



**Case Report:**

**Mixed Mucinous Carcinoma of the Male Breast.**

**Authors**

**Vandana Raphael**, Professor & Head of Department of Pathology,  
**Hirakjyoti Das**, Senior Resident, Department of Pathology,  
**Khonglah Yookarin**, Associate Professor, Department of Pathology,  
**Rajni Sarma**, Junior Resident, Department of Pathology,  
**Noor Topno**, Prof & Head, Department of Surgery,  
**North Eastern Indira Gandhi Regional Institute of Health & Medical Sciences, Mawdiangdiang, Shillong, Meghalaya-793018, India.**

**Address for Correspondence**

**Dr. Vandana Raphael**,  
Professor & Head of Department of Pathology,  
North Eastern Indira Gandhi Regional Institute of Health & Medical Sciences,  
Mawdiangdiang, Shillong-793018,  
Meghalaya, India.  
**E-mail:** raphaellyngdoh@gmail.com

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**Abstract:** Male breast malignancy is extremely rare, representing less than 1% of all breast carcinomas. Infiltrating duct carcinoma is the commonest subtype. Pure mucinous carcinoma and mixed mucinous carcinoma wherein there are components of both mucinous carcinoma and infiltrating duct carcinoma are rare tumours constituting 1.5-5% in women and are even rarer in men. We present here a case of mixed mucinous carcinoma of the breast with metastasis to axillary lymph nodes in a male patient.

**Key Words:** Male breast carcinoma; Mixed mucinous carcinoma

**Introduction:**

Male breast malignancy is extremely rare, representing less than 1% of all breast cancers and less than 1% of all cancer deaths in men.[1] Infiltrating ductal carcinoma is the commonest subtype of male breast cancer at 84% to 94% of cases.[2] Mucinous carcinoma is an extremely rare neoplasm; slightly more common in women than in men. In men it accounts for less than 2% of breast carcinomas.[3] Composite male breast malignancy comprising of these two components is hardly described in the literature.

Described here is a case of a male patient presenting with composite breast tumour comprising of both invasive duct carcinoma not otherwise specified (NOS) and mucinous carcinoma with metastasis in the axillary lymph nodes.

**Case Report**

A 45 years old male presented with swelling of the left breast for the past 6 months and associated pain on and off. On clinical examination, there was a 10x5 cm ulceroproliferative mass in the central quadrant of the left breast.

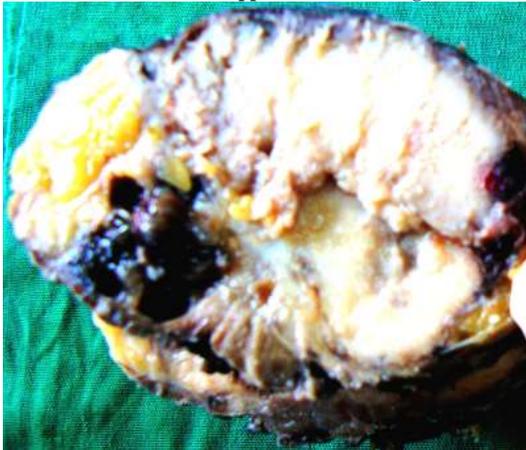
The nipple and areola complex was replaced with ulceration and a bloody discharge exuded from it. On the deeper aspect it was fixed to the pectoralis major muscle. The mass had a variegated consistency, from hard to cystic. The ipsilateral axilla had multiple discrete mobile nodes which were hard. The ipsilateral supraclavicular and contralateral axillary nodes were not involved. Metastatic work up did not reveal any visceral or osseous secondaries. Clinically, the case was diagnosed as carcinoma left breast with ipsilateral axillary lymph node metastasis. Left modified radical mastectomy with ipsilateral axillary node dissection was done and the specimen submitted for histopathological examination.

**Pathology**

The modified radical mastectomy specimen measured 22x11x7 cm and the ulcerated tumour measured 11x5.5x4.5 cm. On cut section, the tumour mass was mostly solid with a well circumscribed mucin filled area measuring 3x3x2.5 cm in size. Five discrete lymph nodes were found with the largest measuring approximately 1cm in diameter.(Figure 1A & 1 B)



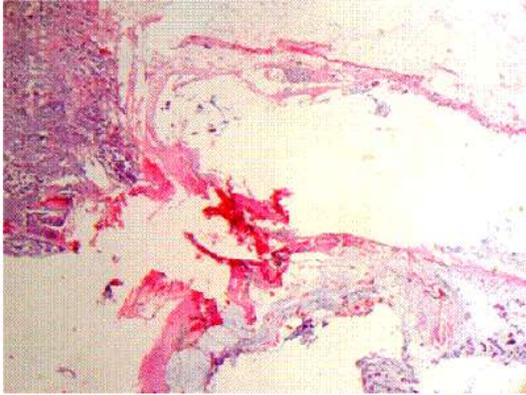
**Figure 1 A: Radical Mastectomy specimen showing ulceration in the nipple and areolar region.**



**Figure 1B: Cut section showing solid mass with a well defined mucin filled cystic area.**

Sections studied from the solid part of the tumour mass showed closely packed malignant cells arranged in syncytial sheets and cords invading into the adjacent fibrous tissue. These cells had highly pleomorphic and hyperchromatic nuclei. These features were consistent with infiltrating ductal carcinoma, NOS and Grade 2 according to Modified Scarff-Bloom-Richardson grading system.

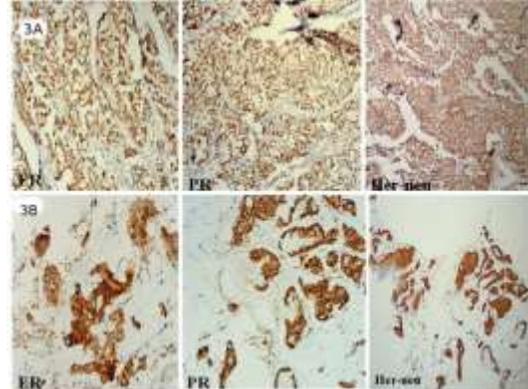
Sections studied from the mucin filled area showed islands of regular epithelial cells floating within extracellular pool of mucin. The cells were small, having darkly stained nuclei with little nuclear pleomorphism. Mitoses were infrequent without vascular and stromal invasion. These features were suggestive of mucinous (colloid) carcinoma of the breast (Figure 2).



**Figure 2: Tumour showing both invasive duct carcinoma NOS (upper left) and the well circumscribed mucinous carcinoma (lower right). (H & E, 20X).**

Sections studied from the axillary lymph nodes showed infiltration by malignant cells of invasive duct carcinoma NOS type only. So, the case was reported as composite breast malignancy comprising of both invasive duct carcinoma, NOS type and mucinous carcinoma with metastasis to axillary lymph nodes by the invasive duct carcinoma, NOS type.

The hormonal status of the tumour cells in both the areas was studied by immunohistochemical markers like ER (estrogen receptor), PR (progesterone receptor) and HER-2-neu which showed strong positivity in both the components (Figure 3).



**Figure 3A & B: Immunohistochemistry showing ER, PR and Her-2-neu positivity in Invasive ductal carcinoma NOS component and mucinous carcinoma component. (100x)**

#### Discussion

Male breast malignancy is extremely rare. Major factors associated with an increased risk of breast cancer for men include BRCA2 mutations, Klinefelter syndrome, family history, hormonal imbalances, such as obesity, testicular disorders (e.g. cryptorchidism, mumps orchitis, and orchidectomy), and radiation exposure.[4] The mean age of presentation is mostly in the sixth decade but ranges from second to ninth decade. The presentation is a painless mass (most common), bloody discharge, nipple fixation or retraction or inversion, oedema, eczema and ulceration of the skin.[5]

Infiltrating ductal carcinoma is the most common subtype and pure mucinous carcinoma is an extremely rare neoplasm. To our best knowledge, till now about 30 cases of mucinous carcinoma of the male breast have been reported in the English literature of which only 12 cases were pure mucinous.[3,6]

The mucinous carcinomas are classified as pure and mixed types. Strict diagnostic criteria for pure mammary mucinous carcinoma is the requirement of = 90% of the tumour having a typical appearance, with islands of monomorphic ductal epithelial cells lying within a copious background pool of mucins.[7] Mixed mucinous carcinoma of breast are those where mucinous areas are admixed with invasive carcinoma and carry unfavourable prognosis as compared to pure mucinous carcinoma. Moreover metastasis to the axillary lymph node is rare in pure mucinous carcinoma (2-4%). This is believed to be due to the extracellular pool of mucin which acts as a barrier to the malignant cells. Hence a search of invasive ductal components should always be made in all mucinous carcinomas showing metastasis to axillary lymph nodes.

The treatment is similar to female breast cancer being local clearance by modified radical mastectomy with axillary lymph node dissection or sentinel node biopsy based on the experience with female breast cancers. There is similar role for adjuvant therapy in male breast cancer as in female breast cancers.[8]

Hill et al reported an overall five year and ten year survival rate in patients with localized disease to 86% and 64% respectively. With positive lymph nodes, the five and ten year survival rate decreased to 73% and 50% respectively.[9] Compared to breast carcinoma in women, male breast carcinomas have a somewhat higher frequency of ER positivity in the 60-95% range, while PR positivity occurs in 45-85% of cases.[1] In our case, the tumour cells were strongly positive for ER, PR and Her-2-neu in both invasive duct and mucinous parts. In women, ER expression is usually a marker of differentiation and indicates that the cancer still remains under hormonal influence. This characteristic would also imply that the tumour should be less aggressive and more responsive to hormonal therapy. In men, however, ER-positive tumours are associated with higher stage disease.[10] The fact that most cancers arising in male breasts are ER positive is likely due to the lack of circulating estrogen in the male system, much like in postmenopausal women.[1] Although composite breast malignancy in male is very rare, it does exist. Usually pure mucinous carcinomas are known to have a less aggressive outcome without metastasis. But the presence of metastatic lymph nodes in a mucinous carcinoma indicates the composite nature of the tumour most commonly combined with invasive duct carcinoma, NOS type. Due to prognostic differences of this tumour, a desperate attempt should be made to diagnose both the components of tumour.

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