

Carcinosarcoma of the Breast

Muhammad Ameen Abbasi¹, Humera Mahmood¹, Muhammad Faheem¹, Khurshid Ahmed Khan² and Javed Irfan¹

ABSTRACT

Carcinosarcoma of the breast is an extremely rare and aggressive tumour with two distinct cell lines comprising epithelial and mesenchymal components, with few cases reported in the literature. The prognosis of carcinosarcoma breast is less favourable compared to more common types of breast cancers such as infiltrating ductal or lobular carcinomas. These tumours form a diagnostic and therapeutic challenge. A case of carcinosarcoma breast in a 36 years old woman is presented here.

Key words: Breast cancer. Carcinosarcoma. Metaplastic carcinoma.

INTRODUCTION

Carcinosarcoma of the breast, often referred to as metaplastic carcinoma of the breast, is a rare malignancy. Its incidence is reported as 0.1% of all breast cancers. It has biphasic differentiation of cells possessing epithelial and mesenchymal characteristics and suggests myo-epithelial origin or differentiation.¹ Clinically carcinosarcoma of the breast is an aggressive breast cancer.² These tumours do not express the estrogen or progesterone receptors and HER-2/neu oncogene. Due to this "triple negative" phenotype, such tumours tend to be more aggressive.³ Immunohistochemical features of carcinosarcoma breast shows immunoreactivity for keratin (55%), vimentin (98%), actin (77%) and S-100 protein (55%).⁴

The present report describes the condition in a 36 years old lady. The case merits presentation because of its rarity and difficult to diagnose mainly due to sarcomatous elements.

CASE REPORT

A 36 years old pre-menopausal woman presented with a mass in her right breast which grew rapidly in 3 months. Physical examination showed a firm mass of 5 cm in greatest dimension with irregular boundaries in the upper outer quadrant of the right breast with no enlarged lymph nodes in the axillary region. Left breast and systemic examination were unremarkable. Ultrasonography revealed a solid hypoechoic mass of 4.5 cm in greatest dimension displaying irregular boundaries.

On mammography a dense lesion with irregular boundaries was seen.

No metastasis was found in systemic radiological investigations. Patient underwent lumpectomy of the right breast. Gross examination of the specimen showed a 4 x 4 x 3 cm grayish-brown coloured tumour. Microscopically it showed breast tissue exhibiting biphasic lesion composed of sheets of spindle cells exhibiting moderate nuclear pleomorphism, eosinophilic cytoplasm and indistinct cell borders. Interspersed neoplastic glands were lined by cuboidal cells with vesicular nuclei, prominent nucleoli and moderate amount of eosinophilic cytoplasm. Mitotic figures were seen within epithelial and stromal component. Immunohistochemical staining showed keratin positivity in epithelial cells and sarcomatous component was positive for vimentin. Estrogen and progesterone receptor status and HER-2/neu oncogene were negative.

Post-excision, she received six cycles of chemotherapy (ifosfamide and doxorubicin) and loco-regional radiation and now she is on regular follow-up for the last 18 months without any recurrence.

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.⁵ Carcinosarcoma of the breast is an aggressive and rare neoplasm. Its reported incidence is 0.1% of all breast malignancies.⁶ Carcinosarcoma breast usually presents as large lump in breast, often painful and show no preference for any particular age group.⁷ Clinical features of metaplastic breast cancer are similar to those patients with invasive ductal carcinoma.⁸ Sonographically it shows complex echogenicity with solid and cystic components which may be related to necrosis and cystic degeneration. The cell of origin of these tumours is still being debated, but most of the

¹ Department of Oncology, Nuclear Medicine Oncology and Radiotherapy Institute (NORI), Islamabad.

² Department of Oncology, Centre for Nuclear Medicine and Radiotherapy (CENAR), Quetta.

Correspondence: Dr. Muhammad Ameen Abbasi, House No. 1176, Sector I-10/4, Islamabad.

E-mail: drabbasiameen@yahoo.com

Received August 20, 2010; accepted October 28, 2011.

research leads us to the conclusion that these tumours are of myoepithelial origin with both carcinomatous and sarcomatous features on histopathology.

Immunohistochemistry is the gold standard investigation in the diagnosis of carcinosarcomas. Wargotz *et al.* reported that in carcinosarcoma breast, 55% of sarcomatous component is immunoreactive for keratin and 98% for vimentin. Aggressiveness of this tumour is attributed to its high grade and negativity for estrogen and progesterone receptors. These tumours also do not overexpress HER-2/neu oncogene.⁹ Epidermal growth factor receptor (HER-1/EGFR) protein is expressed in majority of these tumours and may serve as a potential therapeutic target for EGFR inhibitors. Esses *et al.* emphasized the need for investigating the role for blockade of the HER-1/EGFR receptor with targeted therapies when found to be overexpressed in the primary tumour. Recently, Hennessy¹ *et al.* reported 98 patients with carcinosarcoma breast through the SEER database and conclude that these are aggressive, treatment refractory tumours with shared clinical features and outcomes similar to poorly differentiated, receptor-negative adenocarcinoma of the breast. Carcinosarcoma of the breast metastasize via lymphatics and bloodstream. The incidence of lymph nodal metastasis from metaplastic carcinoma is lower than might be anticipated for infiltrating duct carcinoma, in keeping with the sarcomatous phenotype.¹⁰

In general, the recommended treatment options have followed the established guidelines for treatment of patients with invasive breast cancer. In the majority of the reported cases, mastectomy with or without axillary lymph node dissection was performed, followed by post-operative chemotherapy and radiation therapy. One study by Kim *et al.* reported that patients who were treated with neoadjuvant or adjuvant anthracycline-based chemotherapy showed a better clinical outcome compared to those treated with CMF (cyclophosphamide, methotrexate, 5-fluorouracil) and the neoadjuvant chemotherapy for carcinosarcoma breast was less effective than for conventional adenocarcinoma. Beatty *et al.* in their review of 16 publications on carcinosarcoma

breast revealed a 5-year overall survival ranging from 49-68%.⁸ Wargotz *et al.* described 5 years survival rates for TNM clinical Stages I, II, and III as 100%, 63%, and 35% respectively.⁴

Obtaining an accurate diagnosis of carcinosarcoma breast is essential in order to optimally tailor adjuvant therapy towards this aggressive breast cancer subtype. Therefore, further research needs to be performed in order to fully evaluate the potential of such therapy in patients with carcinosarcoma of the breast.

REFERENCES

1. Hennessy BT, Giordano S, Broglio K, Duan Z, Trent J, Buchholz TA, *et al.* Biphasic metaplastic sarcomatoid carcinoma of the breast. *Ann Oncol* 2006; **17**:605-13.
2. Patrikar A, Maimoon S, Mahore S, Akhtar MA, Wilkinson A. Metaplastic carcinoma of the breast (carcinosarcoma variant). *Indian J Patbol Microbiol* 2007; **50**:396-8.
3. Esses KM, Hagmaier RM, Blanchard SA, Lazarchick JJ, Riker AI. Carcinosarcoma of the breast; two cases reports and review of the literature. *Cases J* 2009; **2**:15.
4. Wargotz ES, Norris HJ. Metaplastic carcinomas of the breast III. Carcinosarcoma. *Cancer* 1989; **64**:1490-9.
5. Kim SH, Chung HC, Jeong J, Kim JH, Rha SY, Ahn JB, *et al.* A locally advanced breast cancer with difficult differential diagnosis of carcinosarcoma and atypical medullary carcinoma, which had poor response to adriamycin- and taxane-based neoadjuvant chemotherapy. *Cancer Res Treat* 2007; **39**:134-7. Epub 2007 Sep 30.
6. Srinivas V, Harjai MM, Subramanya AC, Rajaram BT, Rai R. Carcinosarcoma of the breast with an unusual secretory carcinoma as the carcinomatous component. *Med J Armed Forces India* 2004; **60**:410-2.
7. Atahan K, Gur S, Tarcan E. Carcinosarcoma of the breast. *J Breast Health* 2007; **3**:85-6.
8. Beatty JD, Atwood M, Tickman R, Reiner M. Metaplastic breast cancer: clinical significance. *Am J Surg* 2006; **191**:657-64.
9. Tse GM, Tan PH, Putti TC, Lui PC, Chaiwun B, Law BK. Metaplastic carcinoma of the breast: a clinicopathologic review. *J Clin Patbol* 2006; **59**:1079-83.
10. Arora S, Gupta Y, Bahardwaj S, Gupta R. Metaplastic carcinoma of breast. *JK Sci* 2009; **11**:144-5.

.....★.....