

## CASE REPORT

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# Metaplastic Breast Cancer with Squamous Differentiation: Beyond the Recognized Statistics

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## ABSTRACT

**Background:** Metaplastic breast cancer is a clinically rare subtype of breast carcinomas, accounting for less than 1% of all breast neoplasms, and was not officially recognized till the end of the 20th century as an independent pathological diagnosis. **Objective:** In this paper, we report a case of metaplastic breast cancer with squamous differentiation in a 51-year-old female, with a succinct review of the literature. **Case Report:** The patient presented to our outpatient department with a complaint of left breast mass for 2 months duration with a diagnostic workup found to be grade three metaplastic carcinoma with squamous differentiation. The management decision was to proceed with neoadjuvant chemotherapy, followed by surgical intervention based on the tumor cell response to neoadjuvant therapy. **Conclusion:** Metaplastic breast cancer represents a rare clinical entity, encountered in a minority of patients. The clinical presentation of metaplastic carcinomas in general is similar to other breast cancers, however, metaplastic breast cancer tend to present in later stages as a rapidly growing mass with poor prognosis. The recognized poor prognosis along with rarity necessities having a high index of suspicion for early detection and appropriate management of metaplastic breast cancer.

**Keywords:** Metaplastic Breast Cancer, Squamous Carcinoma, Breast Neoplasm.

## 1. BACKGROUND

Metaplastic breast cancer (MBC) is a clinically rare subtype of breast carcinomas, accounting for less than 1% of all breast neoplasms, and was not officially recognized till the end of the 20th century as an independent pathological diagnosis. The studies on the disease process and its management have been very limited since then due to its rarity and the variety of tumor types included under this diagnosis (1). MBC with squamous differentiation is a subtype of metaplastic breast carcinomas, which is a heterogenous group of rare aggressive form of breast neoplasm encountered in a limited number of patients (1).

## 2. OBJECTIVE

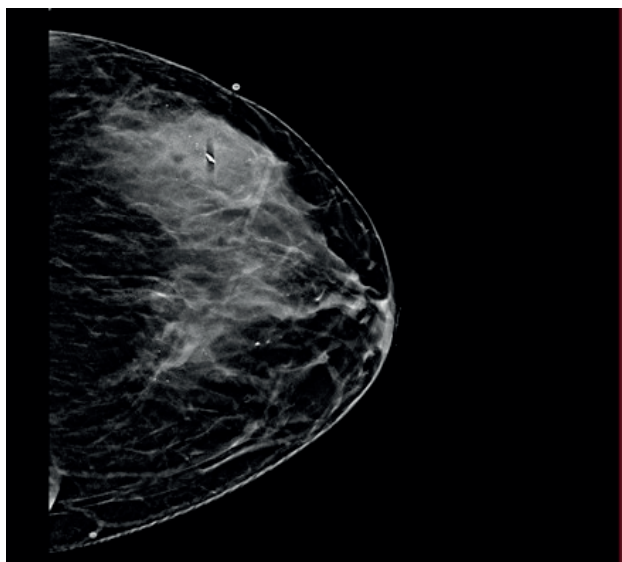
Herein, we report a case of metaplastic breast cancer with squamous differentiation in a 51-year-old female, with succinct review of the literature. The present paper was reported in accordance to the SCARE guidelines (2).

## 3. CASE PRESENTATION

A 51-year-old female, who is known to have hypertension, presented to our outpatient department with a complaint of left breast mass for 2 months duration. According to the patient, the mass was not associated with any pain, discharge from the nipple or skin changes. She is a mother of 7 children and had her first menarche at the age of 13. Her family history was unremarkable for any malignancies. She utilized oral contraceptive pills for 13 years. Her past surgical history was significant for subtotal thyroidectomy performed for goiter 15 years back, and was kept on replacement therapy since then. Menstrual history confirmed a regular and non-heavy menstruation. Upon examination, a mass was detected in the left breast, measuring around 4 x 3 cm, located at 2 o'clock, 7 cm away from the nipple, with no attachment to the

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**Figure 1. A diagnostic mammography was performed and illustrated the presence of an irregular mass with obscured margins measuring around 4.5 cm x 2 cm, occupying the upper lateral quadrant of the left breast, 5 cm away from the nipple, with fine pleomorphic suspicious calcifications.**

skin or muscles. Examination of the right breast along with the axilla bilaterally was unremarkable.

A diagnostic mammography was performed and illustrated the presence of an irregular mass with obscured margins measuring around 4.5 cm x 2 cm, occupying the upper lateral quadrant of the left breast, 5 cm away from the nipple, with fine pleomorphic suspicious calcifications, as shown in Figure 1. No suspicious axillary lymph nodes were identified, and the right breast was demonstrated with no architectural distortion or suspicious masses. A core-needle biopsy was obtained and was consistent with grade three metaplastic carcinoma with squamous differentiation. The lesion was triple negative with a Ki-67 score of 90%. The decision was made to proceed with neoadjuvant chemotherapy to be followed by breast-conserving surgery, or total mastectomy, with sentinel lymph node biopsy based on the cells' response to neoadjuvant agents.

#### 4. DISCUSSION

Metaplastic breast cancer represents a rare clinical entity, encountered in a minority of patients. The clinical presentation of metaplastic carcinomas in general is similar to other breast cancers, however, MBC tend to present in later stages as a rapidly growing mass ranging from 1.5 to 15cm with a median size of 4 cm (1). Despite the size of the tumor, the reported incidence of axillary lymph nodes involvement at time of diagnosis is less frequent in comparison to other invasive breast carcinoma of the same size (1, 3). Distant metastasis observed most commonly to involve the bone and lungs, with no documented lymph node involvement. Metaplastic carcinoma with squamous differentiation of the breast mostly appears in women between 30 and 80 years of age, mainly affecting postmenopausal women.

They clinically present with a large palpable, well fixated, and sometimes painful mass (3).

Along with squamous carcinoma MBC is further classified into 4 subtypes according to the World Health Organization (WHO), namely, low-grade adenosquamous carcinoma (LGASC), fibromatosis-like metaplastic carcinoma (FLMC), spindle cell carcinoma (SpCC), and metaplastic carcinoma with heterologous mesenchymal differentiation (MCHMD) (3). Histopathologically, metaplastic squamous carcinoma are estrogen receptor (ER), progesterone receptor (PR) and human epidermal growth factor receptor 2 (Her2) negative which is consistent with the diagnosis of triple-negative breast cancer (TNBC) (3, 4). They originate from squamous metaplasia, which is found in the epithelium of cysts, phyllodes tumors, chronic abscessor in some cases they may originate from myoepithelial cells (4). Genetically, metaplastic breast cancer harbors different complex mutations, most metaplastic with squamous differentiation demonstrated high Ki-67 proliferation index, negative p53, and positive cytokeratin 19 (4).

Diagnostic mammography and targeted ultrasound are both used for the investigations of MBC. On mammography, MBC have been described as being poorly specific with high density and with either circumscribed, obscured, or spiculated margins (4, 5). In some cases, a more benign appearance was reported on mammogram, having a round or oval shape with circumscribed margins. They usually lack calcifications (5). However, if calcifications are present, the pattern is irregular, coarse, punctuated, or polymorphous. On ultrasound, the appearance of MBC has been described as a hypoechoic solid mass with mixed cystic and solid components demonstrated as posterior acoustic enhancement (1, 4). The definitive preoperative diagnosis of MBC can only be made by means of micro-histological examination through a core-needle biopsy, as it is the only definitive characterization of the pure state of squamous carcinoma (6).

Being rare tumors, there is little data on the optimal treatment regimen for metaplastic squamous breast cancer and its management remains similar to other invasive breast carcinomas (6). As it was proven that MBC responds poorly to hormonal and chemotherapy regimens in comparison to other triple negative breast invasive breast carcinomas, neoadjuvant radiation therapy in combination with surgical management can improve the clinical outcomes (6, 7). Due to the large tumor size and the high rate of local recurrence, modified radical mastectomy is considered as the surgery of choice for MBC (6, 7). For the adjuvant therapy, radiotherapy, and anthracycline-containing chemotherapy regimens are considered to be the most effective and has an important role in the management strategy (6, 7).

The prognosis of patients with MBC depends on its grading and staging and also varies with the subtypes where fibromatosis-like carcinomas and low-grade adenosquamous carcinomas show more indolent behavior, while high-grade spindle cell, squamous cell, adenosquamous, and mixed metaplastic carcinoma are asso-

ciated with the worst prognosis (8, 9). Compared to breast cancer overall, metaplastic breast cancer is faster growing and more likely to metastasize to other parts of the body. It is also more likely to recur after a successful initial treatment (8, 9). The overall 5-year survival rate of patients with MBC is 40%, and local recurrence rate is reported to be 35-62% in the first 2-5 years (8, 9).

## 5. CONCLUSION

MBC is a rare entity of breast carcinomas, with a recognized poor prognosis. Rarity along with the undesirable prognosis associated with metaplastic carcinoma requires a high degree of suspicion while investigating a breast mass with rapid growth. As there is no specific guidelines for the management of metaplastic carcinoma, it was suggested that it should be managed similar to other invasive breast carcinoma. The role of targeted therapy which is being evaluated in many studies may be beneficial to patients in near-future.

- **Patient Consent:** Written informed consent was obtained from the patient for publication and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.
- **Author's contribution:** All authors were involved in all steps of preparation this case report. Final proofreading was made by the first author.
- **Conflict of interest:** None declared.
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