Pure Mucinous Carcinoma of Male Breast: Case Report of a Rare Histological Subtype of Male Breast Carcinoma.

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ABSTRACT

Introduction: Male breast carcinoma is a rare malignancy occurring in older males and are of aggressive in nature, presenting in an advanced stage. Rarity and deviation from usual reported biological characteristics led us to report this case of pure mucinous carcinoma of male breast.

Case report: A 52 years old male presented with a mass below areola found adhered to overlying skin. Resected mass was lobular 5cm x 3cm x 2.5cm which on cut section was multiloculated filled with mucinous fluid. H&E stain from sections from different area showed features of pure mucinous carcinoma of breast with clear cut margins. Immunohistochemical examination showed nuclear positivity for ER receptor and negative for PR receptor, and membrane did not stain for HER2/neu receptor.

Conclusion: More of this rare subtype of male breast carcinoma with its varied biological characteristics should be reported to know more about its biological course so that improvement in the treatment options and steps for its prevention can be taken.

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Introduction
Carcinoma of male breast is a rare occurrence. Male breast cancer represents 0.6% of all breast carcinomas and accounts for less than 1% of all malignancies in male.

Pure mucinous breast carcinoma is rarer histological subtype of breast carcinoma. About 30 cases of mucinous breast carcinoma of the male breast have been documented in the English literature with only 10 cases of pure mucinous carcinoma. Mucinous carcinoma of breast is histologically sub divided into pure and mixed form. Mucinous carcinoma is defined as pure when more than 90% of tumor mass is composed of mucinous component and infiltration duct carcinoma comprises of less than 10% of tumor mass. Histopathologic diagnosis is sufficient for the diagnosis of pure mucinous carcinoma. In general, mucinous carcinoma has a better prognosis than NOS-infiltrating duct carcinoma but in males, breast carcinoma has an aggressive course. Male breast carcinomas present at an older age and with an advanced stage as compared to its female counterpart. Our purpose behind the reporting of this case of pure mucinous carcinoma of male breast is its rarity as a histological subtype, relatively earlier age at presentation and only local involvement at the time of diagnosis.

Case Report
A 52 years old male presented with swelling in left breast beneath areola for last four months and suddenly increasing in size for last one month. On clinical examination, the swelling was 5cm × 3cm 5cm × 3cm in size, non tender and was adhered to the overlying skin. The overlying skin was otherwise normal looking. Resected specimen sent for histopathological examination measured 5cm × 3cm × 2.5cm 5cm × 3cm × 2.5cm, globular mass with smooth surface. On cut section, mass was multiloculated filled with mucinous fluid? H&E stain of the sections taken from different parts of soft tissue mass showed groups of small hyperchromatic ductular epithelial cells floating in pools of mucin. The cells were small with high nuclear cytoplasmic ratio, scanty cytoplasm, hyperchromatic nuclei and inconspicuous nucleoli. The epidermis was free from tumor cells. A diagnosis of pure mucinous carcinoma of breast was made on morphological ground. Cut margins are free from tumor cells. Immunohistochemical analysis on sections showed nuclear positivity for estrogen receptor(ER) and negative for progesterone receptor (PR), HER2/neu receptor was not amplified.

Discussion
Breast carcinoma by far is the most common cancer diagnosed in females in world. On the contrary, carcinoma of male breast is rare representing about 0.6% of all breast carcinomas. But recent study has shown that the incidence of male breast carcinoma is steadily increasing. Raajul jain et al in India found male breast lesions to be 6.34% of all breast lesions, malignant lesions being 23.34% of which most common being infiltrating duct carcinoma, NOS. Mucinous carcinoma of breast is a relatively rare histological subtype , more so in males. Shah et al in his study found mucinous carcinoma to constitute 2.38% of all male breast carcinomas.

Men tend to be older at the time of diagnosis with a median age of 67 years and also they have more advanced disease at the time of presentation. On the contrary, our patient presented at an early age of 51 years and with a localized disease.

Genetic risk factors include BRCA2 mutations. High temperature environments and exhaust fumes were considered as occupational risk factors. Hormonal imbalances, such as gonadal dysfunction, obesity, and radiation exposure also contribute to the occurrence of male breast cancer.

Immunohistochemical staining pattern varies from case to case. Our case was positive for ER but was negative for PR and HER2/neu receptor. This finding was similar to the case report in Ishida M et al where the mucinous carcinoma was ER positive and was negative for both PR and HER2/neu receptor. Arslan et al in his study found majority of cases to be positive for ER receptor and also few triple negative tumors. Friedman et al in his study found the incidence of ER positivity to be more in men than that in female. On the contrary, Shah et al found majority of cases to be positive for both ER and PR receptors and few cases to be only positive for ER receptors. Research showed the majority of cancers arising in the male breast to be ER positive although this finding does not correlate with a better prognosis, as it in cases of women.

Cases of pure mucinous carcinoma of male breast have been reported metastasizing to axillary lymph nodes, lung and as Paget’s disease of nipple. One case of occult breast cancer in 40 years male first manifesting as axillary lymph node metastasis with part of metastatic mucinous carcinoma similar to our case of early age at diagnosis. On the contrary our case had only localized involvement.

For pure mucinous carcinoma male breast in early stage, conservative surgery is the optimal treatment. Chen et al described nine independent prognostic factors contributing to the male breast cancer lethality like grade; mucinous, medullary, tubular, and scirrhous...
Fig. 1: Photomicrograph of gross specimen of tumor mass from left breast (A) showing outer smooth lobulated surface (B) cut section showing multiloculated cystic mass filled with mucinous fluid.

Fig. 2: Photomicrograph showing histopathological feature of tumor mass showing groups of malignant ductal epithelial cells floating in pools of mucin. Haematoxylin & eosin stain magnification, $\times 10 \times 10$

Fig. 3: Immunohistochemical stain showing (A) diffuse ER expression (B) PR not expressed (C) HER2/neu not amplified
adenocarcinoma; male sex; inflammatory disease; Paget disease; and lymph node status.[17] Research found tumor staging and lymph node status and not the hormone receptor status as the only significant prognostic factors effecting overall survival in male breast cancers but improved survival is being stated in hormone receptor positive disease.[11] Morand et al in his study on DNA flow cytometry of mucinous breast carcinomas established DNA ploidy to be of prognostic significance and that large aneuploid tumors have poor prognosis.[13]

Conclusion

Though mucinous carcinoma in general is a subtype of breast carcinoma with better prognosis, male breast carcinomas are more aggressive and different biological characteristics than its female counterpart. Paucity of reported cases of male breast carcinomas, especially of its rare subtypes like pure mucinous breast carcinomas limit the understanding of its carcinogenesis. Reporting of more cases are required to understand more about male breast carcinomas and its histological subtypes for better treatment options and understanding its prognosis. Reporting of this case is considered for rarity of its occurrence and deviation from its other reported biological characteristics.

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Competing Interests

None declared

Reference


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