



Case Report

Mucinous carcinoma of male breast: A rare case report

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Abstract

Less than 1% of recorded malignancies in men are related to breast cancer. In comparison to women who share similar risk factors, male breast cancer has a poorer prognosis which can be attributed to lack of awareness and late presentation. A 63 year old male presented to the surgery OPD with a rapidly enlarging swelling left breast for a duration of three months. Radiological findings were consistent with a BIRADS 4 likely neoplastic lesion in left breast. FNAC of the left breast lump was done and cytological findings were suggestive of breast carcinoma. Following this, the patient underwent left sided radical mastectomy and the histopathological findings were consistent with Mucinous Carcinoma of left breast

FNAC is an important diagnostic tool in diagnosing breast cancer in men and increased awareness can help in its early diagnosis. Mucinous carcinoma is a rare type of breast cancer in men and limited literature is available on this entity that impacts current disease management.

Keywords: FNAC, Male breast cancer, Cytology, Histopathology.

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1. Introduction

Breast cancer accounts for less than 1% of all cancers diagnosed in men and median age of diagnosis is estimated to be 68 years with a case mortality of 20%.¹ The male breast tissue predominantly consists of fatty tissue and ducts with glandular elements localised to the retroareolar region. Although this mammary tissue is limited, it is hormone sensitive, responsive to both estrogen and progesterone (more than 90% are ER/PR positive).² Risk factors for development of carcinoma include increased estrogen exposure (liver cirrhosis, Klinefelter syndrome) and familial cases with BRCA1/2 mutation with more than 20% of patients giving positive family history of breast cancer.^{3,4} Preexisting glandular proliferations in male breast in the form of gynaecomastia also increase the risk of carcinoma. FNAC is a simple, cost effective tool that can be used to distinguish benign and malignant breast disease in males and cases can then be followed up by core needle biopsy which is the gold standard of diagnosis in both male and female breast carcinoma.⁵ Error! Reference source not found. The most commonly

encountered type of male breast cancer is invasive ductal carcinoma, NOS. Mucinous and other variants are rare.⁶

Mucinous carcinoma is subdivided into two categories based on histopathology: pure and mixed. 90% of the tumour area in the pure form of the disease is described as rich extracellular mucin, while the mixed variety has both an invasive ductal carcinoma component and mucinous tissue.⁸ Compared to mixed mucinous carcinoma, which is recognised to be more aggressive in nature, pure mucinous carcinoma is often benign, having a higher survival rate and a lower frequency of metastatic nodal involvement.⁹ In this case report we present a case of invasive mucinous carcinoma of left breast diagnosed in a 63 year old male.

2. Clinical Presentation

A 63 year old male presented to surgery OPD with complaints of rapidly enlarging breast swelling in left breast for a duration of 4 months. On clinical examination the nipple was retracted and a solitary firm mobile lump measuring 6 x 4 cm was noted in the inner quadrant of breast, approximately

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at 4 o'clock position. Multiple hard axillary lymph nodes were palpable in the left axilla. Right breast examination was normal. There was no history of nipple discharge and bilateral testicular examination was normal.

2.1. Radiological findings

Ultrasonography revealed a large ill-defined space occupying lesion with spiculated margins in the left retroareolar region measuring about 6.5 x 3 cm in size with multiple foci of calcification. Multiple enlarged left axillary nodes were seen, largest measuring 4.8 x 2.4 cm. Right breast showed normal echopattern.

2.2. Cytological findings

FNAC of the left breast lump was done and cellular smears examined showed malignant epithelial cells arranged in sheets, clusters as well as scattered singly in the background of metachromatic stroma. Individual tumour cells were large in size, highly pleomorphic, having hyperchromatic to vesicular nuclei, irregular nuclear contours and abundant basophilic cytoplasm. The axillary lymph node was also aspirated and showed features of reactive lymphoid hyperplasia

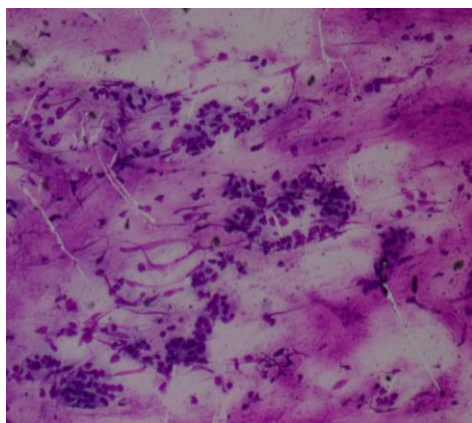


Figure 1: Scanner view showing tumour cells floating in background metachromatic stroma (100X, MGG)

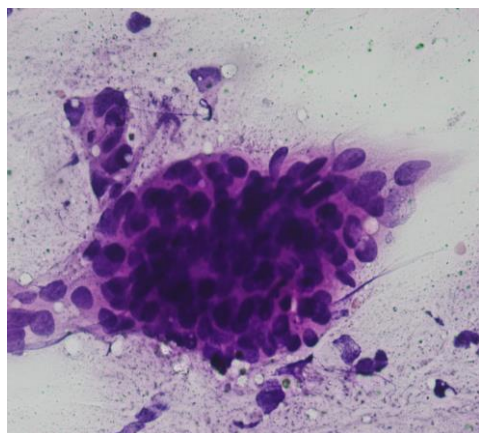


Figure 2: High power view of clusters of pleomorphic tumour cells (400X, MGG)

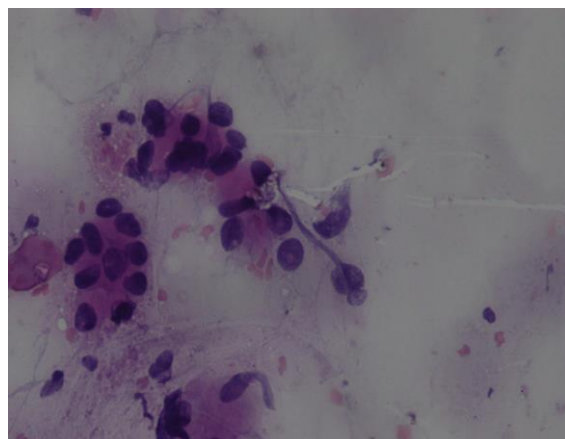


Figure 3: High power view showing large pleomorphic tumour cells with hyperchromatic to vesicular nuclei, irregular nuclei and abundant basophilic cytoplasm (400X, H&E)

3. Histopathological Findings

3.1. Gross examination

MRM specimen consisted of breast tissue measuring 20 x 11 x 4.3 cm with skin covered area measuring 13 x 8cm. On cut section, tan white hard areas measuring 5 x 2.5 cm were appreciated. Another tan white area measuring 4.5 x 4 cm also appreciated in the axillary tail. 7 lymph nodes were retrieved, the largest measuring 0.8 x 0.6 cm.

3.2. Microscopic examination

H and E stained sections examined showed tumour tissue arranged in clusters, sheets and islands floating in pools of mucin. These were separated by fibrous septa and extensive desmoplastic stroma infiltrated by dense mononuclear inflammatory infiltrate. Individual tumour cells were moderate to highly pleomorphic with increased nucleocytoplasmic ratio, hyperchromatic nuclei, irregular nuclear membrane and abundant cell cytoplasm. Few bizarre tumour giant cells along with areas of hemorrhage and necrosis were noted. All margins were involved by tumour. No lymphovascular or perineural invasion was identified. Out of the total 7 lymph nodes, 3 showed positive lymph node metastasis. Histopathological findings were consistent with Nottingham Grade 5 (3+1+1) Mucinous Carcinoma (pT₃N₃M_X).

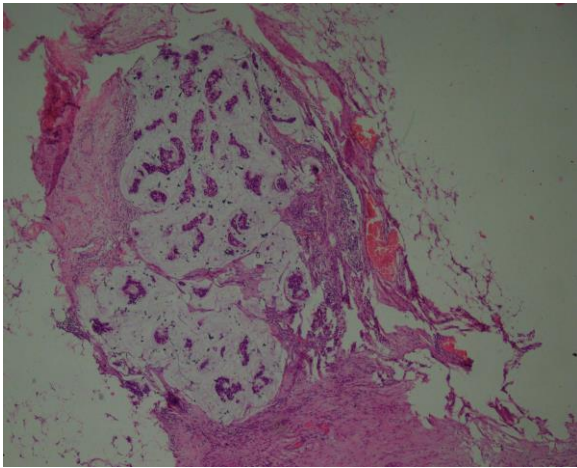


Figure 4: Scanner view showing clusters of tumour cells floating in pools of mucin (110X, H&E)

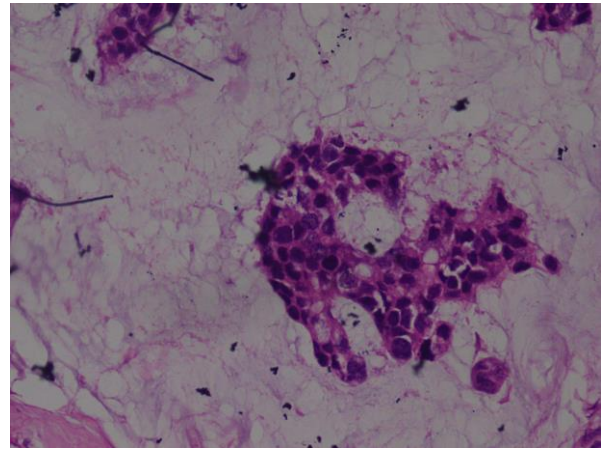


Figure 7: High power view of pleomorphic tumour cells with hyperchromatic nuclei and irregular nuclear membranes and occasional tumour giant cells (400X, H&E)

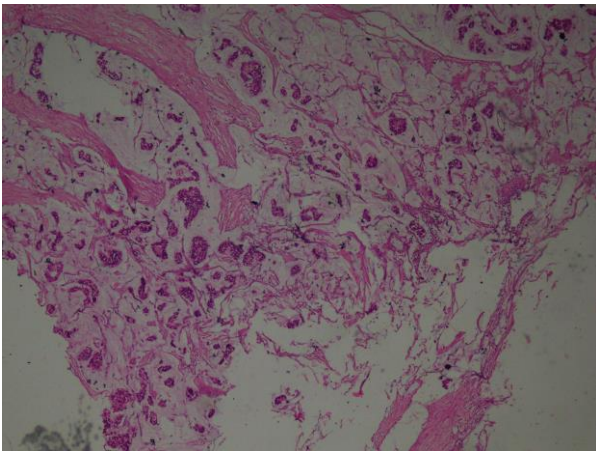


Figure 5: Scanner view showing clusters and sheets of tumour cells surrounded by mucin and separated by fibrous septae (100X, H&E)

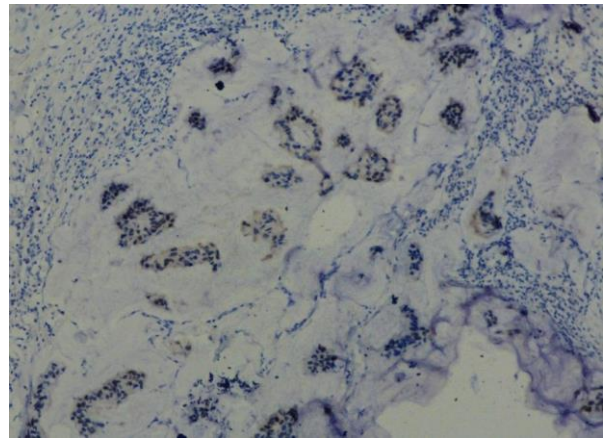


Figure 8: Scanner view of mucinous carcinoma of breast with tumour cells showing strong pr positivity (3+)(100X, PR, DAB)

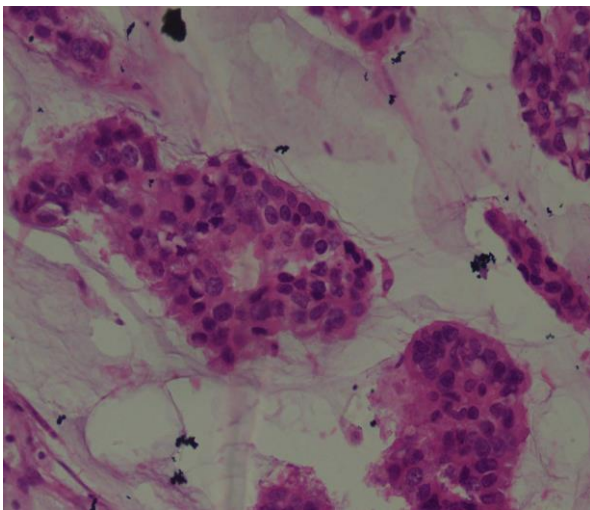


Figure 6: High power view showing pleomorphic tumour cells with high nucleocytoplasmic ratio and abundant cell cytoplasm (400X, H&E)

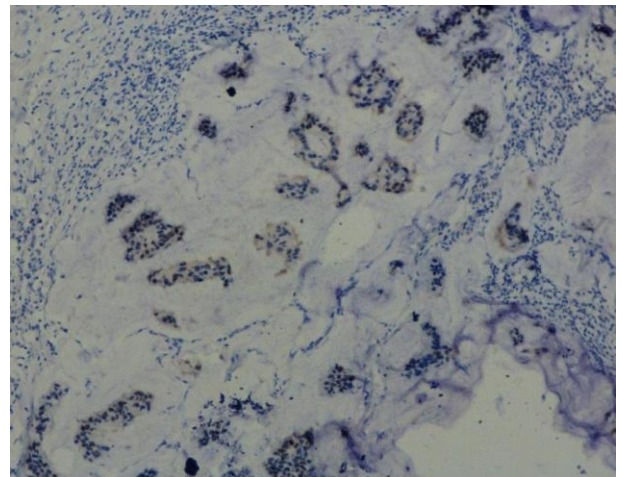


Figure 9: Scanner view of mucinous carcinoma of breast with tumour cells showing strong er positivity (3+)(100X, ER, DAB)

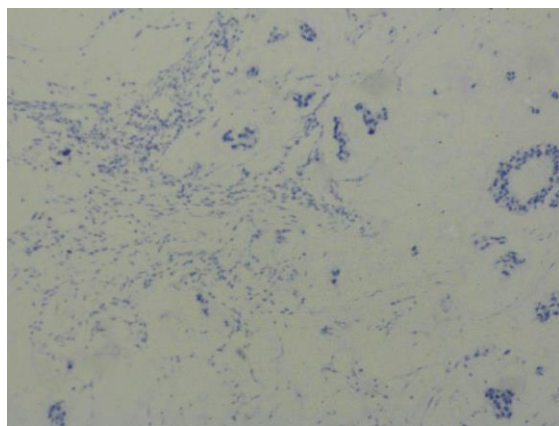


Figure 10: Scanner view of mucinous carcinoma of breast with tumour cells showing complete lack of her2/neu expression (0) (100X, HER2/NEU, DAB)

4. Discussion

Compared to female breast carcinoma, male breast carcinoma is usually ductal in origin and presents at an advanced stage. As per WHO Classification of Tumours (5th edition), gynaecomastia, carcinoma in situ and invasive carcinoma are listed as male breast neoplasms.¹¹ Primary mucinous carcinoma in the male breast is regarded to be exceptionally rare because so few examples of the condition have been documented over the years. Most mucinous carcinomas manifest as a palpable mass; like our patient but this is also the case for a number of other disorders, such as benign breast diseases like gynaecomastia or desmoid tumours. The patient's age was also near the median age of diagnosis, however no positive family history was present.

Mammography findings were characteristic of male breast cancer as a high density, spiculated space occupying lesion. Secondary changes in the form of calcifications were also noted.^{12,13} FNAC of the breast lump helped in establishing its malignant nature and reinstituting its utility in management of male breast lesions

The patient underwent left mastectomy and axillary node dissection. Gross examination of breast tissue revealed a stage 3 tumour tissue measuring 5 cm in greatest dimension with 3 out of the 7 lymph nodes retrieved showing positive lymph node metastasis. Some studies have also proposed lesser significance to tumour size in mucinous carcinoma as mucin comprises majority of tumour volume.¹⁴

Nottingham grading system is composed of three pathological findings: mitotic count, nuclear pleomorphism, and degree of tubular formation. A higher Nottingham grade is linked to a shorter survival and an earlier recurrence. In our case study, the aggressive nature of the tumour is histopathologically indicated by its higher grade (grade 5) along with larger size, positive margins and lymph node metastasis.¹⁵⁻¹⁷

Postoperative adjuvant chemotherapy is determined by the receptor status of carcinoma. Tamoxifen has shown to reduce the rate of recurrence.

In this case study, hormone receptor study revealed a positive ER/PR and negative HER2/NEU status.

The patient received adjuvant chemotherapy and is on regular follow-up.

5. Conclusion

Mucinous carcinoma of breast in males is a rarely encountered disease in routine clinical and histopathological practice. Although previous studies have tried to determine the pathogenesis of male breast carcinoma but due to its low incidence, a well-defined diagnostic or prognostic criteria has not been separately established. More research is required on its morphological variants, relationship with other breast lesions and its distinguishing features from female breast cancer. Increased awareness among the population with thorough clinicoradiological examination and judicious use of FNAC can improve patient outcome.

6. Source of Funding

None.

7. Conflict of Interest

None.

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