

Case Report

Metaplastic carcinoma (carcinosarcoma) of the breast: a case report

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Abstract: Metaplastic breast carcinoma (MBC) is a rare malignancy and accounting for less than 1% of all breast carcinomas, which is often composed of epithelial and mesenchymal components. The present study describes a case of a 43-year-old female patient with MBC, which is diagnosed according to the combination of the gross examination, ultrasonic, mammographic, magnetic resonance (MR), breast-specific gamma-imaging (BSGI) and sentinel lymph node biopsy. After undergoing lumpectomy of right breast, the patient received six courses of adjuvant chemotherapy and now undergoing radiotherapy, without any sign of recurrence or metastasis. MBC may have poorer prognosis compared with invasive breast cancer (IBC) but there is no standardized therapeutic strategy for it. It is urgently needed that large studies are conducted to investigate different treatment.

Keywords: Metaplastic carcinoma, carcinosarcoma, breast, prognosis

Introduction

Metaplastic breast carcinoma (MBC) is exceptionally rare with less than 1% of breast cancer being diagnosed as MBC annually. MBC is a heterogeneous disease characterized by the presence of a mixture of epithelial and non-epithelial components, such as a nonglandular epithelial cell type (e.g., squamous) or a mesenchymal cell type (e.g., spindle, mucoepidermoid, chondroid, osseous, myoid). Despite its poor diagnosis, no standardized therapeutic strategy has been applied in the clinic because of its rare occurrence rate. Here we report a 43-year-old female patient with MBC who suffered lumpectomy of right breast, then received six courses of adjuvant chemotherapy and now undergoing radiotherapy without any sign of recurrence or metastasis.

Case report

A 43-year-old female patient without significant medical history referred to our department complaining that there was a palpable, painless mass in her right breast. On physical exam-

ination, palpation revealed that in the upper outer quadrant of right breast, there was a round, firm, mobile mass without any tenderness or nipple drainage, measuring about 3*3 cm; Axillary lymph nodes were not palpable; Contralateral breast and axilla were normal. Ultrasound showed a round-shaped, solid, smooth margin, hypoechoic mass with spotted blood flow in the 10-12 clock position of right breast (**Figure 1**). No enlarged lymph node was found. Mammography revealed a round, high but uneven density, and margin indistinct mass in the upper outer quadrant of right breast measuring 3*2.6 cm with micro-calcifications (**Figure 2**). The lesion corresponded to category 5 according to the BI-RADS Mammography lexicon classification. MR images showed a round-shaped, with spiculated margin mass measuring about 2.5*2.5 cm in the upper lateral quadrant of the right breast. On T1WI-weighted image the mass showed an iso-hypo signal intensity and mixed signal intensity on T2-weighted fat-saturated image, with high signal intensity on diffusion-weighted image. Contrast-enhanced T1-weighted fat-saturated

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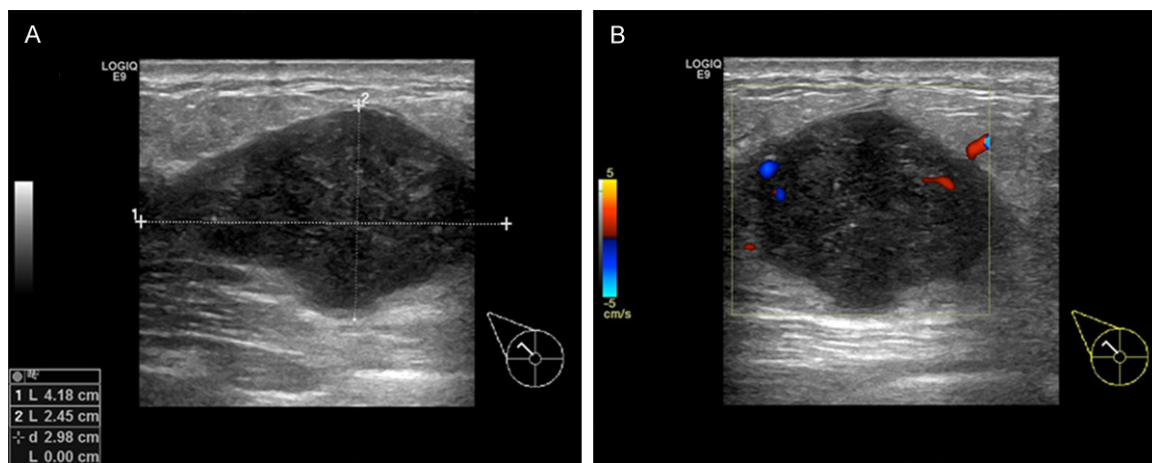


Figure 1. Ultrasound imaging. Ultrasound showed a hypoechoic mass measuring 4.18*2.45 cm with smooth margin (A) and blood flow (B) in the 10-12 clock position of right breast.

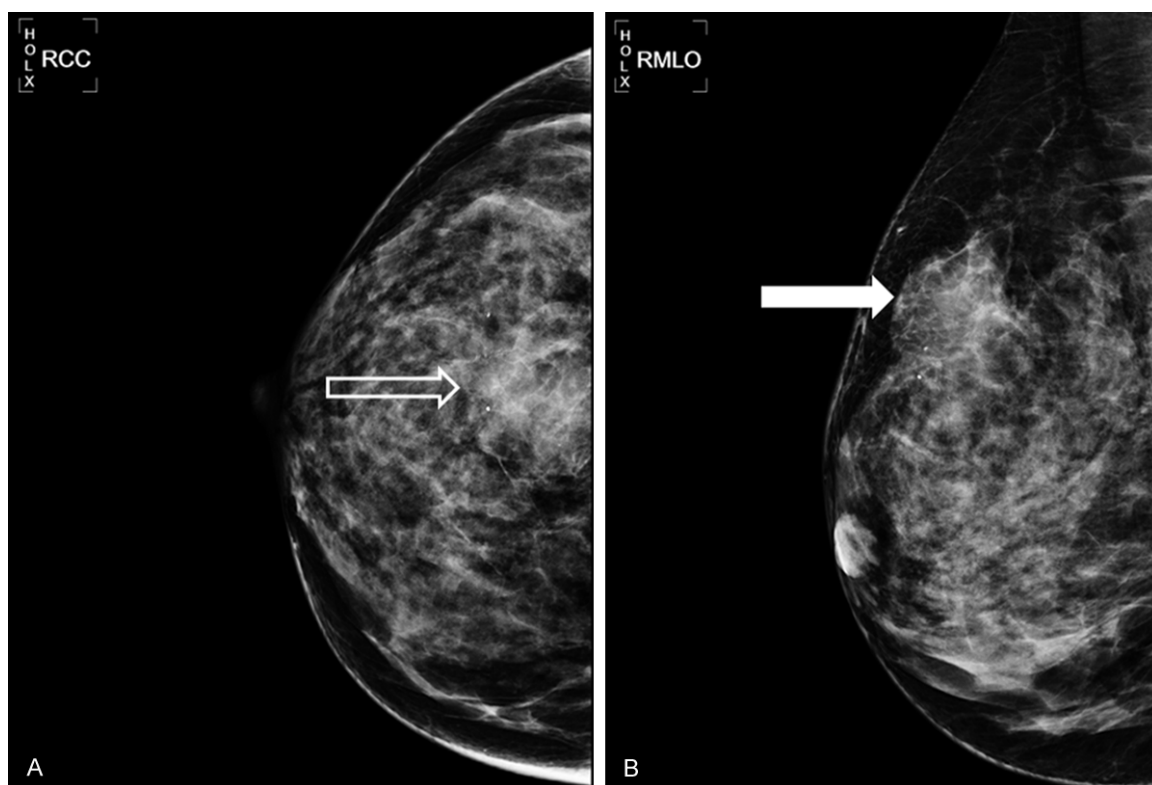


Figure 2. Mammography imaging. Mammography revealed a round, high but uneven density, margin indistinct mass in the upper outer quadrant of right breast measuring 3*2.6 cm with micro-calcifications as the arrows showing. The lesion corresponded to category 5 according to the BI-RADS Mammography lexicon classification.

image showed remarkable heterogeneous enhancement with the central necrosis. MIP showed large blood vessels around the tumor. Curves indicated plateau enhancement (**Figure 3A and 3B**). The BSGI showed a mass in right breast with aggregation of 99mTc-MIBI and the

T/NT was 2.08, which also indicated the potential of malignancy (**Figure 3C**). Combining with the above-mentioned results, the possibility of malignancy could not be excluded, so sentinel lymph node biopsy was operated. The pathological diagnosis was a carcinosarcoma of the

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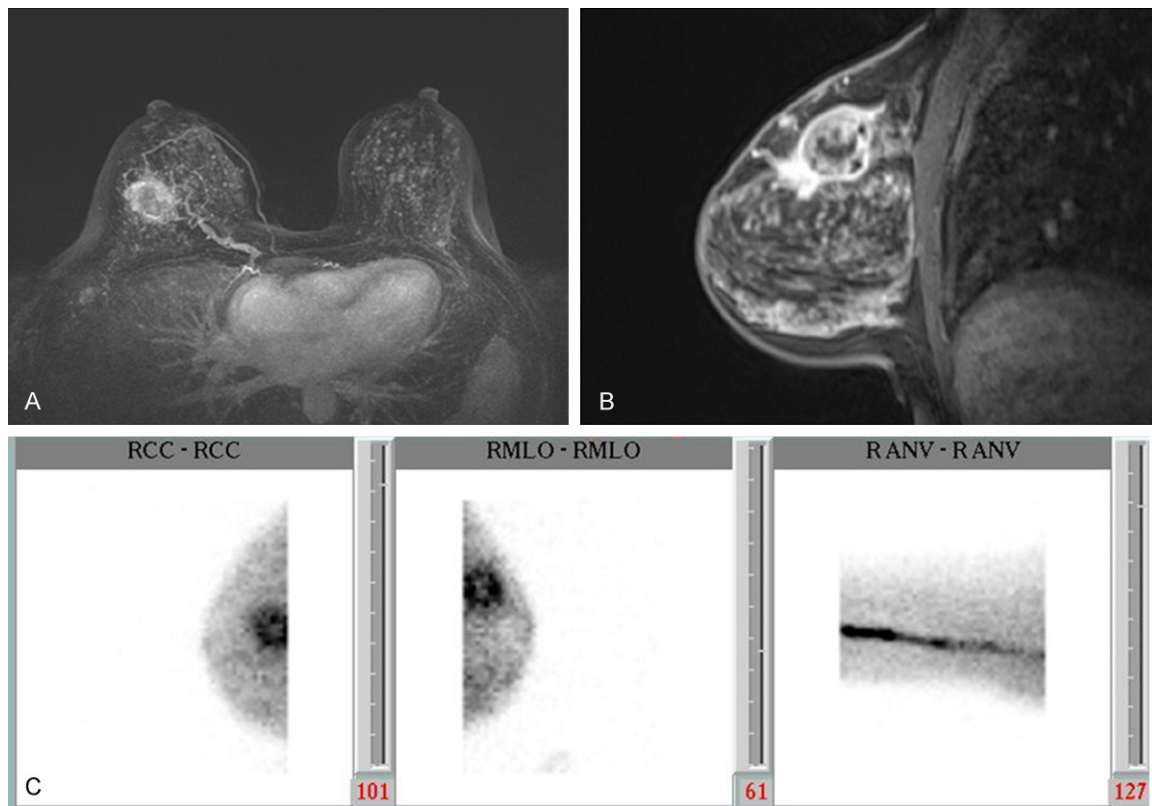


Figure 3. Magnetic resonance (MR) and breast-specific gamma-imaging (BSGI) imaging. MR images showed a round-shaped, with spiculated margin mass measuring about 2.5*2.5 cm in the upper lateral quadrant of the right breast. On T1WI-weighted image the mass showed an iso-hypo signal intensity and mixed signal intensity on T2-weighted fat-saturated image, with high signal intensity on diffusion-weighted image. Contrast-enhanced T1-weighted fat-saturated image shows remarkable heterogeneous enhancement with the central necrosis. MIP showed large blood vessels around the tumor. Curves indicate plateau enhancement (A, B). The BSGI showed a mass in right breast with aggregation of ^{99m}Tc -MIBI and the T/NT was 2.08, which also indicated the potential of malignancy (C).

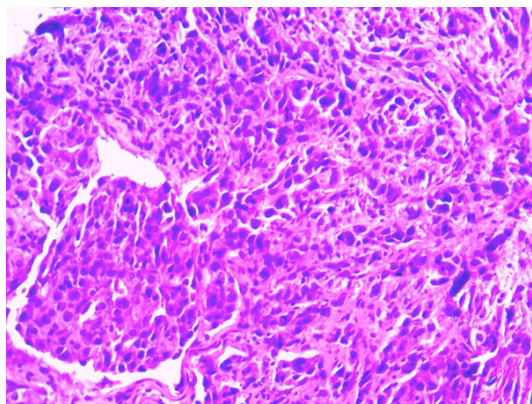


Figure 4. The microscopic appearance of the resected tumor. Pathological finding showed the tumor was mixed by two patterns of tumor cell-epithelial and mesenchymal components. (hematoxylin and eosin (HE) $\times 20$).

right breast (mixed epithelial/mesenchymal metaplastic carcinomas) (**Figure 4**).

The patient underwent a lumpectomy of right breast tumor. Gross examination of the specimen revealed a solid tumor with complete envelope and the tumor was measured 2.5*2.5*3 cm. Microscopically, the tumor showed to be mixed by two patterns of tumor cell- epithelial and mesenchymal components. Pathological diagnosis was mixed epithelial and mesenchymal metaplastic carcinoma (carcinosarcoma). No metastasis was found in the 5 sentinel lymph nodes. In addition, the epithelial tumor cells were positive for CK (AE1/AE3), CAM5.2, EMA, CK7 with an approximately 30% Ki-67 labeling rate, and negative for ER, PR, C-erbB-2, P63 and CK5/6. The spindle cells were focal positive for P63, CK5/6, and negative for CK(AE1/AE3), CAM5.2, EMA, ER, PR, CD117-, c-erbB-2(BC), SMA and S-100, which indicated the diagnosis of MBC.

After the operation, the patient received six courses of a docetaxel-cisplatin combination

chemotherapy regimen (day 1, 75 mg/m² docetaxel; days 1-3, 25 mg/m² cisplatin, per 21 days) and now undergoing radiotherapy, without any sign of recurrence or metastasis.

Discussion

The origin of MBC is still unclear. It is suggested that the origin is most likely derived from epithelial in nature with sarcomatous components which may arise from myoepithelial cells. Some researchers thought MBC may be developed from existing cystosarcoma phyllodes, fibroadenoma and cystic backgrounds [1, 2].

The major clinical manifestation of MBC is a palpable and large mass in the breast, which is similar to invasive breast cancer (IBC). But unlike typical invasive breast cancer, MBC often has larger mass at diagnosis, and sometimes shows benign according to the image with a round shape without irregularity, burr margins. MBC has been found to less frequently express hormone receptor including estrogen (ER), progesterone (PR) with the ER/PR positive rate ranging from 0-17% [3-6]. Besides, HER2/neu is also infrequently overexpressed with lower incidence of axillary node involvement [7-12]. But about 70% of MBC show epidermal growth factor receptor (EGFR) overexpression [13].

Because of the rare incidence, an optimal treatment is still in debate. The treatment is almost similar with IBC. But studies have found no difference in overall or disease-free survival between patients with MBC undergoing either modified radical mastectomy or breast conservation therapy [14, 15]. Traditional adjuvant chemotherapy for IBC is ineffective [6, 16, 17], also hormonal therapy is inapplicable as there is a high incidence of hormone receptor negativity in MBC [18]. Tseng et al. supported adjuvant radiation should be applied in patients with MBC regardless of the type of operation (lumpectomy versus mastectomy) because of the improvement of both overall and disease-specific survival [14]. Neoadjuvant therapy has been recognized as an effective approach for potentially operable MBC which could shrink the tumor, treat micrometastatic disease earlier, and assess responsiveness to therapy directly. But the indication should manage strictly. Treatment should change timely if patients with MBC respond poorly. In addition,

although molecular analyses for genetic alterations of EGFR is lacking, it provides a potential treatment for MBC with protein kinase inhibitor, like gefitinib and cetuximab [13].

Conclusion

MBC often presents as palpable and large mass in the breast. But preoperative diagnosis may not accurate even with needle biopsies. So, clinician need more caution with these presenting benign large mass. MBC may have poorer prognosis compared with IBC but there is no standardized therapeutic strategy for it, so it is urgently needed that large studies be conducted to investigate different treatment.

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Disclosure of conflict of interest

None.

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