Case Report

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Carcinosarcoma of Breast: A Rare Case Report with Review of Literature

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Abstract

Breast cancer is a heterogeneous type of cancer, and many different histology types exist. Carcinosarcoma of the breast is a rare entity and consists of two distinct cell lines comprising epithelial and mesenchymal components. It is usually larger in size than epithelial breast cancers and is characterized by a rapid increase in size. The majority are with high grade and triple negative receptor status causing aggressive behavior nature of the disease. The treatment of carcinosarcoma should follow the guidelines for treatment of invasive breast cancer. The prognosis of the tumor is less favorable compared to more common types of breast cancers such as infiltrating ductal or lobular carcinomas. We reported a case of carcinosarcoma of the right side breast in a 47-year-old woman.

Key words: Breast, Carcinosarcoma, Management, Prognosis

INTRODUCTION

Breast malignancies affect 12.3% of women during their lifetime, and an estimated incidence of 232,340 new cases diagnosed in 2013.[1] Carcinosarcoma of the breast consists of malignant sarcomatoid metaplasia of epithelial carcinoma. It is also known as metaplastic carcinoma and is a rare entity. It consists of 0.08-0.2% of all breast cancers.[2] Controversy exists regarding its origin. The biphasic differentiation of cells such as epithelial and mesenchymal characteristics showing the possibility of myoepithelial origin or differentiation.[3] Carcinosarcoma has aggressive clinical behavior[4] with larger size during the presentation and rapid in an increase in size than epithelial breast carcinomas.[5] Prognosis is less favorable in comparison to invasive ductal or lobular carcinoma.[5] We report a case of carcinosarcoma of the right side breast in a 47 years female.

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CASE REPORT

A 47-year-old perimenopausal woman presented with a lump in the right breast upper outer quadrant with rapid growth in one and half months. Physical examination revealed a mass of size 5 cm × 6 cm in the upper outer quadrant of right breast. There were no skin or chest wall involvement, and the nipple-areolar complex was found to be normal. Ultrasonography showed a solid hypoechoic mass of size 5 cm × 5.5 cm in the right breast upper outer quadrant with irregular boundaries. Mammography finding revealed a radiopaque lesion of size 4.7 cm × 4.8 cm in upper outer quadrant of the right breast with irregular margins (Figure 1). Core biopsy from the breast lump showed features of carcinosarcoma. Estrogen receptor, progesterone receptor, and HER-2/neu receptor status were found to be negative. On immunohistochemical examination, epithelial component showed keratin positivity and mesenchymal component showed vimentin positivity. Modified radical mastectomy was performed. Gross examination of the specimen showed a 5 cm × 4 cm × 3.5 cm grayish-brown-colored tumor. Microscopic examination showed the presence of diffuse sheets of tumor tissue separated by fibrocollagenous stroma (Figure 2). Highly pleomorphic tumor cells found with eosinophilic cytoplasm and hyperchromatic nuclei and prominent nucleoli (Figure 3). High mitotic activity found

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in the background. The patient received six cycles of adjuvant chemotherapy with ifosfamide and adriamycin-based regimen followed by adjuvant external beam radiotherapy of 50 Gy in 25 fractions to the right chest wall. The patient is under regular follow-up since last 22 months without any disease.

DISCUSSION

Breast cancer is a heterogeneous disease with regard to histopathological types. The most common histopathology is infiltrating ductal carcinoma, which accounts for about 80% of all breast cancers.[6] Carcinosarcoma is an aggressive and rare neoplasm of the breast. Its incidence is 0.1% of all breast malignancies.[7]

It is comprised malignant epithelial tissue (carcinoma) mixed with malignant mesenchymal cells (sarcoma). The cell of origin of these tumors is still controversy. Myoepithelial cells originate from a single stem cell-like spindle cells and also may develop from existing cystosarcoma phyllodes, fibroadenoma, and cystic backgrounds.[8-11] Carcinosarcoma shows the myoepithelial origin and histopathologically, consists of both carcinomatous and sarcomatous components. The epithelial component may cause undifferentiated carcinoma, adenocarcinoma, in situ carcinoma, infiltrative ductal carcinoma or squamous carcinoma, whereas the mesenchymal component consists of fibroblastic, chondroblastic, or osteoblastic areas.[5,12-14] The majority are seen in poorly differentiated, high-grade forms.[2] Estrogen receptor, progesterone receptors, and HER-2/neu oncogene are not commonly expressed in this tumor.[6] This "triple negative" phenotype in this tumor is more aggressive and are unlikely responds to targeted therapy or hormonal therapy.[2]

Immunohistochemistry is the gold standard investigation in the diagnosis of carcinosarcomas. Immunohistochemical examination shows positivity for keratin (55%), vimentin (98%), actin (77%), and S-100 protein (55%).[15]

Its high-grade nature and negativity for estrogen and progesterone receptors show the aggressiveness of the tumor. Majority tumors show overexpression of the epidermal growth factor receptor (HER-1/EGFR) protein and may serve as a potential therapeutic target for EGFR inhibitors.

Most of the cases present in women more than 50 years of age. Clinical features are similar to those seen in patients with invasive ductal carcinoma.[5] Usually, carcinosarcoma of breast presents as unilateral, well defined, painless lump, larger in size, often painful and without any preference for

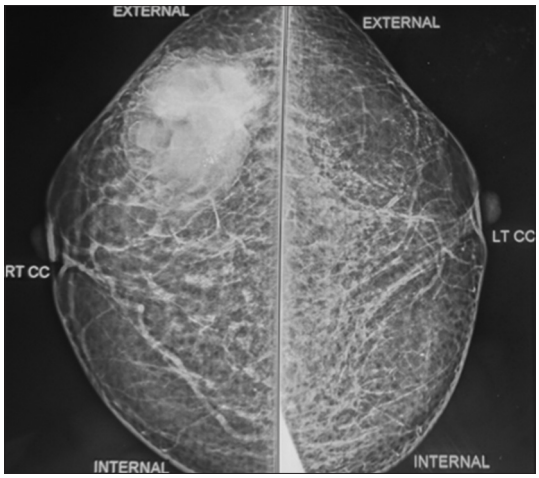

Figure 1: Mammogram of the breast showing a radio-opaque lesion in upper outer quadrant of the right breast

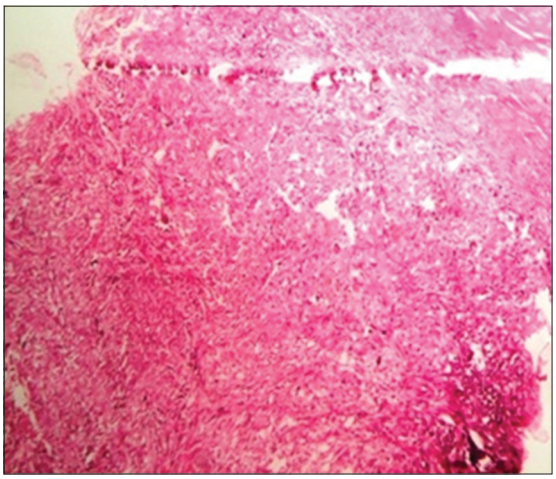

Figure 2: Microsection shows presence of tumor tissue in diffuse sheets separated by fibrocollagenous stroma (H and E, ×100)

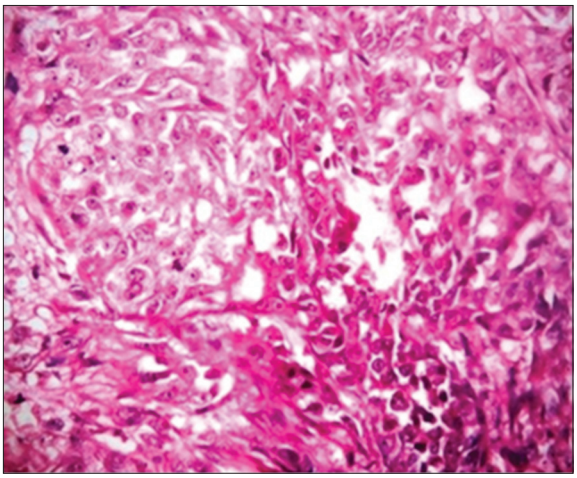

Figure 3: Microsection shows highly pleomorphic cells with moderate amount of eosinophilic cytoplasm, pleomorphic hyperchromatic nuclei, prominent nucleoli at many places. High mitotic count (H and E, ×400)

any particular age group.[16] Rarely, nipple discharge, nipple retraction, or skin ulceration may also be present.[5]

Distant metastasis occurs via the blood and lymphatic circulation. It has a lower incidence of lymph nodal metastasis than that of infiltrating duct carcinoma.[17] The lower chance of the lymph node positivity is due to rare lymphatic spread in carcinosarcoma of the breast. However, the hematogenous metastatic potential is high particularly to extranodal sites such as lung and bone.[6] Lung is the most common distant metastatic site.[18]

Sonographic finding of carcinosarcoma of breast shows heterogeneous or hypoechoic solid mass and may also described as a round, oval, or lobular shape complex echogenicity with solid and cystic components which may be related to necrosis and cystic degeneration and most frequently demonstrate posterior acoustic enhancement (compared with posterior shadowing).[19] Mammographically, imaging features are benign with round or oval shapes, circumscribed margins and the lesions are non-calcified with a high rate of architectural distortion.[6] The magnetic resonance imaging exam includes T2 hyperintensity and lesions containing ring-like, homogenous, heterogeneous, or non-enhancing internal components.[6] These non-enhancing T2 high-signal-intensity internal components correlate with necrosis, cyst, and chondroid matrix on pathology findings.[19]

There are some difficulties in diagnosis and treatment of carcinosarcoma. A multidisciplinary treatment approach should be required during management process. There are no standard management guidelines for carcinosarcoma due to the rarity of the disease-causing limited research data. In general, the treatment of carcinosarcoma should follow the guidelines for treatment of invasive breast cancer. Mastectomy with or without axillary lymph node dissection followed by post-operative chemotherapy and radiation therapy are the treatment options.[20] Axillary lymph node dissection should be omitted from standard mastectomy procedure because of uncommon lymphatic spread in this type of malignancy.[21] Neoplastic cells disposed to local recurrence due to their prevalence in the perivascular tissue.[10] Prevention of local recurrence is very important in the management course, and radiotherapy should be considered in preventing recurrence. Anthracycline/taxane-based chemotherapy is recommended for chemotherapy schedule in carcinosarcoma of breast.[22] Patients treated with neoadjuvant or adjuvant anthracycline-based chemotherapy showed a better clinical outcome compared to those treated with cyclophosphamide, methotrexate, 5-fluorouracil.[23] Neoadjuvant chemotherapy for carcinosarcoma breast was less effective than for conventional adenocarcinoma.

Despite the aggressive type of tumor, no significant difference was found when it was compared to high-grade receptor-negative infiltrative carcinomas.[3] Overall, carcinosarcoma is an aggressive type of breast cancer with a worse prognosis than classical breast carcinomas. Tumor size, differentiation rate, high histologic grade, atypia, and active pleomorphic spindle cells play a role in prognosis.[2] Poor prognostic factors include age younger than 39 years at presentation, skin invasion, and size >5 cm.[8] 5 years overall survival is 49-68% in carcinosarcoma of breast.[5,24] The 5 years survival rates for tumor, nodes, metastasis (TNM) clinical Stages I, II, and III are 100%, 63%, and 35%, respectively.[15] Our case is recurrence- and metastasis-free in the 8th month under follow-up.

CONCLUSION

Pretreatment accurate diagnosis of carcinosarcoma breast with its TNM staging is essential to optimize the treatment process in both surgery and adjuvant therapy toward this aggressive breast cancer subtype. It may help to avoid unnecessary axillary lymph node dissection during surgery. Therefore, further research needs to be performed to evaluate the potential and outcome of such therapy in patients with carcinosarcoma of the breast.

Carcinosarcoma of the breast is a rare entity, and a few numbers of cases have been published in the literature. To know the similar and different characterizing aspects of breast cancer, diagnosed cases should be reported with a literature review.

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