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Case Report

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Male Breast Sarcoma: A Rare but Aggressive Disease

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ABSTRACT
Breast sarcoma in men is extremely rare, comprising less than 1% of male breast cancers. We present a case of undifferentiated breast sarcoma in a 77-year-old man with no family history of breast cancer. A painless mass was found during examination, and histopathology confirmed an undifferentiated spindle cell sarcoma. Treatment included partial mastectomy and adjuvant chemotherapy. Six-month follow-up showed no recurrence or metastases. This case highlights the challenges of diagnosing undifferentiated breast sarcomas and the importance of early diagnosis and follow-up.

Keywords: Breast Sarcoma, Male, Sarcoma

Introduction

Breast sarcoma in men is extremely rare, making up less than 1% of male breast cancers. These tumors arise from connective tissues and are harder to diagnose and treat than carcinomas. Undifferentiated spindle cell sarcoma, with its complex histological classification and poor prognosis, is particularly difficult to identify due to disorganized cellular growth and lack of specific differentiation.

Case Report

We report the case of a 77-year-old male patient presenting with a mass at the site of a previous right mastectomy for a surgically treated breast tumor (undocumented history), associated with pain in the right hemithorax. A chest CT scan revealed a well-defined, oval-shaped mass at the scar site, with heterogeneous enhancement following contrast injection. (Figure 1) An ultrasound was performed as a complementary investigation, revealing a mass at the site of the mastectomy scar, oval in shape, well-defined, with irregular contours, heterogeneous (Figure 2).

A biopsy under ultrasound guidance was performed under local anesthesia, (Figure 3), the histological study of which revealed a tumor proliferation exhibiting a moderately cellular fascicular architecture, with abundant vascularization and an edematous, focally myxoid stroma. A polymorphous inflammatory infiltrate is also visible in some areas of the tumor. The tumor cells show strong expression of CD34, suggesting a vascular character of the tumor cells. In contrast, analysis with the anti-MDM2 antibody shows non-specific staining, which does not allow for the conclusion of overexpression of this protein in this specific case. (Figure 4) These histopathological features are consistent with the diagnosis of undifferentiated spindle cell sarcoma and highlight the aggressive nature and heterogeneous differentiation of the tumor, diagnosing an undifferentiated spindle cell sarcoma.

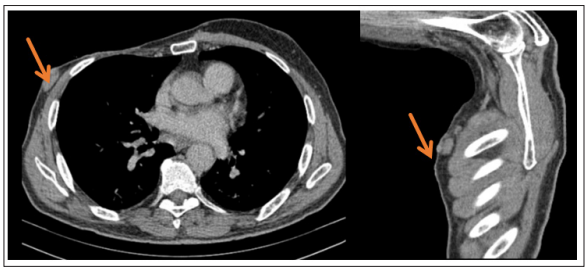

Figure 1: Axial and sagittal chest CT scan with contrast injection showing a mass localized at the site of the right mastectomy scar (orange arrow).

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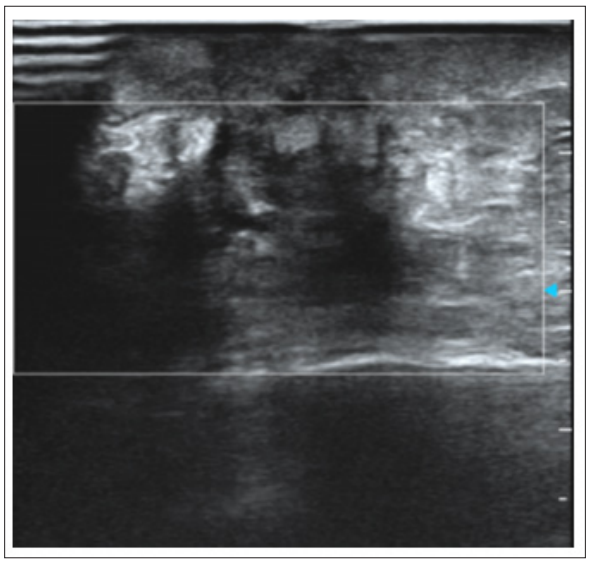

Figure 2: The breast ultrasound revealed a mass at the site of the mastectomy scar.

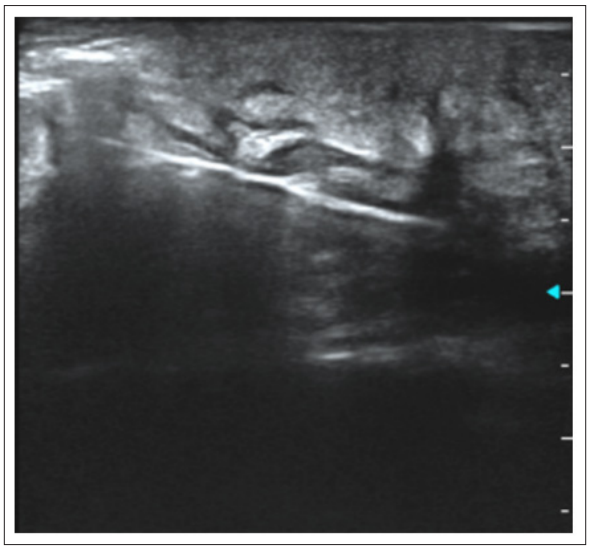

Figure 3: Ultrasound-guided biopsy of a breast mass. The image shows the biopsy needle crossing the target mass under ultrasound guidance, ensuring optimal precision for tissue sampling.

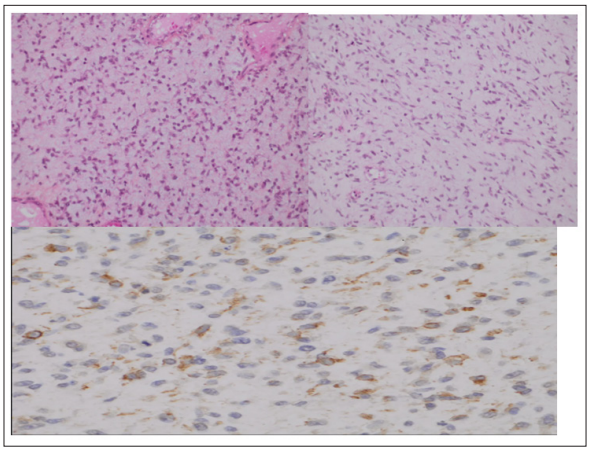

Figure 4: The images show an undifferentiated spindle cell sarcoma with a fascicular architecture, abundant vascularization, and an edematous, focally myxoid stroma. A polymorphous inflammatory infiltrate is also present. The tumor cells strongly express CD34, suggesting a vascular nature, while the anti-MDM2 antibody shows non-specific staining.

Discussion

Breast sarcoma in men is an extremely rare condition, accounting for less than 1% of male breast cancers [1]. These tumors are often more difficult to diagnose and manage than breast carcinomas, as they arise from the connective tissues of the breast, such as fatty tissue, muscles, or blood vessels, in contrast to carcinomas, which have an epithelial origin [2]. The clinical case we present highlights an undifferentiated spindle cell sarcoma, a variant that is particularly challenging to classify histologically and associated with a less favorable prognosis.

Undifferentiated breast sarcomas (also known as unclassified sarcomas) are difficult to diagnose and classify, as they present disorganized cellular proliferation and lack specific differentiation. These tumors can be confused with other types of breast sarcomas or even carcinomas, as they do not exhibit the typical characteristics of breast cancers [2]. In our case, the histopathological analysis revealed a spindle cell sarcoma, a form of sarcoma particularly challenging to distinguish from other mesenchymal lesions. These elongated, spindle-shaped cells tend to form infiltrating tumor masses, without distinct features that allow for precise classification, hence the term ‘undifferentiated [1].

This diagnostic difficulty has been highlighted by several studies, which emphasize that radiology (mammography, ultrasound, MRI) and clinical examination may sometimes fail to provide enough clues for a definitive diagnosis. Breast masses in men are often misinterpreted due to their rarity, and undifferentiated breast sarcomas can be particularly misleading [3].

The prognosis of patients with undifferentiated breast sarcoma depends on several factors, including tumor size, local extension, and the presence of metastases at the time of diagnosis [1]. Undifferentiated sarcomas have a high potential for local recurrence and distant metastasis, primarily due to their infiltrative growth and abundant vascularization [2]. In a study by Fadare et al., it was shown that undifferentiated sarcomas, particularly spindle cell forms, are associated with high recurrence rates, even after complete surgical excision [1]. In our case, the 3 cm tumor, although of moderate size, exhibits classic features of these aggressive sarcomas, which justifies an aggressive therapeutic approach.

The risk of metastasis is also significant, particularly for undifferentiated sarcomas. According to a study by Lippman et al., these sarcomas are frequently associated with pulmonary and bone metastases, although metastases to other sites such as the liver and lymph nodes are also possible [3]. However, it is important to note that the absence of metastases at the time of diagnosis, as in our patient, may improve short-term prognosis, although late recurrences remain possible [4].

The primary treatment for breast sarcomas remains surgery. Complete resection of the tumor, when possible, is essential to reduce the risk of local recurrence, especially due to the infiltrative nature of breast sarcomas [2]. In our case, a partial mastectomy was performed with complete resection of the

tumor mass. This approach aligns with current recommendations that prioritize complete excision of the sarcoma due to its high recurrence potential, even with seemingly healthy surgical margins [1].

As part of adjuvant treatment, chemotherapy is often recommended for undifferentiated breast sarcomas due to their tendency to develop distant metastases [4]. Doxorubicin is a commonly used chemotherapeutic agent for treating sarcomas. Some studies suggest that adjuvant radiotherapy may be beneficial in reducing the risk of local recurrence, but its role remains to be determined, particularly for undifferentiated breast sarcomas [2].

Undifferentiated breast sarcomas have a risk of late recurrence, even after complete surgical excision (1). This is especially true for spindle cell sarcomas, which can present aggressively several years after the initial surgery. Long-term follow-up is therefore crucial. Patients should be regularly monitored, including with clinical examinations, mammograms, breast MRIs, and chest imaging to detect potential pulmonary metastases [3].

Conclusion

Undifferentiated breast sarcoma is rare and poses diagnostic and prognostic challenges. Its difficult histological classification and high recurrence risk warrant aggressive treatment, including surgery and possibly chemotherapy. Long-term follow-up is crucial to monitor for late recurrence.

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