Case Report

Mucinous carcinoma of breast in a 30-year-old female: A rare case report and discussion

Banyameen Mohamad Iqbal, Bedarshi Banerjee

Department of Pathology, Dr. D. Y. Patil Medical College, Hospital and Research Centre, Pune, Maharashtra, India

ABSTRACT

Mucinous carcinoma (MC) (colloid carcinoma) is a particular, rare type of breast carcinoma. It is characterized by the presence of extracellular mucin. MC of the breast generally presents as a lobulated, moderately well-circumscribed mass on mammography, sonography, and magnetic resonance imaging. It has a favorable prognosis due to the low incidence of axillary lymph node metastasis and poor adherence to bottom fascia and poor infiltration of overlying skin. It has high incidence of estrogen receptor and progesterone receptor positivity. The incidence of MC in females under 35 years of age is only 1%. Here, we report a case of MC of right breast in a 30-year-old female.

Key words: Breast, carcinoma, mucinous tumor

INTRODUCTION

The mucinous carcinoma (MC) is a well-differentiated form of adenocarcinoma, constituting 2–5% of all primary breast cancers.[1] It usually occurs in the middle-aged to old women. Pure MC of breast has a more favorable prognosis than other well-differentiated adenocarcinomas of breast, has a lower frequency of axillary node metastasis, has poor adherence to underlying fascia, and has poor infiltration of overlying skin. Short-term prognosis is excellent especially when the tumor measures <5 cm in diameter on gross.[1] The proper identification of this type of malignancy is important because it helps us decide the treatment modalities.

CASE REPORT

A 30-year-old female came to the outpatient department with complaints of a lump in her right breast which she has noticed 8 days back. Clinical suspicion, owing in particular to the hard consistency on palpation, led to further radiological investigations. Mammography showed features suggestive of malignancy while ultrasonography (USG) provisionally diagnosed it as carcinoma breast. All the laboratory investigations were within normal limits. Subsequent fine-needle aspiration cytology report showed the presence of malignant cells which were loosely cohesive and dissociated with intact cytoplasm and nuclei and mild atypia, and no oval bare nuclei were seen. All these tumor cells were seen floating in pools of mucin [Figure 1]. Without delay, the patient was admitted and a right-sided modified radical mastectomy was carried out. The specimen received was identified as right-sided mastectomy with axillary tail and axillary lymph node dissection en-bloc. Breast tissue measured 18 cm × 13 cm × 7.5 cm, axillary tail measured 10 cm × 7 cm × 4 cm, while skin flap measured around 18 cm × 12 cm × 0.5 cm. On gross examination, a tumor was noted in the upper inner quadrant measuring 4.5 cm × 4 cm × 3.5 cm. On dissection, a mucoid-like, brownish material oozed out [Figure 2]. Grossly, the surgical margins appeared to be free from tumor. The nipple areola complex appeared normal. Representative sections were taken and

Address for correspondence: Dr. Banyameen Mohamad Iqbal, Department of Pathology, Dr. D. Y. Patil Medical College, Hospital and Research Centre, Pimpri, Pune - 411 018, Maharashtra, India. E-mail: banzey@gmail.com

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were examined under light microscope after hematoxylin and eosin staining. Sections studied showed cluster of tumor cells lying scattered in pools of extracellular mucin. Individual tumor cells were polyhedral and had normal to moderately increased hyperchromatic nuclear size, with plenty of cytoplasm, and indistinct cytoplasmic borders. Nuclear pleomorphism was moderate [Figure 3a and b]. Attempt at gland and micropapillae formation were few. Immunohistochemistry shows positivity for mucicarmine, estrogen receptor, and progesterone receptor. Skin, nipple areola complex, and surgical margins were all free from tumor. Of a total of 18 lymph nodes, two were positive for metastatic deposits of mucinous adenocarcinoma. Rest of the lymph nodes was showing reactive changes. The patient was discharged and is on regular follow-up.

DISCUSSION

MC of the breast is a very rare entity and is seen mostly in postmenopausal females. We report a case of MC as it occurred in a young female aged 30 years. When palpable, these cancers often present as soft to hard masses due to their semisolid mucin constituents. Mucinous breast carcinoma's microscopic picture shows a relatively large amount of extracellular mucin, in which malignant epithelial cells seem to float.[2] Most MCs are readily detected on mammography. They appear as well-defined, microlobulated masses and generally belong to the category of well-circumscribed breast carcinomas. Our case also showed well-defined and well-circumscribed malignancy on mammography.[3] On USG, MCs typically present as complex masses of mixed echogenicity with solid and cystic appearing components suggesting malignancy. In our case, the USG findings were suggestive of malignancy. MC can be classified as pure and mixed forms. The pure form shows variable amount of extracellular mucin in which tumor cell clusters lie scattered as is the case with our patient. MC with invasive areas not surrounded by mucin is considered as a mixed MC. The prognosis of pure MC is better when compared to its mixed variant. The commonly seen cases are in association with invasive duct carcinoma, the differentials mainly being mucoid fibroadenoma and mucocoele-like lesion.[1] The 5-year overall survival is 80% for mucinous and 77% for not otherwise specified (NOS) carcinomas.[4] The 5-year overall survival for node-positive MC is 81% for mucinous and 69% for NOS carcinomas, showing that node positivity confers a poorer prognosis in mucinous adenocarcinoma.[4] Since the tumor cells have only normal to slightly increased nuclear size and display less pleomorphism, they can give a false impression of benignanacy, a term used to describe such conditions.[1] It is the extracellular mucin rather than the tumor cells that invades the stroma which explains the good prognosis of pure MC. The mucin seen is typically extracellular.[5] Histochemically, the mucins secreted by

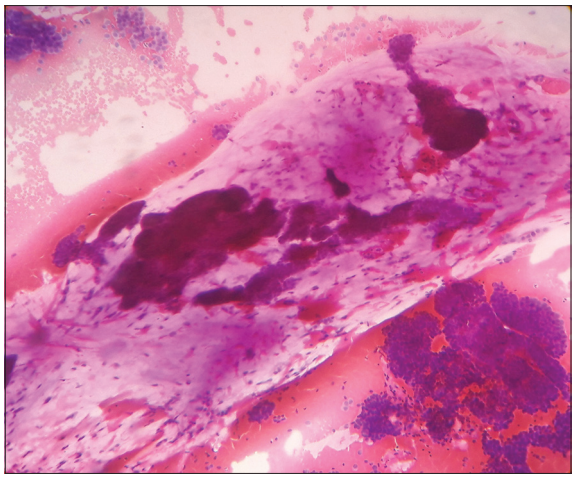

Figure 1: Fine-needle aspiration cytology showing malignant tumor cells dispersed in pools of Mucin (H and E, ×40)

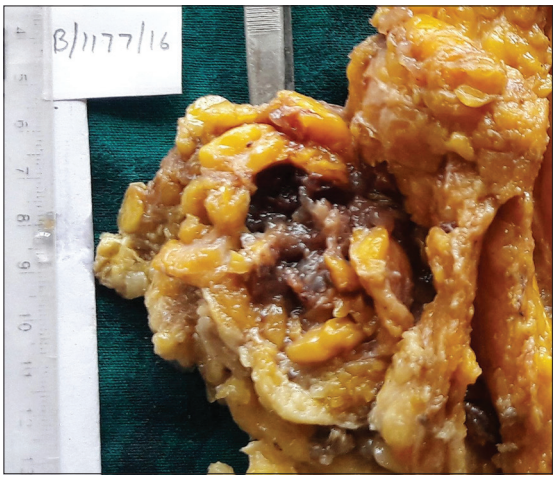

Figure 2: Gross picture showing a brownish black mucinous area in the upper outer quadrant of the breast

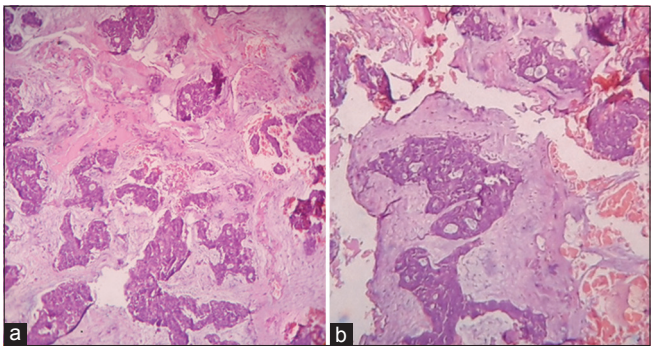

Figure 3: Photomicrograph showing (a) clusters of epithelial cells dispersed in pools of Mucin (H and E, ×40) (b) high power view showing moderate nuclear pleomorphism of epithelial cell clusters (H and E, ×100)

this tumor are distinct O-acylated forms of sialomucin.[6] It should be noted that some subtypes of the MC have a worse prognosis than others such as the micropapillary pattern. In the study of Barbashina *et al.*, more than half of the patients with this particular type of pattern were found

to have vascular invasion and synchronous axillary lymph nodes.[7,8] In our patient, neither micropapillary pattern nor vascular invasion was seen.

CONCLUSION

The rarity of this variant of breast carcinoma in general and more so in young females, as in our patient, made us report this case so that clinicians and/or pathologists are aware of this rare entity.

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Conflicts of interest
There are no conflicts of interest.

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