Case Report

Metaplastic carcinoma of the breast: a case report

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Abstract

Metaplastic Carcinomas of the breast are malignant neoplasms composed of both epithelial and mesenchymal elements. The rarity of this tumor is exemplified by the fact that it accounts for only about 0.2% of all breast carcinomas. It presents histologically with diverse differentiation and the exact histogenesis of this tumor is unknown. The present case is reported for its rarity.

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Introduction

Metaplastic carcinomas are rare and represent less than 0.3% of symptomatic invasive carcinoma of the breast. [1] They are uncommon tumors and contain other cellular components besides the glandular component. [2] The sarcomatous elements range from cartilage, bone, myxoid tissue and spindle cell component. The clinical presentation of these tumors varies from well circumscribed or irregular speculated masses. [3] Pathogenesis of such diverse elements has been the subject of much controversy. These tumours do not express the estrogen or progesterone receptors and HER-2/neu oncogene. Due to this "triple negative" phenotype, such tumours tend to be more aggressive. They show immunoreactivity for keratin (55%), vimentin (98%), actin (77%) and S-100 protein (55%). [4] The present case report highlights the importance of extensive sampling and careful scrutiny of biopsy material for multiple differentiation patterns in any clinically diagnosed breast carcinoma.

Case Report

A 48-years-old female, presented with a huge lump involving the UOQ of the right breast for last 8 months which was increasing in size. There was no history of any pain/trauma/ previous breast disease/significant family history. She had two children and had not taken any medication. On examination, a firm to hard lump of 10 x 8 cms mobile i.e. not fixed to the underlying tissue, healthy overlying skin, nipple & areola. Multiple, enlarged, mobile lymph nodes were found in the ipsilateral axillary region. Her left breast was normal. The general & systemic examination was normal except for moderate pallor. Apart from Hemoglobin of 8.7 gm/dl, the hematological and biochemical parameters were normal. X-ray of the chest and abdominal ultrasonography was normal. Fibrocystic breast disease was the opinion from Mammography & Breast USG. Fine needle aspiration cytology (FNAC) & touch imprint from the mass showed highly cellular aspirates comprised of poorly cohesive highly pleomorphic cells – round to polygonal to spindloid cells with cellular features of malignancy along with bi/ multi nucleated tumor giant cells. The patient underwent modified radical mastectomy with axillary clearance and the specimen was subjected for histopathological examination.

Gross examination: MRM with axillary clearance – intact and oriented specimen measured - 12 x 10 x 8 cms with overlying skin along with nipple and areola. Skin, nipple and areola were healthy. Cut sections showed firm, gray white mass of size 8 x 8 cm with variegated appearance. [Fig. 1 a,b] Rest of the breast parenchyma and overlying skin with nipple and areola showed no abnormality. Deep resected margin was grossly free from tumor. Four axillary lymph nodes of 0.5-1 cm diameter in size were identified, cut section was greyish white, solid and homogeneous.

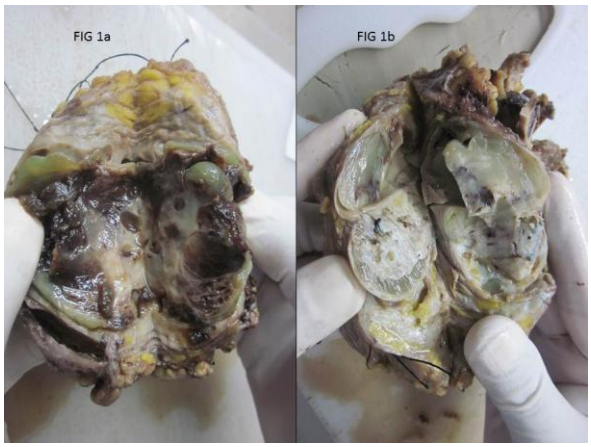

Fig- 1a,b: Gross picture showing variegated appearance on cut section of metaplastic carcinoma of the breast.

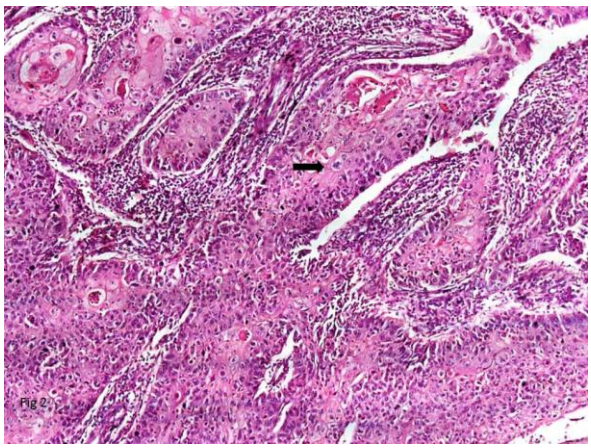

Fig 2: Metaplastic squamous component with keratin pearl & mitosis (arrow).

Micro-sections reveals poorly differentiated ductal epithelial cells arranged in nests & cords with high grade nuclear pleomorphism & moderate desmoplasia. Metaplastic squamous component characterized by polygonal cells with moderate amount of eosinophilic cytoplasm, intercellular bridges, with or without keratin pearl formation [Fig. 2]. Besides foci showed pleomorphic spindle shaped cells arranged in a haphazard pattern along with tumor osteoid and malignant chondroid elements. [Fig.3]. Good number of mitotic figures including atypical ones were noted in both epithelial & mesenchymal elements.. The resected margins, nipple and areola were free of tumor. The lymph nodes were free of metastatic deposits.

IHC showed Triple negative (i.e. for ER, PR, Her-2/neu) and positive for P53 & Ki67. Both the epithelial and mesenchymal components were found to be positive for Cytokeratin. Post-excision, she received six cycles of chemotherapy (Ifosfamide and

Doxorubicin) & loco-regional radiation. Now she is on regular follow-up without any recurrence. Based on the microscopic & IHC findings, a diagnosis of Metaplastic carcinoma of Breast was made.

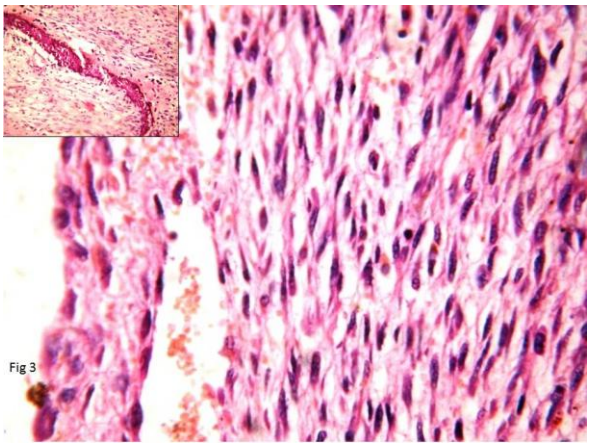

Fig 3: Metaplastic carcinoma, spindle cell with osseous and chondroid differentiation (Inset).

Discussion

Carcinomas showing extensive "metaplastic" changes to spindle cells, squamous cells and heterologous mesenchymal elements are well recognized in the breast. Microscopically two main subtypes of metaplastic carcinoma can be recognized and used for classification: monophasic "sarcomatoid" or spindle cell carcinoma with or without squamous components and biphasic "sarcomatoid" carcinoma (which has also been referred to as carcinosarcoma or malignant mixed tumor and matrix-producing carcinoma.) The monophasic pattern show pure spindle cells or show small cohesive foci of epithelial cells. The spindle cells can show a range of appearances from bland (low grade) spindle cells resembling fibromatosis or scar, undifferentiated spindle cells sometimes with a storiform pattern, to sheets of high-grade pleomorphic cells.[1,5] The biphasic pattern contains conventional carcinoma, usually invasive carcinoma of NST or DCIS. The mesenchymal element usually shows no clear line of differentiation; more rarely angiosarcomatous, leiomyosarcomatous, osteosarcomatous, chondrosarcomatous or rhabdomyosarcomatous patterns may be seen. Wargotz and Norris described a "matrix-forming" pattern with a better prognosis than expected in metaplastic carcinoma. Mitoses are variable in number but are usually plentiful. [1]

The tumor probably is derived from myoepithelial cells. The myoepithelial cell has been suggested as a link that can differentiate into epithelial as well as mesenchymal elements. [6] The incidence of lymph node metastasis from metaplastic carcinoma is lower than might be anticipated for infiltrating duct carcinoma, in keeping with the sarcomatous phenotype. Purely spindle / sarcomatoid tumors has significant lower rate of nodal metastasis than conventional ductal and lobular carcinoma. [7]

Immunohistochemistry is of particular value in evaluation of the tumors that lack evidence of carcinoma. The epithelial phenotype of the spindle cells may be established by immunostaining with panel markers including CAM 5.2, CK7, CK19 and CK20. Metaplastic carcinomas almost always do not express estrogen or progesterone receptors or HER-2/neu, thus limiting potential systemic treatment.[8] The sarcoma like elements of these tumors may have acquired vimentin positivity and other features of mesenchymal nature (Phenotypical switch), it is always possible to demonstrate epithelial markers (wide spectrum cytokeratin positivity) in at least occasional cells. [9,10] Since metaplastic carcinoma have a more aggressive course, early diagnosis and treatment has a bearing on the final outcome.

Acknowledgements

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None.

Competing Interests

None declared.

Abbreviations:

CK: Cytokeratin
CAM: Cell adhesion molecule
DCIS: Ductal carcinoma in situ
NST: No specific type
Her-2/neu: Human epidermal growth factor receptor 2
USG: Ultrasonography

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