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Case Report

Metaplastic Carcinoma of Breast: A Study of 3 case series

Kalyani R[1*],Varsha Shree Rajanna[2],Ankit Ananad[3], Shashirekha CA[4]

1. Professor & HOD, Department of Pathology, Sri Devaraj Urs Medical College, Sri Devaraj Urs Academy of Higher Education and Research, Tamaka, Kolar.
2. Resident, Department of Pathology, Sri Devaraj Urs Medical College, Sri Devaraj Urs Academy of Higher Education and Research, Tamaka, Kolar.
3. Post graduate, Department of Pathology, Sri Devaraj Urs Medical College, Sri Devaraj Urs Academy of Higher Education and Research, Tamaka, Kolar.
4. Associate Professor, Department of Surgery, Sri Devaraj Urs Medical College, Sri Devaraj Urs Academy of Higher Education and Research, Tamaka, Kolar.

Abstract

Metaplastic breast carcinoma (MBC) is rare and distinct histological type of breast cancer. It consists of features of both epithelial & mesenchymal type in a single tumor. It is highly aggressive tumor having poor prognosis.
We present three cases. In first case, 35 year female presented with a lump in left breast for two months. Microscopy showed well differentiated squamous cell carcinoma with 2/10 lymph nodes showing tumor deposits. In second case, 56 year female presented with lump in left breast for six months. Microscopy showed oval cells with prominent nucleolus, spindle cells, osteoclast type giant cells, focal areas of squamous cell carcinoma with 1/ 7 lymph node involvement. In third case, 52 year female presented with lump in right breast for six months. Microscopy showed squamous cell variant of metaplastic carcinoma with no tumour deposits in five lymph nodes retrieved.
Metaplastic breast carcinoma has a diverse clinical behaviour, variable histology and poor prognosis.
Keywords: Breast, breast cancer, metaplastic carcinoma

Introduction

Metaplastic breast carcinoma [MBC] is a rare and distinct histological type of breast cancer which accounts to 0-2.5% of all breast tumors.[1] It consists of a group of neoplasms with distinguishing features of both epithelial & mesenchymal type in a single tumor. Histologically, MBC has adenocarcinoma with a mixture of spindle cells, squamous, chondroid or bone forming neoplastic cells. These metaplastic cells can be either benign or malignant which are identified using IHC.[1] 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.[2]

Due to its highly variable histology, the diagnosis is complex by clinical findings, radiology investigations and histopathology. Diagnosis of this rare and highly aggressive tumor is important as it determines the mode of management and prognosis of patient.

We present 3 cases of MBC which were diagnosed in last 5 years at our institute.

***Corresponding Author**
Dr. Kalyani R
Professor & HOD, Department of Pathology,
Sri Devaraj Urs Medical College, Sri Devaraj Urs Academy of Higher Education and Research, Tamaka, Kolar-563101.
Mobile No: 9448402775
E-mail: drkalyanir@rediffmail.com
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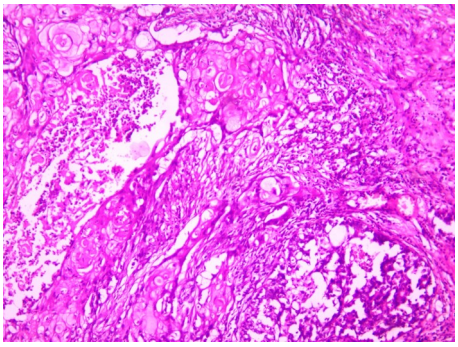
Case reports

Case 1: A 35 year female presented with a lump in left breast for a period of two months. On examination, lump was palpable in upper and outer quadrant measuring 8x5cms, hard in consistency and fixed. Ultrasonogram (USG) revealed heterogeneous hyperechoic lesion with intrinsic cystic component suggestive of neoplastic aetiology.

Fine needle aspiration (FNA) showed papillary structures covered by malignant cells having increased nuclear: cytoplasmic (N: C) ratio,

hyperchromatic nucleus, coarse granular chromatin and moderate amount of eosinophilic cytoplasm. Cytological features were consistent with papillary neoplasm with atypia following which Modified radical mastectomy (MRM) was done and sent for frozen for confirmation and typing of breast carcinoma. Grossly on serial sectioning of breast, a single grey white mass measuring 7x5x3cm was noted with area of cystic change measuring 3x3cm in upper and outer quadrant. Ten lymph nodes were retrieved from the specimen. Frozen sections from tumour showed round to polygonal tumour cells having hyperchromatic nucleus, increased N: C ratio with pale eosinophilic / vacuolated cytoplasm. A diagnosis of carcinoma breast with two differentials of mucoepidermoid carcinoma and SCC was offered. The tissue bits on routine processing and staining with hematoxylin and eosin showed polyhedral / squamoid tumour cells having increased N:C ratio with hyperchromatic nucleus and pale eosinophilic moderate amount of cytoplasm arranged in sheets. A diagnosis of well differentiated squamous cell carcinoma (SCC) was offered (Figure 1) with two out of ten lymph nodes showing tumor deposits. The case was lost for follow-up.

Figure 1: Microphotograph showing squamous cell carcinoma with epithelial pearls (H&E X100)

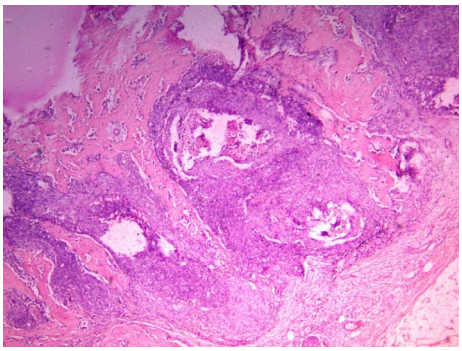


Case 2: A 56 year female presented with lump in left breast for a period of six months. On examination breast lump was palpable in upper and outer quadrant measuring 10x5cms, hard in consistency and immobile. A single lymph node was palpable in left axilla measuring 2x1cm.

She underwent MRM and specimen was subjected for HPE. Grossly on serial sectioning of breast, a single firm grey white lesion measuring 5x4x2.5cm with areas of necrosis and cystic change was noted. Seven 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, focal areas showed features of SCC (Figure 2). One lymph node out of seven showed tumor deposits. Final diagnosis of metaplastic carcinoma of breast was offered. The case was lost for follow-up.

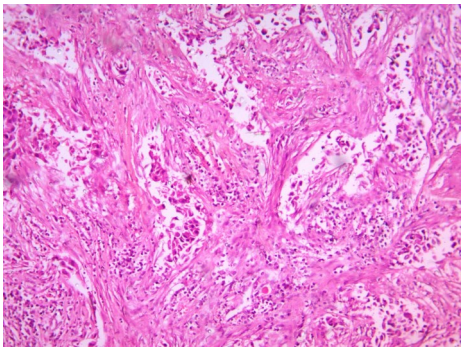
Figure 2: Microphotograph showing osteoid matrix, osteoclasts and malignant squamoid cells. (H&E X100)



Case 3:52 year female presented with lump in right breast for a period of six months. On examination, lump was palpable in upper and inner quadrant of right breast measuring 15x7cm, nodular and fixed. Nipple discharge was noted. No axillary lymph nodes were palpable.

Patient underwent MRM with axillary clearance. Grossly, serial sectioning of breast revealed a single grey white hard lesion measuring 12x6x3cm in upper and inner quadrant of right breast. Five 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. A final diagnosis of metaplastic carcinoma of breast with squamous cell variant (Figure 3) was offered with no tumor deposits in five retrieved lymph nodes. The case was lost for follow-up.

Figure 3: Microphotographs showing features of squamous cell carcinoma along with spindle cells. (H&E X100)



Discussion

MBC is a rare and heterogenous group of tumor characterised by adenocarcinoma admixed with spindle cells, squamous cells and mesenchymal differentiation. These tumor constitute to less than five percent of all breast carcinoma.[3]

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, two were of same age while the first case was of 35 years.[3] These tumors present as a well circumscribed, large and firm solid mass with less incidence of axillary lymph node involvement.[4,5] Among the three cases in the present series, two cases showed two and one lymph nodes metastasis respectively while in the third 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 as in one of the case in the present study.[5]

Immunohistochemistry (IHC) markers in cases of MBC shows triple negative for estrogen receptor (ER), progesterone receptor (PR) and HER2-neu.[4,5] In the present study also all the three 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.[5, 6]

The treatment protocol of MBC is not specific and is uncertain till date. Presently, these cases are treated similar to IDC, but adjuvant radiotherapy has shown a better overall survival and disease free survival rate. In present study all the three cases underwent MRM with radiotherapy. 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.[3] In the present study, all the three cases were lost for follow-up.

Conclusion

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

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