

# Carcinosarcoma of breast – A chimera among breast neoplasms

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### ABSTRACT

Malignant phyllodes, along with ductal carcinoma, is known as metaplastic cancer of the breast. This tumor is additionally known as breast carcinosarcoma. Malignant phyllodes in conjunction with ductal carcinoma is a rare finding in routine clinical practice. We describe the case report of a 47-year-old female patient who arrived with a large right breast mass. A core biopsy was performed, and histopathological examination indicated that the tumor was a malignant phyllodes tumor. A positron emission tomography (PET) scan revealed hyper-metabolic and hypo-metabolic tumors with perilesional stranding and satellite nodularity. There were a few metastatic right axillary nodes visible. There was no indication of distant metastases. Due to the presence of both components, a modified radical mastectomy surgery with axillary dissection was undertaken for this patient. Histopathological analysis of paraffin sections revealed ductal carcinoma *in situ* (DCIS) comedo-epithelial component and spindle-shaped cells with hyper-chromatic oval nuclei and scanty cytoplasm.

**Keywords:** Breast cancer, carcinosarcoma, ductal carcinoma *in situ*, modified radical mastectomy, phylloides tumor

### Introduction

Commonly reported carcinoma of the breast is ductal adenocarcinoma. Their management algorithms are well-defined. However, rare types of histopathological surprises have been reported in literature.<sup>[1]</sup> Awareness of such pathologies should prompt reference to dedicated oncological services for better patient management.

Carcinosarcoma of the breast, also known as metaplastic carcinoma of the breast, is a rare cancer. The incidence of primary breast cancer is lower than 1%.<sup>[2]</sup> It develops from two separate cell lines and is defined as ductal breast cancer with a sarcoma-like component. Malignant epithelial and malignant

mesenchymal components coexist. Breast metaplastic carcinomas lack estrogen and progesterone receptors, as well as the human epidermal growth factor receptor (HER2/neu) oncogene. These triple-negative tumors are aggressive<sup>[3]</sup> and do not respond to Herceptin treatment.<sup>[4]</sup>

HER-1/EGFR protein is thought to be present in most cases of metaplastic cancers, and epidermal growth factor receptor (EGFR) inhibitors such as gefitinib and cetuximab may assist.

### Case History

A 47-year-old female was hospitalized with a history of a mass in her right breast for 3 months. There was no documented case of breast, ovarian, or uterine cancer in the family. She did not have diabetes and had normal blood pressure. The mass measured 5 cm × 3 cm in the outer quadrant and had retro-areolar expansion. The consistency of the lump varied. There were no changes to the skin or the nipple. Axillary lymph

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nodes were palpable on the right side. The left breast and axilla were examined and found to be normal.

Ultrasonography (USG) of the right breast indicated a well-defined lesion with uneven margins of approximately 3 cm × 2.5 cm. The lesion was hypoechoic and had fat density and calcification. Another lesion was discovered at the retro-areolar lesion, which measured 1.8 cm × 1.3 cm × 1.1 cm and was hypoechoic with calcification. At 7 o'clock, two hypoechoic minor lesions measuring 0.9 cm × 0.7 cm and 0.5 × 0.5 cm were also seen.

No focal lesion was noted on left breast, and no evidence of axillary lymphadenopathy was notable.

Lesion at 9 o'clock was reported as Breast Imaging Reporting and Data System (BIRADS) class IV C.

Core biopsy was taken from the right breast mass [Figure 1], which revealed features suggestive of metaplastic tumor in the right breast.

PET-CT imaging indicated a hyper-metabolic parenchymal soft tissue mass encompassing the right breast's outer quadrant, showing perilesional stranding and satellite nodularity. Few metastatic right axillary nodes were seen. No evidence of distant metastasis.

Considering the patient's age, size of the lesion, and histology, she was counseled for modified radical mastectomy (MRM). MRM was performed by a team of senior surgeons [Figure 2]. Histopathology revealed infiltrating duct carcinoma with malignant phyllodes. All 27 lymph nodes were negative for tumor invasions.

MRM sample histopathological diagnosis was Metaplastic Carcinoma with Ductal Carcinoma-in-Situ [Figure 3].

Immunohistochemistry markers ER (EP-1) [Figure 4], PgR (EP-2), and HER-2/Neu (EP-3) [Figure 5] were negative.

Ki67 (MIB-1) was 70%.

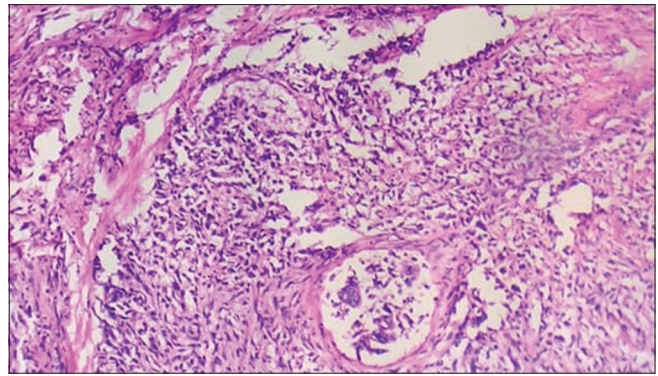
## Discussion and Conclusion

Carcinosarcoma of the breast is a malignant sarcomatoid metaplasia of epithelial carcinoma. Carcinosarcoma is included in the group of metaplastic breast tumors. Malignant epithelioid and malignant mesenchymal cells are found together.

Carcinosarcoma does not have specific imaging findings. Typical findings clearly indicating malignancy may not be seen on mammography.<sup>[5]</sup> On ultrasound, both solid and cystic components are seen in the lesion.<sup>[5]</sup>

In our patient, lesion was hypoechoic and with calcifications.

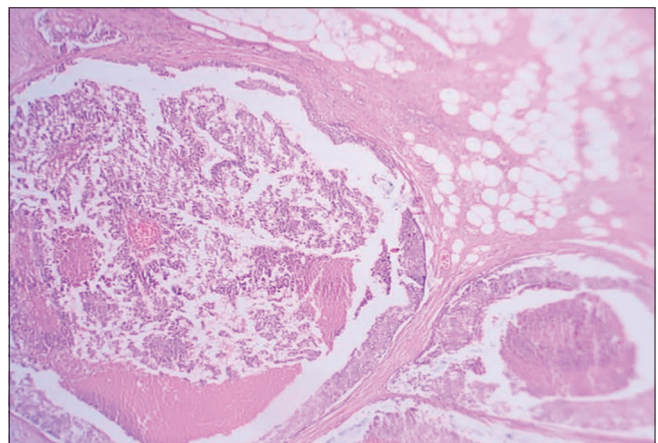
Histopathology is helpful in the diagnosis of immunohistochemistry markers.<sup>[6]</sup>



**Figure 1:** Histopathological examination conducted post-core biopsy showing multiple cores infiltrated by malignant cells suggestive of metaplastic carcinoma of the breast



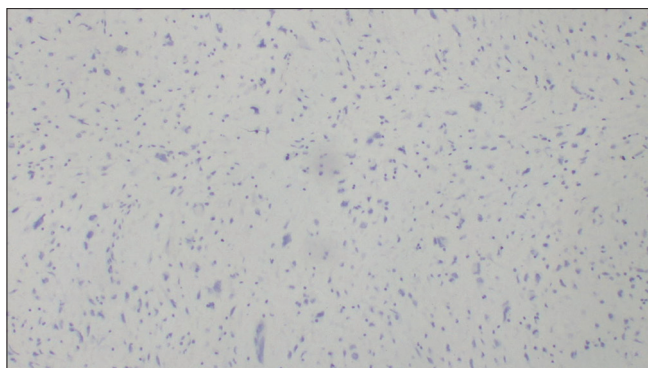
**Figure 2:** Excised specimen of the breast mass following modified radical mastectomy



**Figure 3:** Histopathological examination of the excised specimen post-mastectomy showing features of metaplastic carcinoma of the breast with ductal carcinoma *in situ*

Treatment is MRM.<sup>[7]</sup> Though, the axillary metastatic rate is between 0 and 53%. Calley's reported no axillary node involvement in 32 patients.<sup>[8]</sup> Our patient was also node-negative.

Hormone receptors and C-erb B2 are generally found to be negative.<sup>[9]</sup>



**Figure 4:** Immunohistochemistry (IHC) staining showing negative stain for ER (EP-1)

Adjuvant chemotherapy is generally recommended, but the response rate is low.<sup>[10]</sup>

Radiotherapy is used to prevent local recurrence.

Similarly, in our patient, the presence of distant metastasis in the lung, bone, and brain adds to the poor prognosis.

Though the course of the disease is parallel to breast cancer, it is more aggressive with poor prognostic marker.<sup>[11]</sup>

In conclusion, breast carcinosarcoma is a rare, metaplastic tumor. Evaluation of rapidly growing, large masses that may not have typical malignancy signs on imaging and needle biopsy may be insufficient for diagnosis. This requires an interdisciplinary approach to treatment with the involvement of pathologist, radiologist, surgeons, oncologist, and supporting nurses.

### Abbreviations

- BIRADS = Breast Imaging Reporting and Data System.
- cm = centimeter
- EGFR = Epidermal Growth Factor Receptor
- IHC = Immuno-histochemistry
- PET-CT = Positron emission tomography-computed tomography scan
- HER1 = Human Epidermal growth factor 1.
- HER2/neu = Human epidermal growth factor 2.

### Declaration of patient consent

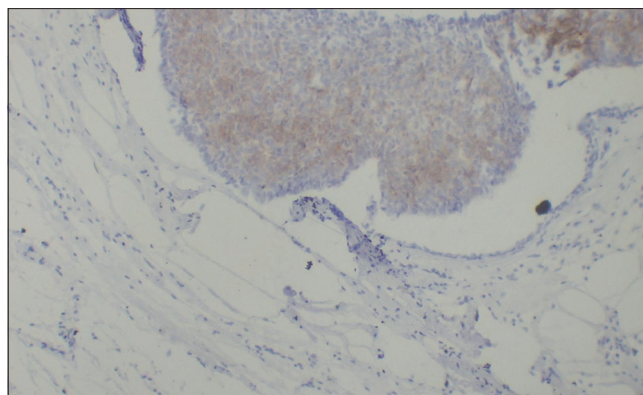
The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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### Conflicts of interest

There are no conflicts of interest.



**Figure 5:** Immunohistochemistry (IHC) staining showing negative stain for HER2-neu (EP-2)

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