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STUDY OF MALE BREAST LESIONS: A CYTO-HISTOLOGICAL CORRELATION

Pathology

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ABSTRACT

Background: Breast cancer is the most common cancer in women worldwide. However, its male counterpart is relatively rare and often presented at late advanced stage which is associated with worst prognosis. The present study was initiated to study the cytological findings of all male breast lesions, cyto-histological correlation and immunohistochemical characteristics, whenever possible. **Method:** The present study is a retrospective analysis of male patients with breast lump who underwent fine needle aspiration cytology (FNAC) and surgery over a period of 5 years from January 2018 to December 2022. **Results:** A total of 17 cases of male breast lesions were studied. The mean age of presentation is 47±5 years. In our study, 82.4% of the cases were benign while 17.6% were malignant. Of all the cases, gynaecomastia was the most common benign lesion and invasive ductal carcinoma was the most common malignant counterpart. 1 case of invasive ductal carcinoma, NOS was found to be triple positive.1 case each of invasive papillary carcinoma and invasive ductal carcinoma, NOS were found to be ER+, PR+, Her-2/neu -. **Conclusion:** Incidence of cancers including male breast cancer has been increasing worldwide. As the male breast cancers usually present at the advanced stage, screening as well as public awareness are highly essential for early detection and timely treatment.

KEYWORDS

Male breast cancer, FNAC, Histopathology, Immunohistochemistry

INTRODUCTION:

Male breast cancer is relatively rare and constitute about 1% of all breast cancers.[1,2] Its incidence increases by 40% during 1975 to 2015 according to Surveillance, Epidemiology and End Results (SEER) data.[3] Gynaecomastia is the most common male breast lesion. The correlation between gynaecomastia and breast cancer in male is not found in most of the studies. Histologically, ductal carcinoma, no special type (NST) is the most common type but papillary carcinoma or Paget's disease was also described with invasive lobular carcinoma as an exceptional entity which may be due to the usual absence of terminal duct lobular unit in normal male breast. Most of the male breast carcinoma are strongly positive for oestrogen receptor (ER) and progesterone receptor (PR).

Comparing to females, the male counterpart has worst prognosis because of its late diagnosis at advance stages of the disease. The aim of this paper is to study the cytological findings of all male breast lesions, cyto-histological correlation and immunohistochemical characteristics wherever applicable.

METHODS:

Medical records of seventeen male patients with breast lesions or breast specimens over a period of five years (from January 2018 to December 2022) from the cytopathology and histopathology sections of department of Pathology, JNIMS, were studied. Reports having clinical and pathology data were included in our study. Reports with incomplete data, secondary breast disease and inconclusive results were excluded. Out of the 17 cases, histopathological correlation could be made in 6 cases. Immunohistochemistry was also done in all cases of carcinoma. All data were collected and analysed using Microsoft Excel 2021.

RESULTS:

In our study, 82.4% of the cases were benign while 17.6% were malignant. Gynaecomastia was the most common benign lesion. We also observed 3 cases of malignancy, 2 cases of invasive ductal carcinoma, NOS (Fig-1) and 1 case of invasive papillary carcinoma (Fig-2). Age of the patients ranges from 1-80 years, the mean age of presentation being 47±5 years. Benign lesions are most common in the 4th decade whereas malignancies were more prevalent in the 7th decade (Table 1). Involvement of the left breast (29.4%) was more than the right breast (23.5%) with bilateral lesions being the most common presentation (47%) (Table-2). Majority of the patients in our study presented with palpable breast lump (58.8%). Discharge and nipple retraction were observed in 1 case each of malignancy (5.9%) (Table-3). Gynaecomastia was the most common benign lesion and invasive ductal carcinoma; NOS was the commonest malignant counterpart (Table-4). Majority of the patients are from rural areas (82.3%) and the rest (17.6%) are from urban areas (Fig-5). 6 cases are subjected to radiological examination (3 Ultrasonography and 3 both ultrasonography and mammography). 3 benign lesions diagnosed by ultrasound and 3 suspicious lesions by mammography are confirmed on histology (100% correlation). Cyto-histological correlation could be made in all 6 cases of histopathological specimens (Table-5) showing 100% concordance rate. All the malignant cases are subjected to immunohistochemical analysis. 1 case each of invasive papillary carcinoma and invasive ductal carcinoma, NOS were found to be ER+, PR+, Her-2/neu -. 1 case of invasive ductal carcinoma, NOS was found to be triple positive (Table-6).

Table1: Age Wise Distribution Of Benign And Malignant Lesions

Age in years	No. of cases (n= 17)	Benign lesions (n=14) (82.4%)	Malignant lesions (n=3) (17.6%)
<10	1	1(7.1%)	0 (0%)
11-20	1	1(7.1%)	0(0%)
21-30	1	1(7.1%)	0(0%)
31-40	2	2(14.3%)	0(0%)
41-50	5	5(35.7%)	0(0%)
51-60	3	2(14.3%)	1(33.3%)
61-70	2	2(14.3%)	0(0%)
71-80	2	0(0%)	2(66.7%)

Table 2: Frequency Of Laterality Of Breast Lesions, N=17

Left breast (n=5)	Right breast (n=4)	Bilateral (n=8)
(29.4%)	(23.5%)	(47.1%)

Table 3: Presentation Of Study Population (n=17)

Signs and symptoms	Total no. of cases
Palpable breast lump	10 (58.8%)
Nipple discharge	1 (5.9%)

Breast pain	5 (29.4%)
Nipple retraction	1 (5.9%)

Table 4: Cytological Findings Of Male Breast Lesions (n=17)

Sl.no	Diagnosis	No. of cases	% (Percentage)
1.	Gynaecomastia	12	70.6%
2.	Ductal Carcinoma (NOS)	2	11.7%
3.	Papillary carcinoma	1	5.9%
4.	Acute suppurative mastitis	1	5.9%
5.	Benign cystic disease	1	5.9%

Table 5: Histopathological Findings Of Male Breast Lesion (n=6) With Cytohistological And Histo-radiological Correlation.

Sl.no	Histological Diagnosis	Cytological diagnosis	Radiological diagnosis	No. of cases	%	Cyto-histological correlation	Histo-radiological correlation
1.	Gynaecomastia	Gynaecomastia	Benign lesion	3	50%	100%	100%
2.	Invasive ductal carcinoma	Ductal carcinoma, NOS	Suspicious for malignancy	2	33.3%	100%	100%
3.	Papillary carcinoma	Papillary carcinoma	Suspicious for malignancy	1	16.7%	100%	100%

Table 6: Histologic And Immunohistochemical Assessment Of A Case Of Male Breast Carcinoma

Sl.no	Age(years)	ER	PR	HER2/neu	Ki	Luminal	Tumoral stage	Diagnosis
1.	79	Positive	Positive	Negative	<10%	A	II A	Invasive papillary carcinoma
2.	77	-do-	-do-	Positive	10	B	III B	Invasive ductal carcinoma, NOS
3.	60	-do-	-do-	Negative	20%	A	II B	-do-

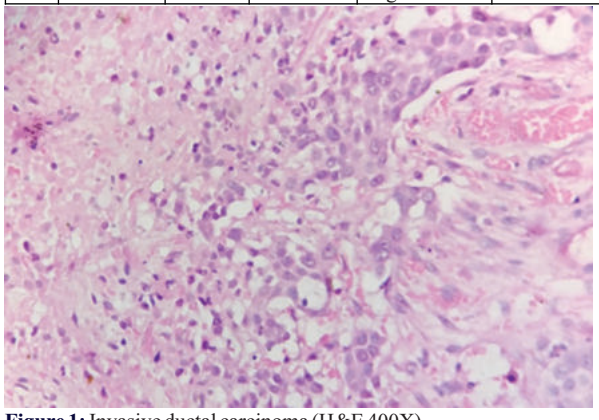

Figure 1: Invasive ductal carcinoma (H&E 400X)

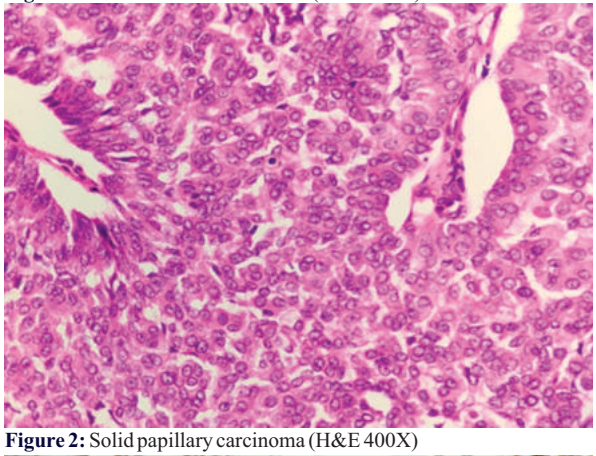

Figure 2: Solid papillary carcinoma (H&E 400X)

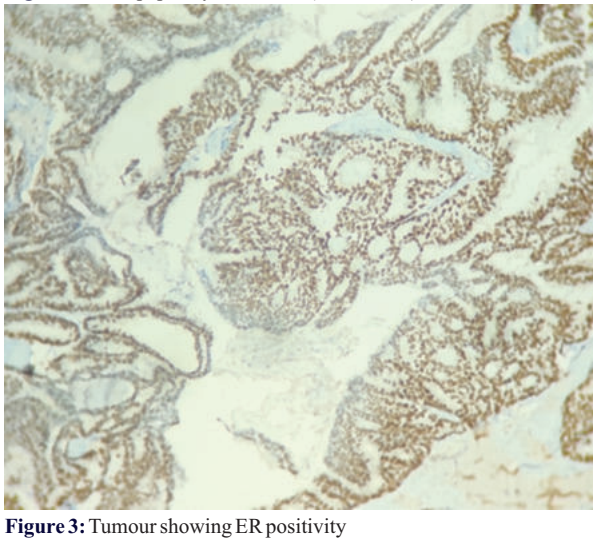

Figure 3: Tumour showing ER positivity

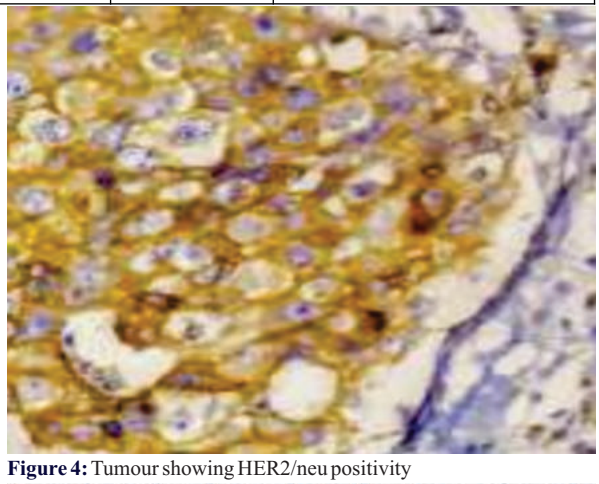

Figure 4: Tumour showing HER2/neu positivity

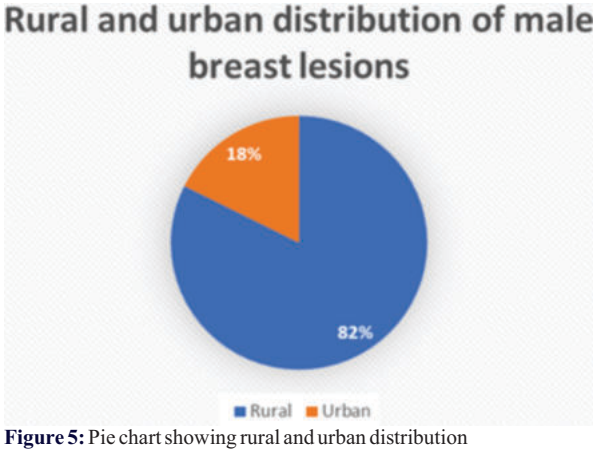

Figure 5: Pie chart showing rural and urban distribution

DISCUSSION:

Male breast lesions are uncommon and are usually benign. Breast carcinoma in males is usually diagnosed at a late stage and is less common compared to benign lesions.[4,5] It has a poor prognosis because of paucity of breast tissue and its close proximity to the skin and nipple with greater propensity to dermal lymphatics spread leading to early metastasis. BRCA gene mutations, particularly BRCA 2, are reported to be seen in approximately 4-15% of male breast cancer, who may benefit from screening. Family history of breast cancer is seen in upto 20% of male breast cancer.[6] Other risk factors include old age, radiation exposure, cryptorchidism, Klinefelter syndrome. In our study infiltrating ductal carcinoma, NOS is the most common invasive carcinoma in men which is consistent with Park et al.[7] In this study benign lesions accounts for 82.4% of the cases which is comparable to that of Akande et al[8], Aslam et al[9] and Rathi et al[10] who reported 85%, 79.13% and 78.68% of benign lesions in their respective studies. Gynaecomastia was the most common benign lesion as documented in previous studies.[11,12,13] Such lesions are worrisome to the patients who feel embarrassed and anxious. Gynaecomastia results from hyperplasia of the ductal and stromal elements and usually present

clinically as a bilateral, tender and mobile sub-areolar mass. It is seen in neonates, adolescents and elderly man having increased oestrogen and decreased testosterone levels. Other causes include hormonal disorders, Klinefelter syndrome, systemic disease, neoplasm, obesity and other drugs.[14] Palpable breast lump constitute 58.8% in our study followed by breast pain, nipple discharge and nipple retraction but Cutuli B et al[15] painless palpable mass, nipple retraction, skin ulceration and discharge are the most common presentation accounting for 75% of all the cases in their study. The maximum incidence of breast lump in our study is in the 41-50 years age group which corroborates with the observation of Rathi M et al[10]. In our study, bilateral lesions were observed in 47.1 % of the cases whereas unilateral involvement of the left and right breast were seen in 29.4% and 23.5% of the cases respectively. Our findings correlate with Mustafa et al.[16]

Akande HJ et al[8] observed preponderance of right-side lesions but Elhaj et al observed 51.85% involvement of left breast.

CONCLUSION:

Male breast cancer has been increasing worldwide. Screening as well as public awareness for early detection and treatment is important. The main limitation of our study was its retrospective nature and paucity of cases. Fine needle aspiration cytology is an effective and reliable diagnostic tool for early diagnosis with high sensitivity and specificity. Diagnostic yield will improve when combined with imaging techniques.

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