well, with no postoperative complications indicating the possibility of performing reconstruction promptly following resection.

Conclusion: The pathological diagnosis of the patient suggested synovial sarcoma; therefore, large synovial sarcoma of the chest wall is a rare condition that can be managed by total resection of the breast, chest wall, and lymph node.

Keywords: Sarcoma, treatment, resection, reconstruction.

Introduction

Chest wall sarcoma (CWS) is a rare and complex category of malignant neoplasms originating from the bone, soft tissues, or their combination within the thoracic cavity [1]. Almost 75% of sarcomas arise from soft tissues, whereas 10% arise from cartilage and bone; rib cage involvement is uncommon, as they may occur due to metastatic or primary [2]. Sarcoma represents less than 1% of all malignancies [3]. CWS is characterized by aggressive behavior and heterogeneity; it also represents a formidable challenge to clinicians as it requires complex surgical interventions to achieve oncological clearance and maintain acceptable cosmetic outcomes [1]. CWS surgical resection is the cornerstone of curative therapy [3]. The importance of chest wall reconstruction following resection is to maintain stability, protect intra-thoracic organs, and preserve breathing [4]. However, reconstruction is often complex due to the likelihood of the need for perioperative therapy, the required size of resection, and variations in involved tissue types [3]. Thoracic synovial sarcoma (TSS) is a rare entity arising in the chest wall with a high grade of malignancy. However, the data regarding its incidence in the chest wall is insufficient [5,6], and there are no studies on its management; therefore, here we present a

patient with large chest wall synovial sarcoma managed by resection followed by chest wall reconstruction.

Case presentation

A 35-year-old lady was admitted to our hospital with a large left breast mass. She was previously presented to another hospital with a large breast mass and diagnosed, based on her report, as left breast cancer. She received four cycles of chemotherapy but with no response. After a presentation to our hospital, she reported that she had a history of surgery to excise a lateral chest wall superficial mass due to a benign tumor, as she was told, but with no pathology review provided. The woman underwent imaging, and her scan revealed the presence of a large chest wall mass with ribs destruction; the tumor was invading the pleura and was in very close proximity to the

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Figure 1. CWS invading and fungating through left breast.



Figure 3. Enblock resection done with ribs No 4,5,6,7 and left breast.

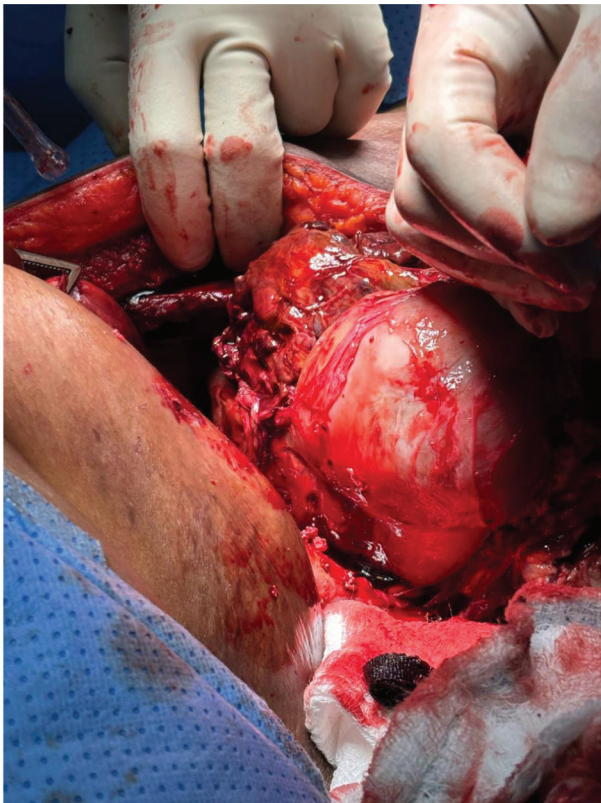


Figure 2. The bulk of the tumor was intrathoracic, compressing the pericardium and left lung.

left lung and pericardium. Also, there was pleural effusion and invasion to the left breast with a large hemorrhagic component in the breast, and it was indicated as large CWS, but there was no evidence of metastasis.

The patient was discussed in our tumor board and decided to undergo enblock resection of the chest wall, left breast, and axillary lymph node, followed by chest reconstruction. The procedure went well and included complete resection of a total of four ribs (R4-7) along with the left breast resection and left axillary lymph node (Figures 1-11), followed by chest wall reconstruction that was performed using plates.

There were no postoperative complications reported. Based on the histopathological report of the resected breast mass, chest wall ribs, and left axillary lymph node, she was diagnosed as a secondary malignant neoplasm of breast with no lymphovascular invasion, and the lymph nodes were negative for tumor deposits. The morphology suggested synovial sarcoma of biphasic pattern. Confirmation by immunohistochemistry was recommended, and the physicians are still waiting for the final pathology to decide on further therapy if needed.

Discussion

CWS is a rare heterogeneous category of mesenchymal tumors, and primary sarcoma accounts for 0.04% of

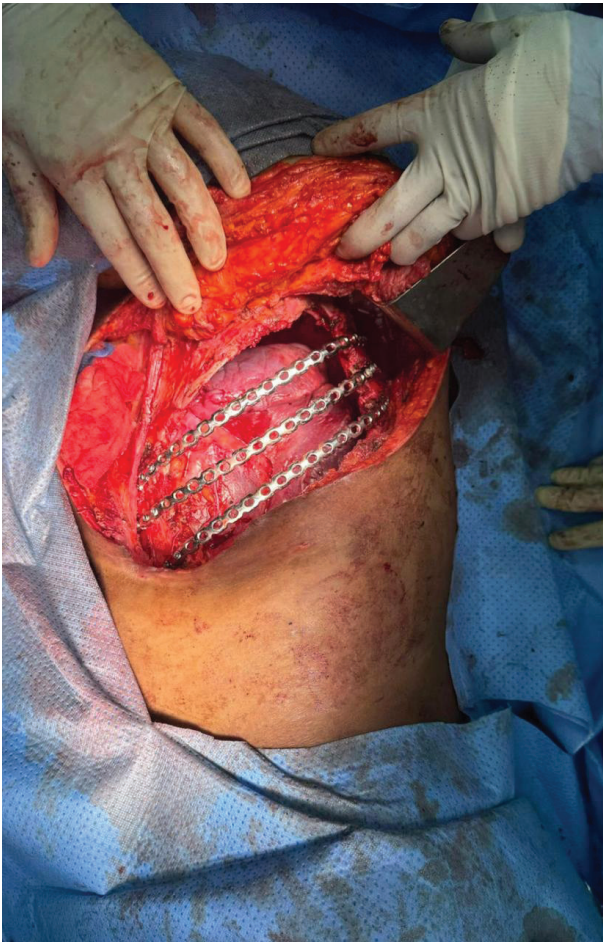


Figure 4. Reconstruction of chest wall done with surgical plates.

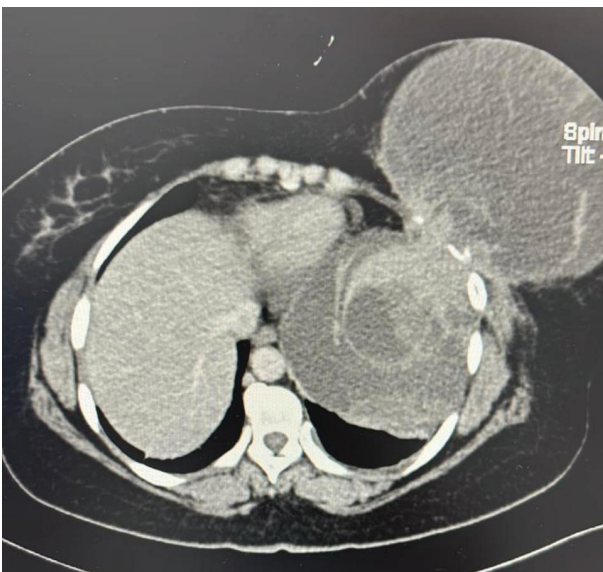


Figure 5. CT scan showing large chest wall tumor with ribs destruction, invasion into the left breast and collapse of the left lung.

newly detected cancers [7]. The clinical presentation of CWS is various; indolent neoplasms slowly grow and

are presented as a painless palpable mass or incidentally diagnosed [8]. It was stated that most cases with CWS present with an enlarged palpable mass [7]. Our patient was presented to our center complaining of a large left breast mass, and by imaging, it was found to be a large chest wall mass invading the pleura and was in very close proximity to the left lung and pericardium.

Huge tumors of the thoracic wall encompass primary malignant tumors that invade the thoracic wall directly or metastatic nodules of the thoracic wall. Such huge neoplasms can invade important thoracic cavity structures, making them hard to manage [9]. In the present case, our patient had a large TSS, and the patient reported that she underwent excision of a lateral chest wall superficial mass due to a benign tumor; her diagnosis revealed secondary malignant neoplasm of the breast, suggesting metastasis of the previously excised tumor of the lateral chest wall. However, there was no pathology report provided by the patient of her previous intervention to determine if it was benign, as she knew or malignant.

Rib cage involvement in sarcoma is an uncommon condition as it may result from primary or metastatic illness. The etiology of sarcoma is unknown; however, it was reported that exposure to chemical agents and ionizing radiation are risk factors [2]. Based on the diagnosis for our patient, she had secondary malignant breast neoplasm, indicating that the sarcoma of the patient may be due to metastasis lateral chest mass that was previously excised. However, the patient reported that she received four cycles of chemotherapy for left breast cancer; therefore, her CWS mass may be related to the chemotherapy she received before or metastasis of the previous chest mass.

TSS was reported in the previous two case reports; however, one did not report the management [5], and the other reported tumor resection with involved ribs with no more data [6].

Complete resection is the foundation of chest wall tumor treatment to achieve surgical clear margins, but metastatic disease is a contraindication for the surgery [8]. Our patient was an ideal case for surgical resection as she had no evidence of metastasis, so she underwent enblock resection of chest wall, total left breast, and axillary lymph node. Additionally, the surgery was good, and there were no complications of the surgery.

Chest wall reconstruction is indicated for primary and metastatic tumors, trauma, and congenital defects, as such conditions can cause thoracic wall functional and esthetic impairments [10]. Following resection of chest wall tumors, huge defects can occur in the bone and soft tissue, exposing the thoracic organs to several complications. Therefore, reconstruction after resection is necessary to restore the chest wall integrity to protect the tissues and organs and restore normal breathing [9]. Reconstruction of the chest wall of our patient was required as our patient had ribs destruction and underwent resection of four ribs; therefore, reconstruction was performed using plates with no associated complications.

It was reported that defects involving more than four ribs at the lateral thoracic wall frequently require mesh for repair as they are linked with an elevated risk of paradox breathing and herniation [7]. However, reconstruction in our patient required only plates with no mesh requirement. Reconstruction involves the selection of appropriate prosthetic material and ensuring its coverage with a well-vascularized soft tissue flap to ensure the protection of the prosthetic material, reducing the risk of wound complications, and eliminating any dead space; all such elements contribute to enhanced esthetic outcomes [1].

Thoracic wall resection followed by prompt reconstruction is a challenging intervention with considerably high post-surgical complication and mortality risk [4]. The complication rates following reconstruction vary between 16% and 62%, with pulmonary issues being the most common. Also, compromised wound healing is another complication of this procedure [4]. However, our patient was doing well with no reported postoperative complications. A previous study enrolled 139 patients with primary CWS who underwent chest wall resection and construction revealed that 75% had no complications up to 30 days postoperatively [1].

Conclusion

CWS is a rare condition, and TSS is even rarer. In our patient, TSS may have progressed due to the chemotherapy received by the patient before for left breast cancer, or due to metastasis or the previous chest wall mass. Therefore, the patient was managed by resection and then reconstruction to maintain the integrity of the chest wall and the function of the internal organs. Resection was done by total excision of the breast, axillary lymph node, and four ribs. Reconstruction using plates only was adequate, with no need for mesh, and the patient had no postoperative complications, indicating the success of the procedure. Therefore, reconstruction following resection is possible with no associated complications. However, the final pathology report for the patient will determine the requirement for further therapy. Also, follow-ups with the patient will be performed to record the late outcomes of the procedure.

List of Abbreviations

CWS chest wall sarcoma
TSS thoracic synovial sarcoma

Conflict of interests

The authors declare that there is no conflict of interest regarding the publication of this article.

Funding

None.

Consent for publication

Due permission was obtained from the patient to publish the case.

Ethical approval

Ethical approval is not required at our institution to publish an anonymous case report.

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