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### RESEARCH ARTICLE

#### METAPLASTIC CARCINOMA BREAST: A CASE SERIES

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#### Abstract

**Introduction:** Metaplastic breast carcinoma is a distinct histological type of breast cancer and comprises of two components of both epithelial & mesenchymal type in a single tumor. It includes adenosquamous, squamous cell carcinoma (SCC), spindle cell carcinoma, metaplastic carcinoma with mesenchymal differentiation, mixed carcinoma and myoepithelial carcinoma.

**Materials and Methods:** The study comprises of 5 cases of Metaplastic Breast carcinoma and was conducted in the Department of Pathology in Western part of India.

**Discussion:** MBC is characterized by adenocarcinoma admixed with spindle cells, squamous cells and mesenchymal differentiation. Among the five cases in the present series, two cases showed lymph nodes metastasis. Commonly immunohistochemistry (IHC) markers in cases of MBC shows triple negative for estrogen receptor (ER), progesterone receptor (PR) and HER2-neu.

**Conclusion:** The MBC has a poor prognosis and have a diverse clinical behavior, variable histology and different regime of treatment.

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#### Introduction:-

Metaplastic breast carcinoma [MBC] is a rare and distinct histological type of breast cancer which accounts to 0-2% of all breast tumors.<sup>1</sup> It was not recognized as a distinct pathologic entity until year 2000 when it was classified by World Health Organization (WHO). Despite increased recognition of this specific histologic subtype, the reported incidence still remains under 1% of all breast malignancies. It consists of a group of neoplasms with distinguishing features of both epithelial & mesenchymal type in a single tumor.<sup>2</sup> Clinically, most cases manifest as a palpable nodule, and the characterization of the lesion may be possible both by ultrasound and mammography. Macroscopically, they may appear as well-circumscribed or indistinct-appearing masses with irregular edges.<sup>1,3</sup> Histologically, MBC has adenocarcinoma with a mixture of spindle cells, squamous, chondroid or bone forming neoplastic cells.<sup>3</sup> These metaplastic cells can be either benign or malignant which are identified using IHC. The latest WHO classification includes adenosquamous, squamous cell carcinoma (SCC), spindle cell carcinoma, metaplastic carcinoma with mesenchymal differentiation, mixed carcinoma and myoepithelial carcinoma in this entity<sup>4,5,6</sup>. Due to its highly variable histology, the diagnosis is complex by clinical findings, radiology investigations and histopathology.

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**Materials and Method:-**

The study was hospital based descriptive observational cross-sectional study and 5 cases of Metaplastic Breast carcinoma were included in the study. The study was conducted in the Department of Pathology in Western part of India. The duration of the study was from July 2021 to June 2022.

**Case Reports:****Case 1:**

A 75-year female presented with lump in right breast. On examination breast lump was palpable in right inner and outer quadrant measuring 20x18x6cms, hard in consistency and immobile. She underwent MRM with axillary lymph node dissection and specimen was subjected for HPE. Grossly on serial sectioning of breast, solid tumor growth, grey white lesion measuring 6x6x6cm with areas of necrosis. No hemorrhage was noted. Nipple and areola were not involved. Eight lymph nodes were retrieved from axillary clearance. Microscopy showed squamoid cells having increased N:C ratio, hyperchromatic nucleus with moderate amount of pale eosinophilic cytoplasm arranged in sheets. One lymph node out of eight showed tumor deposits. Final diagnosis of metaplastic carcinoma of breast with squamous cell variant was offered with pT3N0 staging. On immunohistochemistry, ER, PR and Her2neu were negative. The case was lost for follow-up.

**Case 2:**

54-year female presented with lump in right breast. On examination, lump was palpable in all quadrants of right breast measuring 14x10cm, nodular and fixed. Patient underwent MRM with axillary clearance. Grossly, serial sectioning of breast revealed a single, grey white hard lesion measuring 8.5x7x3.5cm with areas of necrosis, hemorrhage and cystic change were noted. Nipple and areola were not involved. Twenty-five lymph nodes were retrieved from axillary clearance. Microscopy showed tumor having round to oval cells with prominent nucleolus and spindle cells. Focal areas showed features of Squamous cell carcinoma. A final diagnosis of metaplastic carcinoma of breast with pT4N2 staging was offered with tumor deposits in three out of twenty-five retrieved lymph nodes. The case was lost for follow-up.

**Case 3:**

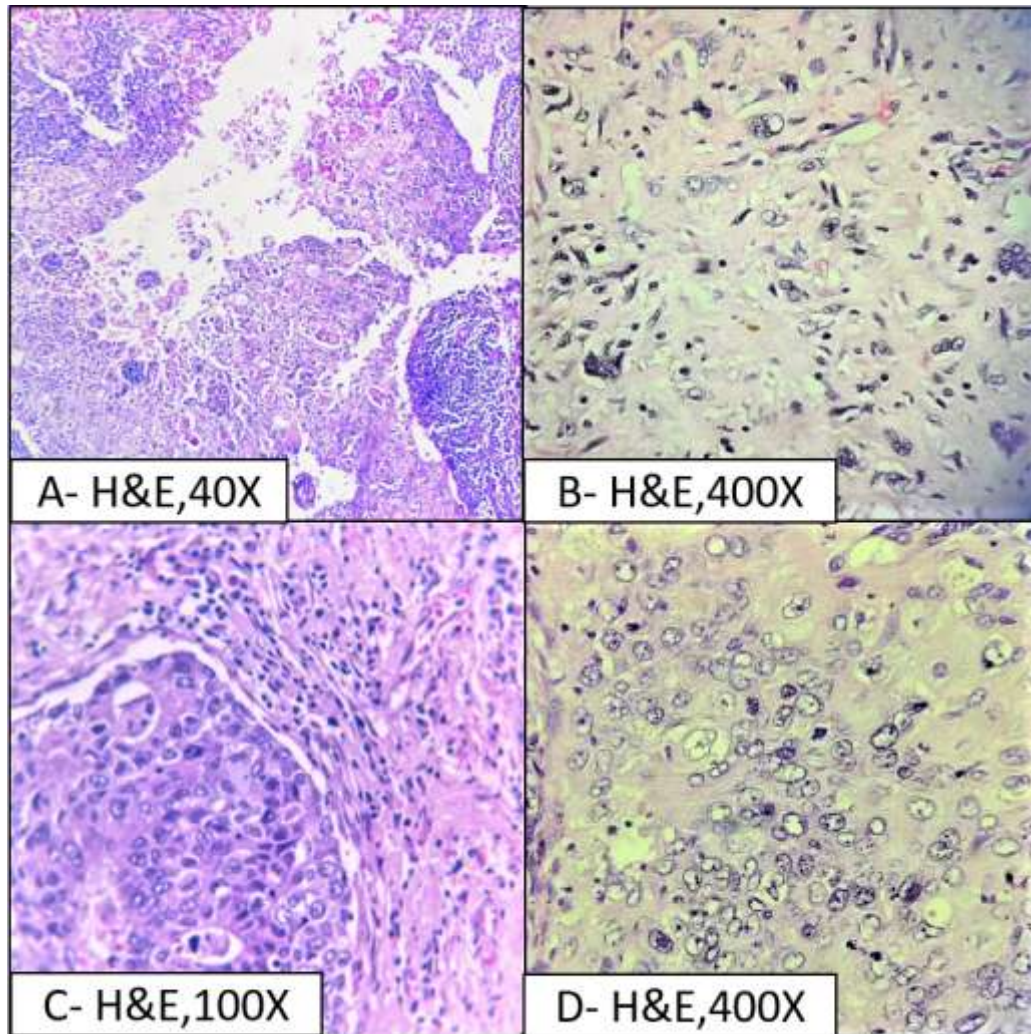
42-year female presented with lump in right breast. On examination, lump was palpable in all quadrants of right breast measuring 21x14x8cm, fungating growth and fixed. Nipple discharge was noted. Patient underwent MRM with axillary clearance. Grossly, serial sectioning of breast revealed a solid tumor growth, grey white hard lesion and irregular measuring 15x12x5.5cm with areas of necrosis and hemorrhage were noted. Nipple and areola were involved. Thirty lymph nodes were retrieved from axillary clearance. Microscopy showed tumor having round to oval cells with prominent nucleolus and spindle cells. Also noted were osteoclast type giant cells. A final diagnosis of metaplastic carcinoma of breast with pT4N3 staging was offered with tumor deposits in fifteen out of thirty retrieved lymph nodes. The case was lost for follow-up.

**Case 4:**

65-year female presented with lump in left breast. On examination, lump was palpable in lower inner quadrant of left breast measuring 10x5x4cm, nodular and fixed. Nipple discharge was not noted. Patient underwent MRM with axillary clearance. Grossly, serial sectioning of breast revealed a single grey white hard lesion measuring 3x2.5x1cm with areas of necrosis and cystic change were noted. No areas of haemorrhage were seen. Nipple and areola were involved. Ten lymph nodes were retrieved from axillary clearance. Microscopy showed tumor having round to oval cells with prominent nucleolus and spindle cells. A final diagnosis of metaplastic carcinoma of breast with pT2N0 staging was offered with no tumor deposits in ten retrieved lymph nodes. The case was lost for follow-up.

**Case 5:**

60-year female presented with lump in left breast. On examination, lump was palpable in upper outer quadrant of left breast measuring 14.5x11x6cm, solid and fixed. Nipple discharge was not noted. Patient underwent MRM with axillary clearance. Grossly, serial sectioning of breast revealed a single grey white hard lesion with papillary excrescences measuring 9x6x5cm with areas of necrosis. No areas of hemorrhage and cystic change were noted. Twenty-two lymph nodes were retrieved from axillary clearance. Microscopy showed tumor having round to oval cells with prominent nucleolus and spindle cells with focal component of DCIS and comedonecrosis. A final diagnosis of metaplastic carcinoma of breast with pT3N0 staging was offered with no tumor deposits in twenty-two retrieved lymph nodes. On IHC, it came out to be triple negative with ER, PR, Her2 neu negative. The case was lost for follow-up.

**Legend**

A- Microphotograph shows squamous cell carcinoma with epithelial pearls.

B-Microphotograph shows spindle cells along with osteoclastic component and mitotic figures.

C- Microphotograph shows poorly differentiated neoplasm with formation of solid blocks composed of epithelioid cells with little evident vesicular nuclei and nucleoli.

D-Microphotograph shows neoplastic proliferation of round cells with presence of vesicular nuclei and prominent nucleoli with mitotic figures.

**Discussion:-**

MBC is a rare and heterogenous group of tumors characterized by adenocarcinoma admixed with spindle cells, squamous cells and mesenchymal differentiation. These tumors constitute to less than five percent of all breast carcinoma.<sup>7</sup> The epithelium and mesenchymal elements arises from a single stem cell which undergoes mutation leading to clonal evolution of the various metaplastic components. As per the literature, average age of presentation of MBC is 55 years and in our case series, one case was of 42 years and other cases were in the range of 54 years to 75 years. These tumors present as a well circumscribed, large and firm solid mass with less incidence of axillary lymph node involvement. Among the five cases in the present series, two cases showed three and fifteen lymph nodes metastasis respectively while in rest three case, all the lymph nodes retrieved were negative for tumor deposits. Radiological investigation, mammogram and USG, have a minor role in diagnosing MBC as these tumors are heterogenous and radiological investigation can only suggest malignant etiology but cannot indicate metaplastic carcinoma. Immunohistochemistry (IHC) markers in cases of MBC shows triple negative for estrogen receptor (ER), progesterone receptor (PR) and HER2-neu.<sup>8,9</sup> In the present study two cases showed triple negative. Based on type

of metaplastic component seen on histopathology sections the tumors can be confirmed by IHC staining with pan-cytokeratin, vimentin, CD10, p53, S-100 and Ki-67<sup>9,10</sup>. The treatment protocol of MBC is not specific and is uncertain till date. Presently, these cases are treated similar to IDC. However, the role of chemotherapy and hormone therapy in MBC is not proved. The MBC has a poor prognosis as it is a highly aggressive tumor with 38-65% of five-year survival.<sup>7</sup> In the present study, all the five cases were lost for follow-up.

### Conclusion:-

One should be aware of the entity of metaplastic breast carcinoma as it has a diverse clinical behavior, variable histology and different regime of treatment. MBC has poor prognosis.

All authors are not having conflict of interest.

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