



HISTOPATHOLOGICAL STUDY OF NEOPLASTIC LESIONS OF BREAST: AT A TERTIARY CARE CENTRE.

Pathology

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ABSTRACT

Background: Female breast is one of the commonest sites of neoplasm in the human body. In India, breast cancer is the most common cancer among women in many regions. Histopathology plays an important role in management of breast diseases. **Objectives:** To study gross and microscopic characters of the Neoplastic Breast lesions, classify them according to WHO classification and to determine the distribution according to age and gender. **Materials and Methods:** The observational study was conducted in the Department of Pathology, GMC Aurangabad from October 2020 to September 2022. All the patients presenting with Breast Lump were included in the study. Total 420 cases studied. **Observation and Results:** Out of 420 cases, most cases 331(78.8%) were malignant, 88 cases (20.95%) were benign and only 1 case (0.24%) was borderline. Majority 273 cases (82.42%) were found to be Invasive Breast carcinoma- Not Otherwise Specified (IBC NOS). **Conclusion:** Histopathology is gold standard for the diagnosis, staging and predicting the prognosis in breast lesions.

KEYWORDS

Breast, Fibroadenoma, Invasive breast carcinoma.

INTRODUCTION

Female breast is constantly under the influence of sex hormones is one of the commonest sites of neoplasm in the human body. Of all the breast disorder, palpable breast lump is most common manifestation. All the breast lumps are suspected to be carcinoma until proved otherwise. The most common cause of breast lump are fibrocystic change, fibroadenoma and carcinoma of breast in ascending order.¹ In India, breast cancer is the most common cancer among women in many regions and has overtaken cervix cancer which was most frequent cancer a decade ago.² As per the Globocan data 2020, in India, Breast cancer accounted for 13.5% of all cancer cases and 10.6% of all deaths.³ Histopathology plays an important role in management of breast diseases, it is necessary component of diagnosis, treatment and prognosis in most breast disorder. Also when assessing the adequacy of treatment in breast cancer, pathological assessment is the main criterion.⁴

MATERIAL AND METHODS

This observational study was conducted in the Department of Pathology, Government Medical College and Cancer Hospital, Aurangabad from October 2020 to September 2022. All the patients presenting with Breast Lump were included. Total 420 cases studied. All the specimens of breast were included in the study including biopsies. Clinical details such as age, sex, side of involvement, quadrant and size of lesion were noted. Gross examination findings were noted. Specimens were processed by routine paraffin embedding technique and stained with Haematoxylin and eosin and microscopic examination was done and lesions were classified according to WHO classification of breast tumors. Grading was done using Modified Bloom Richardson scoring.

OBSERVATION AND RESULTS

Out of total 420 patients, 416 were female and 4 were male. Majority of cases i.e 110 cases were in 41-50 years of age group. Out of 416 female patients, most patients i.e 210 cases (50.48%) are post menopausal. Most cases 227(54.05%) showed left side involvement. Upper outer quadrant is most commonly involved in 210 cases (50%). Most common size of tumor was 2-5 cm accounting 276 (65.71%) cases. Out of 420 cases, most cases 331(78.8%) were malignant, 88 cases (20.95%) were benign and only 1 case (0.24%) was borderline phyllodes tumor. Out of 88 benign lesions, Most cases 66 cases (77.65%) were fibroadenoma, followed by Benign phyllodes tumor which accounted for 11 cases (11.76%). In malignant lesions Out of total 331 malignant lesion in female patients, Majority 273 cases (82.42%) were found to be Invasive Breast carcinoma- Not Otherwise Specified (IBC NOS) followed by 12 cases of DCIS and 11 cases of IBC with lobular pattern, 9 cases of Mucinous carcinoma, 6 cases of Medullary carcinoma. Only 1 male patient had malignant neoplasm,

metaplastic carcinoma. Histopathological examination according to NMBRS grading shows Majority of cases 257 cases were Grade III, 55 cases were grade II and only 1 case (0.32%) of Grade I tumor. We observed maximum no. of younger patients had higher grade tumor. Out of 227 surgically operated cases of malignant lesions, 129 cases (56.83%) showed lymph node metastasis. 126 cases (55.51%) showed Ductal Carcinoma in Situ in adjacent breast. NPI (Nottingham prognostic Index) predicted Poor prognosis in 107 (50.23%) cases and moderate prognosis in 100(46.95%) cases and good prognosis in 6 (2.82%) cases.

Table 1: Spectrum Of Neoplasms And Age Wise Distribution In Male Patients

Age in years	21-30	31-40	41-50	51-60	61-70	Total	Percentage%
Gynaecomastia	2	0	0	1	0	3	75.00%
Metaplastic carcinoma	0	0	0	0	1	1	25.00%
Total	2	0	0	1	1	4	100.00%

Table 2: Age wise distribution of Benign and Borderline lesions in Female patients

Nature of Neoplasm	Spectrum of lesions	11-20	21-30	31-40	41-50	51-60	61-70	71-80	Total
Benign	Fibroadenoma	28	9	21	6	1	0	1	66
	Phyllodes	1	1	4	2	1	1	0	10
	Sclerosing adenosis	0	0	1	2	0	0	0	3
	Lactating adenoma	2	1	0	0	0	0	0	3
	Adenomyoepithelioma	0	0	1	0	0	0	0	1
	Atypical ductal hyperplasia	0	0	0	0	1	0	0	1
Borderline	Intraductal papilloma	0	0	1	0	0	0	0	1
	Borderline phyllodes	0	0	0	1	0	0	0	1
Total		31	11	28	11	3	1	1	86

Table 3: Age Wise Distribution Of Malignant Lesions In Female Patients

Age in years	21-30	31-40	41-50	51-60	61-70	71-80	Total
Extensive DCIS	1	1	6	2	2	0	12
IBC NOS	10	53	86	60	50	14	273
IBC with lobular pattern	1	2	0	6	2	0	11

IBC with medullary differentiation	0	1	3	2	0	0	6
IBC with Neuroendocrine differentiation	0	0	0	0	1	1	2
Mucinous carcinoma	0	0	1	3	2	3	9
Metaplastic carcinoma	1	1	3	1	1	1	8
Papillary carcinoma	0	0	0	0	2	0	2
IBC Schirrous type	0	0	0	0	0	1	1
IBC with sebaceous differentiation	0	1	0	0	0	0	1
Pagets disease	0	0	0	1	0	0	1
Primary osteosarcoma of breast	0	0	0	1	0	0	1
Malignant phyllodes	1	1	0	0	0	0	2
Non Hodgkins Lymphoma	1	0	0	0	0	0	1
Total	15	60	97	76	60	20	330

Table 4: Age And Grade Correlation

Age in years	Grade I	Grade II	Grade III
21-30	0	2	10
31-40	0	10	48
41-50	0	9	84
51-60	0	15	57
61-70	1	14	43
71-80	0	5	15
Total	1	55	257

Table 5: Maximum Tumor Dimension On Gross Examination

Size in cm	No. of cases
≤2.0	31
2.1-4.9	276
≥5.0	113
Total	420

Table 6: Lymph Node Metastasis In Malignant Lesions

LN Metastasis	No of cases
Positive	129
Negative	98
Total	227

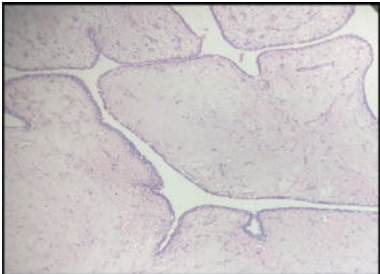


Fig 1: Phyllodes Tumor Showing Leaf Like Architecture.

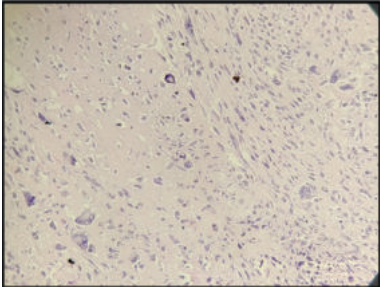


Fig 2: Malignant Phyllodes Tumor With Heterologous Element (chondroid).

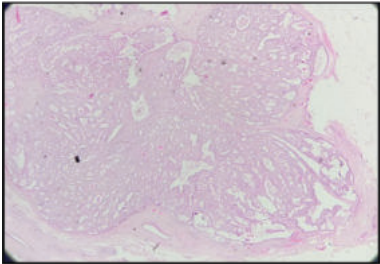


Fig 3: Intraductal Papilloma. (H&E100x).

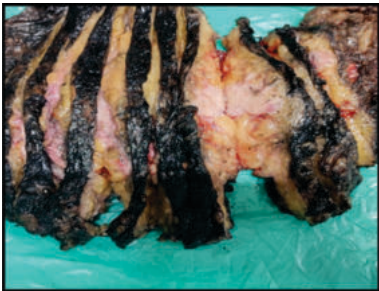


Fig 4: Invasive Breast Carcinoma On Gross Examination.

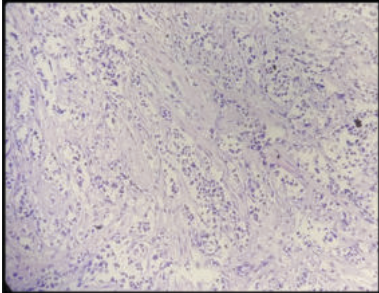


Fig 5: IBC Grade III Showing <10% Tubule Formation. (H&E,100x)

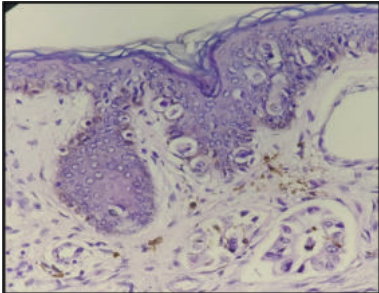


Fig 6: Pagetoid Spread. (H&E,400x)

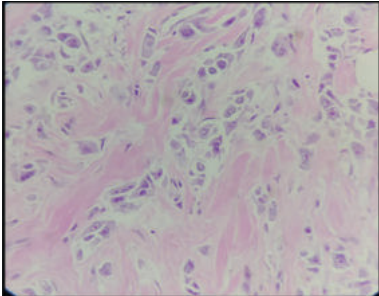


Fig 7: Pleomorphic Lobular Carcinoma Showing Cells Arranged In Single File Pattern And Desmoplastic Stroma.(H&E,400x)

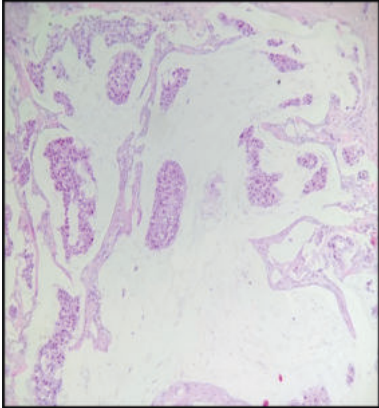


Fig 8: Mucinous Carcinoma Showing Clusters Of Tumor Cells Suspended In Extracellular Pools Of Mucin.(H&E,400x)

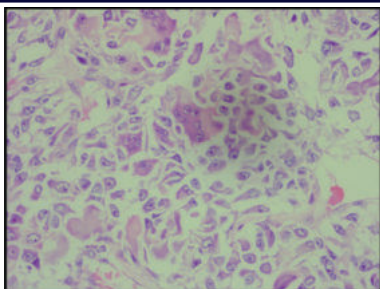


Fig 9: Primary Osteosarcoma Of Breast Showing Tumor Cells (Having Vesicular Nucleus And Prominent Eosinophilic Nucleoli) Along With Osteoclastic And Tumor Giant Cells. (H&E, 400x)

DISCUSSION

In our study most common benign lesion found to be fibroadenoma, followed by phyllodes. Similar findings are observed by Ghodasara et al⁵. Sharma HB et al⁶ also found maximum no. of cases 50 cases of fibroadenoma followed by 3 cases each of phyllodes tumor and 3 cases of Atypical ductal Hyperplasia. Ghodasara et al⁵ and Sharma HB et al⁶ found 9 and 4 cases of gynecomastia respectively while we found 3 cases.

Table 7: Frequency Of Malignant Lesions

	Siddiqui et al	Singh et al	Chiedozi et al	Naser Ahmed et al	Wakkar et al	Present study
Extensive DCIS with microinvasion	0	0	3 (0.4%)	0	2 (0.2%)	12 (2.85%)
IBC NOS	1224 (37%)	22 (14.4%)	38 (5.36%)	789 (29.3%)	246 (25.7%)	273 (65%)
IBC with Ioular pattern	30 (1) %	1 (0.6%)	1 (0.1%)	38 (1.4%)	12 (1.2%)	11 (2.61%)
IBC with Medullary Differentiation	14	0	0	0	0	6 (1.82%)
IBC with Neuroendocrine differentiation	1	0	0	0	0	2 (1.42%)
Mucinous carcinoma	10	0	0	14 (0.5%)	4 (0.4%)	9 (2.14%)
Metaplastic carcinoma	0	0	0	0	2 (0.68%)	9 (2.14%)
Papillary carcinoma	9	0	0	16 (0.6%)	31 (3.2%)	2 (0.47%)
IBC Schirrous type	0	0	0	0	0	1 (0.23%)
IBC with sebaceous differentiation	0	0	0	0	0	1 (0.23%)
Pagets disease	0	0	0	0	0	1 (0.23%)
Primary osteosarcoma of breast	0	0	0	0	0	1 (0.23%)
Malignant phyllodes	0	1 (0.6%)	0	11 (0.4%)	3 (0.3%)	1 (0.23%)
Non-Hodgkins Lymphoma	6	0	0	0	0	1 (0.23%)

In various studies done by Siddiqui et al⁷, Naser Ahmed et al¹⁰, Wakkar et al², Singh et al⁸ and Chiedozi et al⁹ the most common malignant tumor is Invasive breast carcinoma Nos type. We also got the same findings. In present study, we found one case of primary osteosarcoma of breast which is very rare Case, although it is not classified under

WHO but such cases are reported in the literature. According to Allan and Soule¹¹ based on their clinicopathological study of 26 cases of Osteogenic sarcoma in somatic soft tissues, the basic requirement for the diagnosis of a primary osteosarcoma of the breast relies on :

1. The presence of neoplastic osteoid or bone
2. The exclusion of origin in the bone
3. The absence of epithelial component

In addition to the above histomorphological features, immuno-histochemical tests show positivity for the mesenchymal marker vimentin with absence of epithelial, neural, muscular and other markers.

In Our Case,

A 57-year female came with right breast lump since 5 months. Sonomammography revealed a heterogenous mass of size 4.8x4.5 cm at 9 to 12 o'clock in the right breast. No skeletal lesions were detected clinically or radiologically.

Right Modified Radical mastectomy done. On gross examination, grey white, firm tumor with areas of hemorrhage of size 7.5x6.5x5.5 cm, in central upper outer and lower outer quadrants. Microscopy revealed oval to spindle cells neoplasm forming lobules of cartilage and at places forming osteoid.

On IHC, tumor cells were negative for CK, CK8/18, p63, desmin and positive for SAT B2 (confirming osteoblastic differentiation). Pan CK negative rules out metaplastic carcinoma. So, based on histomorphology and immunohistochemistry findings diagnosis of primary osteosarcoma of breast was made.

In the present study, Size of the tumor ranged from 1 cm to 25 cm. and most of the tumors (65.71%) were of size 2.1 to 4.9 cm. Badwe et al¹² & Raina V et al¹³ also got similar findings. But a major difference we found was 26.90 % tumors were of size > 5 cm, possibly because those cases presented late to the clinics or because of lack of awareness among the community.

In Our study 56.83% of malignant cases are positive for metastasis in Lymph node. In the studies by various authors like Ghodasara NM et al⁵, Ahmed Z et al¹⁴ and Mudduwa et al¹⁵ documented lymph nodes positive for metastasis as 54.28%, 74.77% and 57.7% respectively.

The Nottingham Prognostic Index (NPI) is used to determine prognosis following surgery for breast cancer. In our study, 50.23% of cases showed NPI score ≥ 5.5 (i.e., showing poor prognosis) followed by Moderate prognosis in (46.95%). Similar observations were made by Ahmad et al⁴ (2009). They studied 120 cases and observed maximum (56.1%) cases with poor prognosis. Blamey et al¹⁶ studied 2238 cases and in study by Sivakumar et al¹⁷. They observed higher no. of cases with moderate prognosis.

CONCLUSION

In present study Out of 420 cases, most cases 331(78.8%) were malignant, 88 cases (20.95%) were benign and only 1 case (0.24%) was borderline. Majority 273 cases (82.42%) were found to be Invasive Breast carcinoma- Not Otherwise Specified (IBC NOS). one rare case of primary osteosarcoma of breast was found. Out of 4 male patients Only 1 male patient had malignant neoplasm, metaplastic carcinoma. We observed maximum no. of younger patients had higher grade tumor.

Histopathology is gold standard for the diagnosis, staging and predicting the prognosis in breast lesions. It plays an important role to guide the treatment. In India Breast cancer incidence is rising more in younger females than western countries it may be due to changes in lifestyle, short period of breast feeding, nulliparity. Concerning the increasing incidence, awareness and screening programs must be initiated. Healthcare infrastructure needs to be improved and shortage of skilled personnel must be met to overcome the limited accessibility in rural areas to reduce the morbidity and mortality with breast lesions.

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