



Case Report

Male breast carcinoma- with numerous histological patterns - an interesting case report

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ABSTRACT

Male Breast Carcinoma (MBC) is a rare condition accounting for <1% of all breast carcinomas. The risk factor includes hormonal imbalance, Klinefelter syndrome, testicular disorders, radiation exposure, alcoholism and antiandrogenic medication. MBC clinically manifests as painless palpable mass sometimes masquerading gynecomastia. Compared with female breast cancer, male breast carcinoma presents slightly older age at diagnosis with large tumor size and most of the tumors hormone receptor positive. We come across chronic alcoholic male presented with fungating growth over left breast. Cytology revealed neuroendocrine type of infiltrating ductal carcinoma cells, whereas biopsy showed various histological patterns in sections from different areas making this case interesting one. Immunohistochemically, it was positive for estrogen and progesterone receptor but negative for Her2neu marker.

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1. Introduction

Male breast cancer (MBC) is very rare and constitutes 0.5-1% of all patients with breast cancer. The reason of the low incidence rate in men is the relatively low amount of breast tissue along with the difference in their hormonal environment. Even though breast tissue is less in men as compared to women, the factors that influence malignant changes are similar.¹ Breast cancer may be incidentally found in the specimens of cases operated on for gynecomastia. The most common presentations are painless palpable mass, skin ulceration, and nipple retraction or discharge in approximately 75% of the cases, similar to women.² Since the breast tissue in men is undersized, the nipple is mostly involved at early stages. Almost all histologic types pertaining to female breast cancer (FBC) have also been reported for MBC, mixed pattern is described in 5.8% of cases.³ Here we present a 62 year old chronic alcoholic male presented with fungating growth on left breast, cytology revealed malignant nature of the lump and

biopsy revealed six different histological patterns making this case interesting one.

2. Case Details

A 62 year old male patient presented to surgery OPD with complaints of breast lump on left side since 1 month. He was known chronic smoker and alcoholic since past 30 years. There was no significant family history of any cancer. He was admitted to surgical ward with clinical working diagnosis of carcinoma left breast and was sent to us for cytology section for fine needle aspiration cytology (FNAC). On examination, left breast showed a cauliflower growth measuring 3x3 cm eroding the nipple and areola (Figure 1). The lump was firm to hard in consistency and appeared to be fixed to underlying chest wall. Single lymph node was felt measuring 1x1.5 cm in left axilla. FNAC was carried out from breast lump as well as from left axillary lymph node. Aspiration from breast lump was hemorrhagic and second pass of needle was not tried as there was more blood oozing from aspiration site. Adequacy of material was confirmed by rapid onsite evaluation technique after staining with

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new methylene blue stain. FNAC smears revealed highly cellular aspirate showing epithelial tumor cells which were pleomorphic displaying round to oval vesicular nucleus with prominent nucleoli, with few having eccentrically placed nucleus giving “plasmacytoid” appearance (Figure 2). The cytoplasm was moderate to abundant. These cells were arranged in sheets, vague glandular pattern and in singles against hemorrhagic background. Occasional mitotic figures were also seen. No bare bipolar nuclei seen in the background. The aspirate from lymph node also revealed similar tumor cells. We offered diagnosis of infiltrating ductal carcinoma with lymph node metastasis and requested biopsy for further typing and grading of tumor.

This was followed by mammographic examination which suggested BIRADS grade V- highly suggestive of malignancy. Pre-operative ultrasound examination of liver showed fatty liver disease and chest X-ray was normal. Patient underwent modified radical mastectomy with axillary clearance. We received specimen covered by elliptical bit of skin with attached axillary pad of fat (Figure 3). The cut section of nipple and areola revealed gray white tumor extending from nipple to underlying breast parenchyma and measured 3x2.5x2 cm. The lower resected margin was showing pectoralis major muscle fibres and tumor was 0.5 cm away from deep resected margins. All other margins were uninvolved. Serial sectioning of tumor showed mucinous areas as well as areas with hemorrhage and necrosis. The axillary fat showed 2 lymph nodes largest measured 2x1.5 cm and cut section was gray white.

Histopathological examination from gray white of tumor showed numerous histological pattern with none of them constituting more than >50% of tumor area; making this case distinctive and interesting. The tumor cells near deep surgical margin showed cells arranged in tubular and glandular pattern (Figure 4) displaying cells with vesicular nucleus and prominent nucleoli (Figure 4A inset). These features were suggestive of infiltrating ductal carcinoma (IDC) –not otherwise specialized (NOS) type of areas, constituting nearly 20% of tumor area. Focal areas (nearly 20% of tumor area) showed mucinous pools containing glands and micropapillary projections constituting mucinous type of IDC (Figure 4B). Whereas section beneath nipple and areola (nearly 10% of tumor area) showed tumor cells arranged in cribriform pattern with tumor cells in ducts with “holes in Swiss cheese” appearance (Figure 5 A) with foci of microcalcifications. One focus showed presence of perineural invasion (Figure no 5A inset) by tumor cells which characterize the cribriform pattern of IDC. Deep areas of tumor showed solid sheets of tumor cells without any evidence of tubule formation (Figure 5B) displaying plasmacytoid appearance of cells. The cells in this area showed “salt and pepper” appearance of chromatin (Figure 5B inset) resembling “Neuroendocrine” pattern of IDC (nearly 20% of tumor

area). These are the cells seen in the aspiration slides suggesting most probably the area which was aspirated during FNAC. Serial sections from gray white hard area revealed cells with dense desmoplastic response (Figure 6A) suggesting Schirrous type of IDC pattern constituting <10% of tumor area and focal area showed classical central area of comedonecrosis (Figure 6B) suggesting Comedocarcinoma type of IDC, seen in around 20% of tumor area. Peculiarly, two lymph nodes isolated in axillary pad of fat showed subcapsular area filled with tumor cells (Figure 6B inset) with large areas of comedonecrosis. The tumor showed positivity for ER and PR on immunohistochemistry but negative for Her2neu marker. The final impression of Infiltrating Ductal Carcinoma of left breast with variable histological patterns (NOS type-20%, mucinous type-20%, cribriform type-10%, neuroendocrine type-20%, schirrous type-10%, and comedocarcinoma type-20%), TNM Stage of pT2N1Mx was issued with Modified Nottingham’s histological grade of 2. Patient was sent for chemotherapy to the referral centre and 6 months follow up of the patient is uneventful.



Fig. 1: Left breast showed a cauliflower growth eroding the nipple and areola.

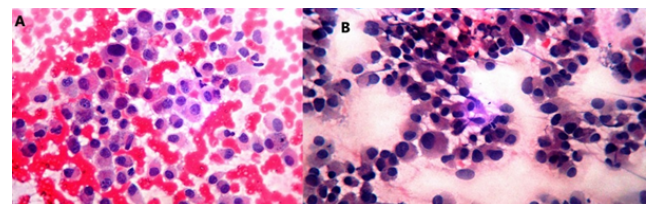


Fig. 2: FNAC showing pleomorphic tumor cells displaying “plasmacytoid” appearance with round to oval vesicular nucleus placed eccentrically and some having prominent nucleoli (A is H&E stain and B is Pap stain at 40 x magnifications).

3. Discussion

Male breast cancer (MBC) is very rare and constitutes 0.5-1% of all patients with breast cancer. The reason of the



Fig. 3: Modified radical mastectomy specimen with gray white tumor extending from nipple to underlying breast parenchyma.

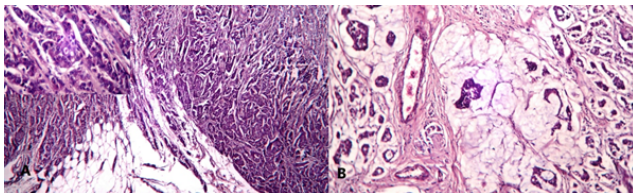


Fig. 4: Histopathological examination showing tumor cells arranged in tubular and glandular pattern –IDC –NOS type(A) displaying cells with vesicular nucleus and prominent nucleoli (A inset). Figure no 4 B: Mucinous pools containing glands and micropapillary projections suggesting IDC-Mucinous component. (H & E sections A is 10 X, inset is 40 x, B is 40 x magnification)

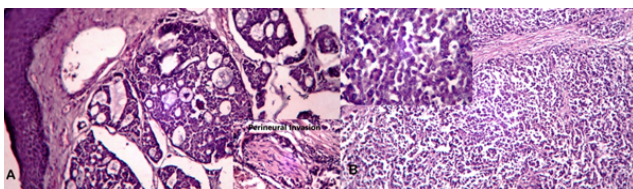


Fig. 5: Section from nipple showing tumor cells arranged in “cribriform” pattern with microcalcifications (A) and perineural invasion (inset) suggesting Cribriform pattern of IDC. Figure no 5B showing solid areas of tumor cells with cells displaying “salt and pepper” appearance of chromatin (inset) suggesting Neuroendocrine component of IDC. (H & E sections 5A is 10 X, inset is 40 x, B is 10 x, inset is 40 x magnification)

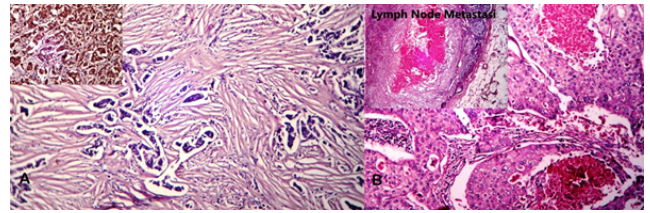


Fig. 6: Sections showing cells embedded in dense desmoplastic stroma suggesting Schirrous component of IDC(A) with IHC showing ER positivity (inset); Focal area (Figure no 6B) showed classical central comedonecrosis with inset showing lymph node metastasis. (6A is 10 X H & E section; inset is 10x with ER- IHC marker; B is 20 x, inset is 4 x magnification, H & E stain)

low incidence rate in men is the relatively low amount of breast tissue along with the difference in their hormonal environment. Even though breast tissue is less in men as compared to women, the factors that influence malignant changes are similar.¹The Surveillance, Epidemiology and End Result (SEER) data also showed that the rate that was 1.1 for 1,00,000 men in the mid-1970s and raised to 1.44 for 1,00,000 men by 2010.²

The known risk factors for male breast cancer include mainly genetic mutations like BRCA2 (more than BRCA1), androgen receptor (AR) gene, CYp17, PTEN tumor suppressor gene, CHEK2 mutation along with increasing age, obesity, radiation, Klinefelter syndrome, use of estrogens or testosterone and positive family history.⁴ A very strong association between MBC and Klinefelter syndrome was observed in various studies along with history of liver disease, chronic alcoholism, past breast and testicular pathologies (orchitis, undescended testicles) are other risk factors that have been described.⁵

The most common presentations are painless palpable mass, skin ulceration, and nipple retraction or discharge in approximately 75% of the cases, similar to women. Since the breast tissue in men is undersized, the nipple is mostly involved at early stages.⁶ The incidence of nipple retraction is 9%, discharge is 6% and ulceration is 6%. The mass is frequently localized to the subareolar region. It is seen less frequently in the upper outer quadrant. The left breast is involved more frequently than the right; 1% of the cases are bilateral.⁷

A normal male breast is essentially composed of fatty tissue and contains only a few secretory canals. It does not have Cooper ligaments, and has very little ductal and interlobular connective tissue. The tumor is visualized on mammography as a hyperdense, well defined, lobulated mass with structural distortion. Microcalcification is rare and generally appears as wide, round and dispersed calcifications.⁸

A differential diagnosis should be made between gynecomastia and cancer in masses of the male breast. Gynecomastia is the most frequent benign mass of the

breast, which may be unilateral or bilateral, characteristically symmetrical, and has a discoid shape under the nipple and areola. Whereas male breast carcinoma, it develops a painless hard mass at an eccentric location. Besides breast cancer, the reasons that cause a mass in the male breast include abscess, hematoma, lipoma, fat necrosis, ductal ectasia, intraductal papilloma, cyst, and metastatic tumors. The most frequent primary tumors in men, which metastasize to the breast include melanoma, lymphoma, prostate, lung and colon tumors.⁹

Almost all histologic types pertaining to female breast cancer (FBC) have also been reported for MBC, with varying rates. According to the SEER data, 93.7% of MBC is IDC –NOS type; and only 1.5% is of the lobular subtype. The other histological types are papillary (2.6%) and mucinous (1.8%) tumors.² One more largest study was conducted by Zhou et al,³ who studied 73 cases of MBC in their retrospective study and found ICD NOS type as most common type (75%) followed by rare types of invasive papillary (8.7%), cribriform (1.4%), metaplastic (1.4%), mucinous (4.4%), secretory (2.9%), and mixed patterns (5.8%).

There is no consensus on molecular subtyping of male breast cancer, and the few studies with small group of patients yielded inconsistent results.¹⁰ One more large study on immunohistochemical markers for MBC was done by Serdy et al,¹¹ who concluded that, most male breast cancers are hormone receptor positive. MBC shows a higher estrogen and progesterone receptor expression as compared to women (97% ER, 90% PR in males vs. 70 to 80% ER or PR in females). As for HER-2/neu expression, it is lower in men in comparison to women and in our case, it was negative.

The standard treatment for male breast cancer is surgery (modified radical mastectomy and axillary lymph dissection) is recommended if the tumor is not fixed to the pectoral muscle, followed by adjuvant endocrine treatment, chemotherapy or radiotherapy depending on prognostic factors, which is the same as in women.^{12,13}

4. Conclusion

In Breast Cancer, more than one histological pattern may predominate rarely and such cases become feast for the day to pathologist. In this case we encountered six histological patterns of IDC namely, NOS type, mucinous type, cribriform pattern, neuroendocrine type, schirrous type, and comedocarcinoma type in single specimen at variable proportions. When male patient presents with breast lump, it can be clinically confounded with gynecomastia and detection may be delayed. Breast cancer behaves differently in males and cytological evaluation still has its own benefits

in evaluating breast lumps.

5. Source of Funding

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6. Conflict of Interest

None.

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