

Case Report

Mixed Medullary and Mucinous Carcinoma of Breast - A Very Rare Case Report

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ABSTRACT

Mucinous carcinoma and medullary carcinoma are rare types of invasive breast cancers that account for 2% (mucinous) and less than 1% (medullary) of invasive breast cancers respectively. They occur either in pure form or mixed with invasive ductal component. Combined mucinous and medullary carcinomas are very rare and have not been found in the literature. We diagnosed a case of invasive breast cancer showing features of mixed medullary and mucinous component in a 55 year old female patient. We present this case for its extreme rarity.

Key words: Invasive breast cancer, mixed medullary and mucinous carcinoma.

INTRODUCTION

Amongst invasive breast cancers medullary carcinoma and mucinous carcinoma are very rare. Most of the times they occur in pure form and rarely in combination with invasive ductal carcinomas. The incidence of pure medullary carcinoma is less than 1% while the incidence of mucinous carcinoma is 2% of all invasive breast cancers. [1,2] Combination of medullary carcinoma and mucinous carcinoma has not been found in the literature. We have diagnosed such a case, hence presenting for its rare occurrence.

CASE HISTORY

A 55 years old lady presented with lump in the left breast in upper outer quadrant since 2 months which measured 9x6x4 cm, soft to firm and fixed. There was no history of pain or discharge. Mammography revealed 9x6x4 cm, well

circumscribed lump with no areas of calcification (Fig-1). Fine needle aspiration cytology of the lump revealed invasive breast cancer. Modified radical mastectomy (MRM) with axillary dissection was performed.



Fig-1: Mammography-well-circumscribed tumor mass, no areas of calcification.

Pathological Examination: Gross examination-We received a specimen of MRM with axillary dissection which revealed 9x6x4 cm, well circumscribed, soft tumor mass with pushing margins on serial cut sections. Cut section of tumor

was grey white with gelatinous areas. Necrosis or cystic change was not seen. (Fig-2) Axillary dissection revealed 10 lymph nodes.



FIG-2: Serial cut sections of MRM specimen specimen showing tumor.



Fig-3: Gross examination showing gelatinous, fleshy and grey-white tumor mass with pushing margins.

Microscopic examination of extensive sampling from tumor revealed

invasive breast carcinoma showing features of mucinous and medullary carcinomas. Medullary component revealed large neoplastic cells showing syncytial growth pattern with marked nuclear atypia, prominent nucleoli, and absence of glandular differentiation, necrosis or hemorrhage. Neoplastic cells were separated by stroma which revealed lymphoplasmacytic infiltrate. Microscopy of mucinous component revealed pools of extracellular mucin amongst which were seen tumor cells in small clusters with mild nuclear atypia. (Fig-3)

Invasive ductal or in situ carcinoma was not seen. Considering all these microscopic features the tumor was diagnosed as mixed medullary and mucinous carcinoma of breast with metastasis of medullary carcinoma in 8 out of 10 axillary lymph nodes.

Immunohistochemistry (IHC) profile of medullary carcinoma revealed Estrogen receptor (ER), Progesterone receptor (PR) and HER-2neu negativity while mucinous carcinoma was ER, PR positive and HER-2 neu negative. (Fig-4)

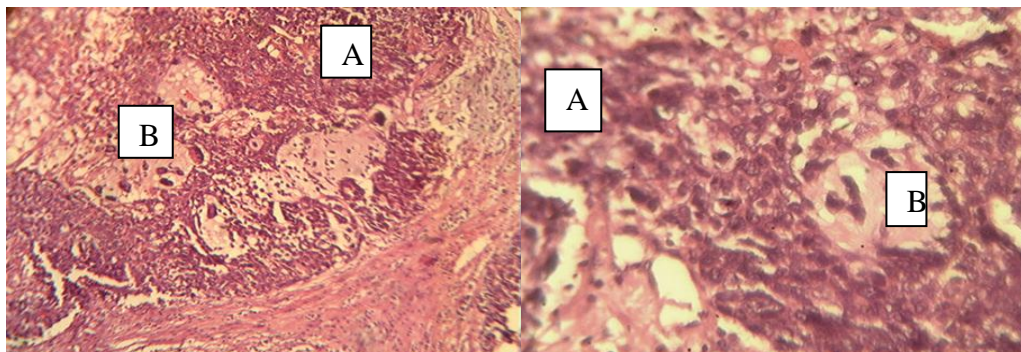


Fig-4: Photomicrograph showing medullary(A) and mucinous (B) components of carcinoma(H&E,100x,400x)

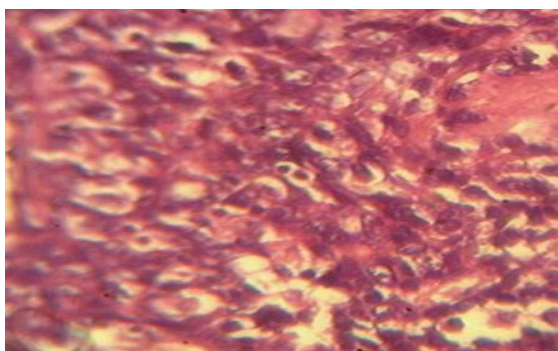


Fig-5: Photomicrograph showing the medullary component (H&E,100x)

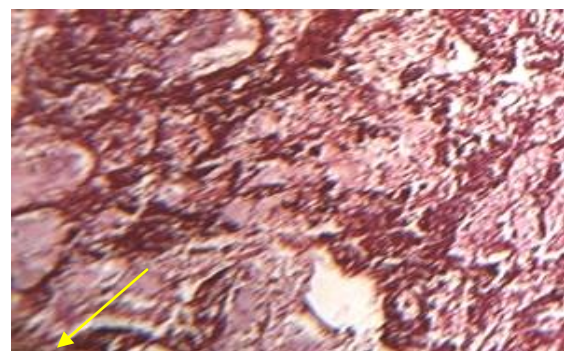


Fig-6: Photomicrograph showing the mucinous component (yellow arrow) (H&E, 100x)

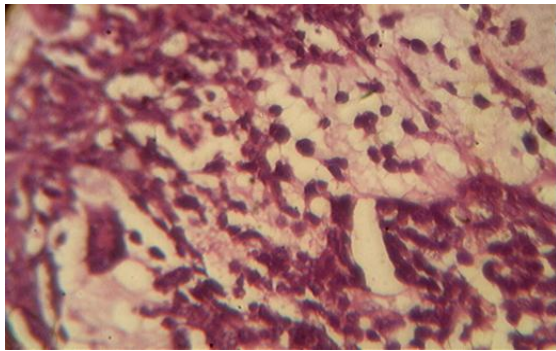


Fig-7: Photomicrograph showing medullary and mucinous component (H&E, 400x)

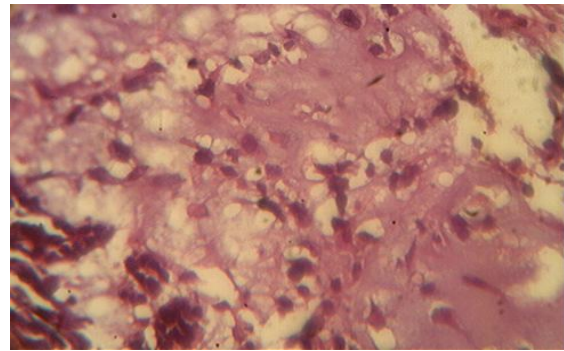


Fig-8: Photomicrograph showing mucinous component (H&E, 400x)

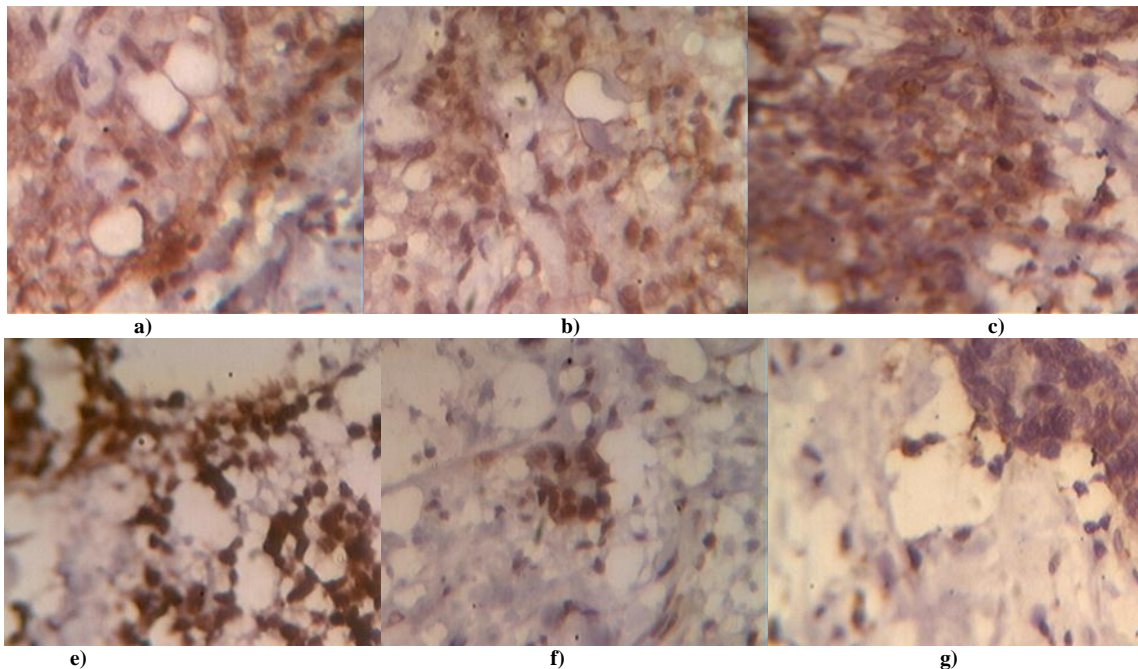


Fig-9: IHC –Medullary carcinoma-ER, PR and HER-2 negative (a,b,c) Mucinous carcinoma-ER,PR positive(d&e) and HER-2 negative(f)

DISCUSSION

Combination of medullary and mucinous carcinoma among invasive breast carcinoma is very rare. No such case has been reported. Most of the times these occur in pure form and rarely in combination with invasive ductal carcinomas. The incidence of pure medullary carcinoma is less than 1% while the incidence of mucinous carcinoma is 2% of all invasive breast cancers. [1,2] The prognosis is good for pure form while worst for mixed forms. [3] Prognosis for mixed mucinous and medullary carcinoma has not been found in the literature as no such case has been reported. Truly pure mucinous and medullary carcinomas have less aggressive behavior and are well circumscribed in nature. Both mucinous

and medullary carcinoma present in the late age group than invasive ductal carcinoma. Age incidence of medullary carcinoma is 45-52 years while that of mucinous carcinoma is over 60 years. [4,5] Our patient also presented in same age group. Mammography of mucinous and medullary carcinoma reveals well circumscribed masses; calcification is not seen in medullary carcinoma while it is rarely observed in mucinous carcinoma. [6] In our case the lump was well circumscribed and was not associated with calcification. Both tumors have well defined margins with soft consistency as seen in our case. Gross examination of medullary carcinoma reveals well circumscribed, fleshy mass with soft consistency while mucinous carcinoma

reveals soft, gelatinous well circumscribed tumor mass. [5] Our case revealed same features. Average size of the mucinous carcinoma is 2.8 cm while average size of medullary carcinoma is 2 cm. In our case the size of the tumor was larger i.e. 9x4x6cm.

Microscopic features of medullary carcinoma reveal syncytial growth pattern of tumor cells in more than 75% of tumor, admixed lymphoplasmacytic infiltrate, microscopic circumscription, Grade II or III nuclei and absence of glandular differentiation. Tumors which lack a variable number of these features are termed as atypical medullary carcinoma. Foci of necrosis hemorrhage and cystic change may be observed in medullary carcinoma with little or no ductal carcinoma in situ (DCIS) component. [7] Our case revealed all features of medullary carcinoma. Mucinous carcinoma microscopically reveals clusters of uniform, round cells with mild nuclear atypia, floating in lakes of mucin. Rarely papillary or tubular configuration can be seen. [8] These tumors can be subdivided into cellular and hypocellular variants. Our case is a hypocellular type. Axillary node metastasis is seen in 3-15% of mucinous carcinoma while 10% cases of medullary carcinoma. [9] Medullary carcinoma with more than 3 metastatic axillary nodes have poor prognosis. [10] In our case 8 out of 10 nodes were positive showing metastatic medullary carcinoma and no evidence of metastatic mucinous carcinoma indicating a poor prognosis.

Biomarkers and molecular pathology: 70% of mucinous carcinomas are ER&PR positive and do not overexpress HER-2 neu protein and reveal relatively little genomic instability. Medullary carcinomas are triple negative and some patients harbor BRCA-1 germline mutation. [4,11-13] Our case revealed similar IHC findings.

Differential diagnosis for medullary carcinoma can be Non-Hodgkins Lymphoma. In such case immunostains for cytokeratin is helpful. [5]

Differential diagnosis for mucinous carcinoma includes mucocele like lesions and myxoid fibroadenoma. [14]

Prognosis: Both medullary and mucinous carcinoma have favourable prognosis than invasive ductal carcinoma of not specific type (NST). Our patient is on long term follow up and one month follow up is uneventful.

CONCLUSION

Medullary and mucinous carcinoma are rare types of invasive breast cancers, both having favourable prognosis. These tumors occur in pure form or mixed with invasive ductal carcinoma. Combination of mucinous and medullary carcinoma is extremely rare as no such case has been reported yet. Close follow up should be kept for such cases to search for the further clinical course and prognosis.

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