Case Report

Pleomorphic Carcinoma - A Rare Variant of Invasive Breast Carcinoma

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ABSTRACT

Pleomorphic breast carcinoma is a rare variant of high-grade invasive ductal breast carcinoma of no special type. We present a case of a 50 years old female who came with complaints of swelling in right breast since 1-month which was associated with pain. Radiological findings suggested BIRADS gradeV. Fine needle aspiration of the swelling in breast was done. The smears were stained with Giemsa and were examined. The diagnosis on fine needle aspiration cytology was given as 'Malignant carcinoma of right breast'. Modified radical mastectomy was performed and after the routine tissue processing, Hematoxylin and Eosin stained slides were prepared. Morphological diagnosis of Pleomorphic carcinoma-Invasive ductal carcinoma of no special type was made and the diagnosis was confirmed by immunohisto-chemistry. It is important to recognize this tumor since this entity has been reported to have a poor prognosis and tumor size greater than 5 cm are associated with markedly decreased overall survival.

Keywords: Pleomorphic Carcinoma, Breast, Immunohistochemistry

INTRODUCTION

The recent World Health Organization (WHO) classification of breast tumors, includes a rare variant of high-grade invasive breast carcinoma of no special type (NST) called 'Pleomorphic Carcinoma'. Pleomorphic carcinoma is characterized by "proliferation of pleomorphic andbizarre tumor giant cells comprising >50% of the tumor cells in a background of adenocarcinoma or adenocarcinoma with spindle and squamous differentiation"[1]. The two main features are pleomorphism and increased mitotic activity[2]. Due to its unusual morphological features, pleomorphic carcinoma is confused & misdiagnosed as sarcoma and therefore immunohistochemical markers are used for differentiation[3]. 84 cases of pleomorphic carcinoma of breast have been reported in English literature[2].

Herein, we report a rare case of pleomorphic carcinoma of breast in a 50 years female.

CASE REPORT

A 50 years old female, housewife, visited the surgery OPD in a tertiary care hospital in southern Rajasthan, with complaints of swelling in right breast since 1 month. It gradually increased in size and was associated with pain. She also complained of loss of appetite and weight loss. She had no past history of malignancy. There was no family history of breast carcinoma. Physical examination revealed a hard, fixed and painful mass in the lower outer quadrant of the right breast. Nipple inversion was noted but there was no nipple discharge. No abnormalities were noted in the left breast and no lymph nodes were palpable in bilateral axillary region. Ultrasonography of right breast revealed a large lobulated hypoechoic mass measuring 88 x 70 mm, with internal necrotic areas involving the lower outer quadrant of the right breast. This represented a malignant mass in the right breast

and was graded as BIRADS-V. Fine needle aspiration was done and the Giemsa stained smears studied were highly cellular and composed of dyscohesive ductal epithelial cells arranged insheets, few branching papillae and dispersed singly. The cells were pleomorphic, showing nucleomegaly, round to oval hyperchromatic nuclei, irregular chromatin, prominent nucleoli with moderate amount of cytoplasm. Many bizarre cells and multinucleated giant cells were also noted in a hemorrhagic background. Impression given was 'Malignant Carcinoma-Right Breast' (Figure 1).

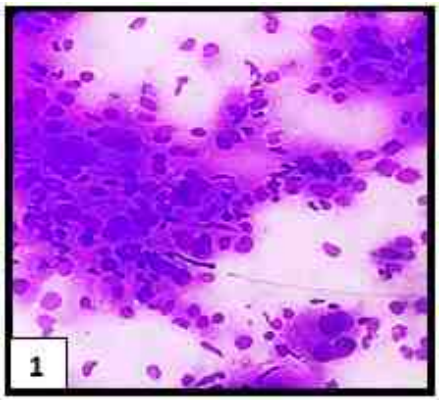

Figure 1: Dyscohesivepleomorphic Ductal Epithelial Cells
Arranged in Sheets, Many Giant Cells And Bizzare Cells Noted, Giemsa 400x

The patient underwent modified radical mastectomy (MRM). Post-operative period was uneventful. The MRM specimen was sent for histopathological examination.

On gross examination (Figure2), the MRM specimen measured 15 x 12 x 7cm. The elliptical skin flap with nipple areolar complex (NAC) measured 12 x 6 cm. NAC was unremarkable. Serial sectioning showed a mass measuring 9 x 7 x 5 cm. Cut surface of the mass was grey white andvariegated. All surgical margins were free of tumor. 8 lymphnodes were identified from the axillary region, largest measured 1.5 cm in greatest diameter and smallest measured 0.5 cm in greatest diameter. Cut surface of all were grey white.

Figure 2: Mass Measuring 9x7x5cm,
Cut Surface is Grey White & Variegated

Routine tissue processing was done and Hematoxylin and Eosin (H&E) stained slides were prepared. Multiple sections examined microscopically showed a tumor with cells arranged in sheets(Figure 3). The cells were pleomorphic with large nuclei, prominent nucleoli and showed abundant eosinophilic cytoplasm. Many pleomorphic tumor giant cells with bizzare nuclei were noted. Increased mitotic activity, areas of necrosis and vascular tumor emboli was seen. All the margins and NAC were free of tumor. 3 lymphnodes showed metastasis. The impression given was 'Pleomorphic variant-Invasive Carcinoma of No Special Type -Right breast', Modified Bloom Richardson score: 3+3+3 = 9; Grade 3.The diagnosis was confirmed with immunohistochemical markers ER, PR, Her2neu, CK-7 and Pan-CK (Figure 4). ER was positive with Allred score 2+2=4. CK-7 and Pan-CK were positive. PR and Her2neu were negative.

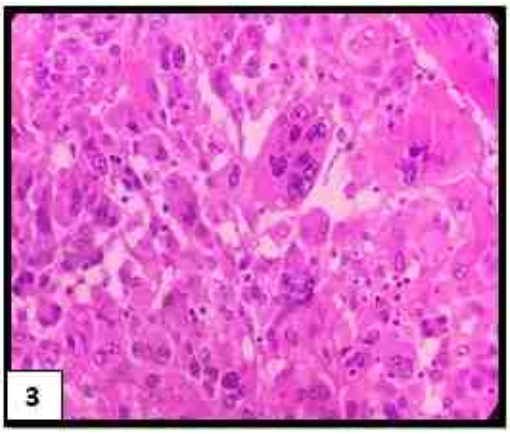

Figure 3: Tumor Arranged in Sheets, Cells are Pleomorphic with Round to Oval Nuclei, Prominent Leomorphic Giant Tumor Cells with Bizarre and Multinucleated Nuclei H

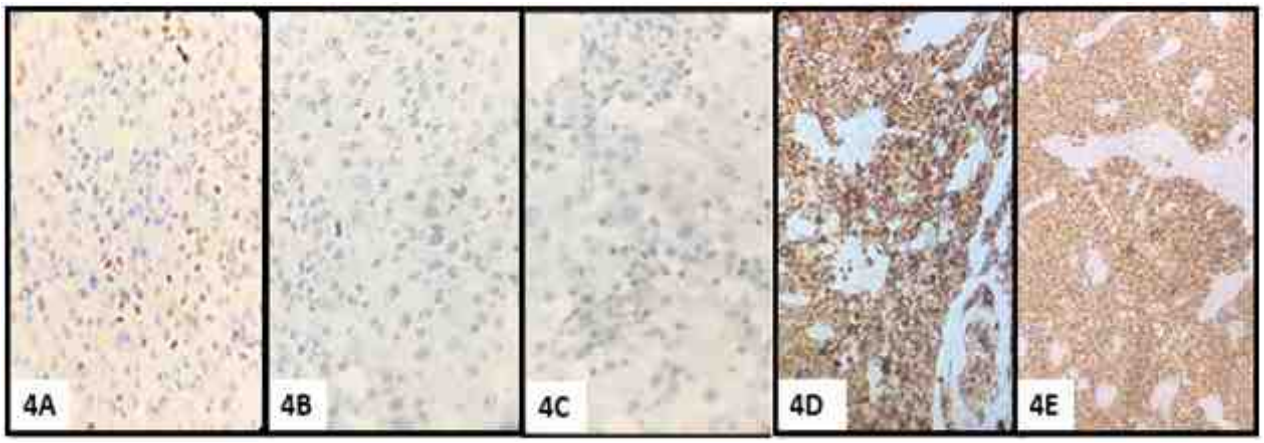

Figure 4A: ER Positive (IHC,400x); **Figure 4B:** PR Negative (IHC,400x); **Figure 4C:** Her2neu Negative (IHC,400x); **Figure 4D:** CK-7 Positive (IHC,100x); **Figure 4E:** Pan-CK Positive (IHC,100x)

DISCUSSION

Breast cancer is the commonest cancer worldwide affecting females with a high mortality rate[2,4]. The recent WHO classification of breast has described a new entity of pleomorphic carcinoma. Pleomorphic carcinoma has distinctive morphological features characterized by "Proliferation of pleomorphic and bizarre tumor giant cells comprising >50% of the tumor cells in a background of adenocarcinoma or adenocarcinoma with spindle and squamous differentiation"[1]. Silver SA and Tavassoli FA were the first to describe & report pleomorphic carcinoma and believed it to represent grade III, invasive ductal carcinoma[5]. Pleomorphic variant is a rare variant of high grade invasive carcinoma no special type[1]. This variant is known to have poor prognosis, but not all cases behave poorly. Poor prognosis of the tumor is associated with spindle cell metaplastic component and tumor size >5 cm in stages I-III disease[2].

Radiological findings of pleomorphic carcinoma may be confused with other benign breast lesions, inflammation, fibroadenoma and malignant phyllodes tumor. Therefore pathological examination plays a vital role in diagnosing pleomorphic carcinoma[6].

Microscopic features of pleomorphic carcinoma are similar to other breast tumors- invasive carcinoma with osteoclast-like giant cells, invasive pleomorphic lobular carcinoma, invasive carcinoma with chorioepithelioma features, mammary sarcoma with giant cells, and metastatic tumors can present pleomorphic tumor cells[7]. Invasive carcinoma with osteoclast-like giant cells is CK negative while CD68 is positive. Pleomorphic lobular carcinoma show cells with pleomorphic, hyperchromatic, irregular nuclei and which tend to arrange in a linear pattern. Immunohistochemistry study for E-Cadherin is negative as compared to pleomorphic invasive breast carcinoma in which it is positive. Invasive carcinoma with chorioepithelioma features shows positive expression of β-HCG. Mammary sarcomas can be differentiated with CK. Metastatic carcinomas usually are rare and are multicentric, while patients mostly has a history of another primary tumor.Pleomorphic variant of invasive carcinoma no special type shows positivity for CK and E-Cadherin which differentiates it from invasive carcinoma with osteoclast-like giant cells, pleomorphic lobular carcinoma and breast sarcomas. While it is negative for β-HCG which distinguishes it from invasive carcinoma with chorioepithelioma features[2,8,9].

CONCLUSION

It is important to recognize this entity to avoid catastrophe due to its unfavorable prognosis. Although pleomorphic variant of

invasive breast carcinoma is a rare variant and has a poor prognosis, timely diagnosis through pathological examination and immunohistochemistry studycan differentiate it from other similar tumors and may be associated with better prognosis and increased rate of survival.

Conflicts of Interest: Nil

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