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Histopathological patterns of breast neoplasms: A study in tertiary care hospital

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Abstract
Aim & Objectives: The main aim of this study is to find out the various histopathological patterns and distribution of neoplastic breast lesions in various age groups in our institute.
Methodology: This was a two year study from Jan 2018 to Dec 2019 comprising 50 cases done at Department of Pathology at Katuri Medical College & Hospital, Guntur.
Results: In the present study all the cases were studied by histopathological examination, of which the commonest benign tumour was Fibro adenoma and malignant tumour was Infiltrating Duct Cell Carcinoma – Not Otherwise Specified.
Conclusion: We conclude that there was a variation in distribution of benign and malignant lesions in different age groups in our institute.

Keywords: malignant, benign, histopathology, carcinoma, fibro adenoma

Introduction

Breast diseases constitute heterogeneous group of lesions, and show variety of disease patterns ranging from inflammatory lesion, benign breast disease to invasive cancers [1]. Approximately 200,000 cases of breast lesions are diagnosed annually [2]. Of these, carcinoma breast is 19% to 34% of all cancers in the female population [3]. In India, it forms the second common malignancy after carcinoma cervix [4] and is detected in 20 per 100,000 women [5]. Benign breast diseases are more prevalent as compared to malignant and inflammatory [6, 7, 8, 9]. Due to lack of awareness and education, patients present with advanced disease. The pattern and etiology of breast disease differs in different countries [10, 11].

The aim of this study is to find out the various histopathological patterns and distribution of neoplastic breast lesions in various age groups in our institute.

Materials and Methods

The study was conducted in the Pathology department of Katuri Medical College, Guntur, Andhra Pradesh over a period of 2 years from Jan 2018 to Dec 2019. The samples for this study include breast trucut biopsies, needle core biopsies, excisional biopsies and mastectomy specimens received in our department. Histopathological examination done by standard procedures using 10% formalin, paraffin embedding and stained by H&E methods. A total of 50 cases were studied.

Results

Table 1: Age wise distribution of benign and malignant lesions.

Age	Benign lesions with %	Malignant lesions with %
< 20 years	15 (42. 85%)	00
21-30 years	9 (25.71%)	1 (6.66%)
31-40 years	6 (17.14%)	7 (46.66%)
41- 50 years	4 (11.42 %)	3 (20%)
51- 60 years	1 (2.85%)	2 (13.33%)
>61 years	00	2 (13.33%)
Total	35	15

A total of 50 cases were studied over a period of 2 years. 35 cases were benign lesions and 15 cases were of malignant lesions. Most of the benign lesions belonged to age group 11-20 years followed by 21-30 years and malignant lesions belonged to age group of 31-60 years. 45 were female patients and 5 were male patients, and left breast was mainly involved i.e. 55%. In male breast, total 4 cases were present, of which 2 cases were of Gynaecomastia and 2 cases were of IDC-NOS type.

In benign lesions, Fibroadenoma was the commonest i.e. 45.71%, followed by Fibrocystic Disease (20%), Ductal Hyperplasia, and Gynaecomastia, (5.71%). Tubular Adenoma, (2.85%), Fibroadenoma with Adenosis (2.85%), Hamartoma (2.85%), Lactating Adenoma, Galactocoele, Intraductal Papilloma and Borderline phyllodes tumour (2.85%).

Amongst the malignant lesions, Infiltrating Duct Cell Carcinoma- Not Otherwise Specified was the commonest lesion constituting 53.33%, followed by Invasive Lobular Carcinoma (13.33%), Neuro endocrine Carcinoma (6.66%), and Mucinous Carcinoma (26.66%).

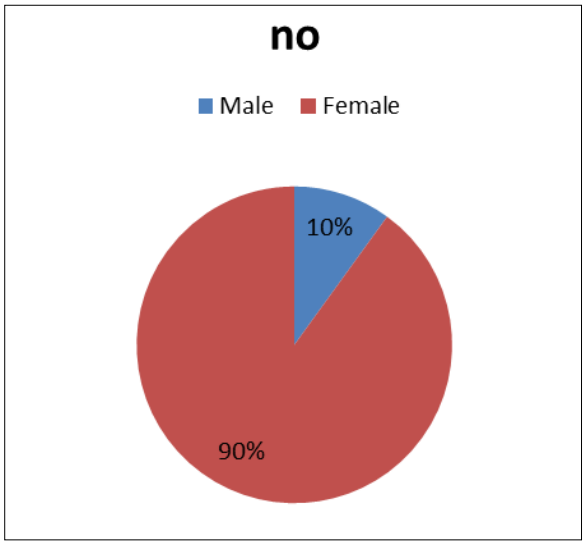

Fig 1: Male and female distribution

Table 2: Histomorphological distribution of benign lesions

Benign lesions	No. of cases	Percentage
Fibroadenoma	16	45.71%
Fibrocystic disease	7	20%
Tubular adenoma	1	2.85%
Ductal hyperplasia	2	5.71%
Gynaecomastia	2	5.71%
Hamartoma	1	2.85%
Fibroadenosis	1	2.85%
Fibroadenoma with adenosis	1	2.85%
Lactating adenoma	1	2.85%
Galactocoele	1	2.85%
Intraductal papilloma	1	2.85%
Borderline phyllodes tumour	1	2.85%

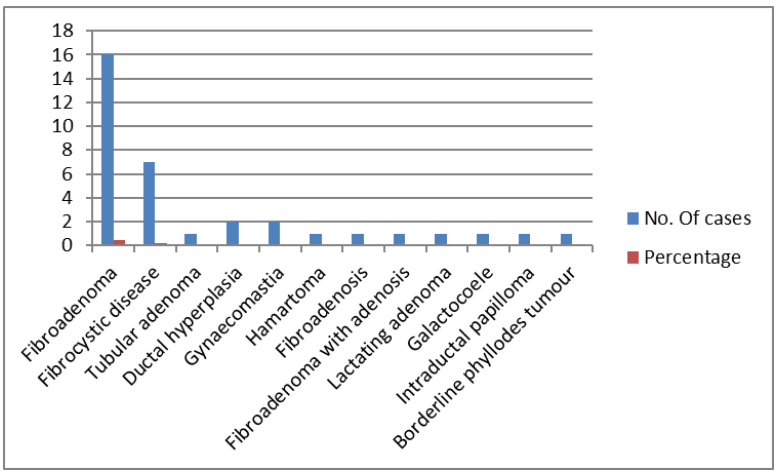

Fig 2: Histomorphological distribution of benign lesions

Table 3: Histomorphological distribution of malignant lesions

Malignant lesions	No. of cases	Percentage
Infiltrating duct cell carcinoma	8	53.33%
Invasive lobular carcinoma	2	13.33%
Neuroendocrine carcinoma	1	6.66%
Mucinous carcinoma	4	26.66%

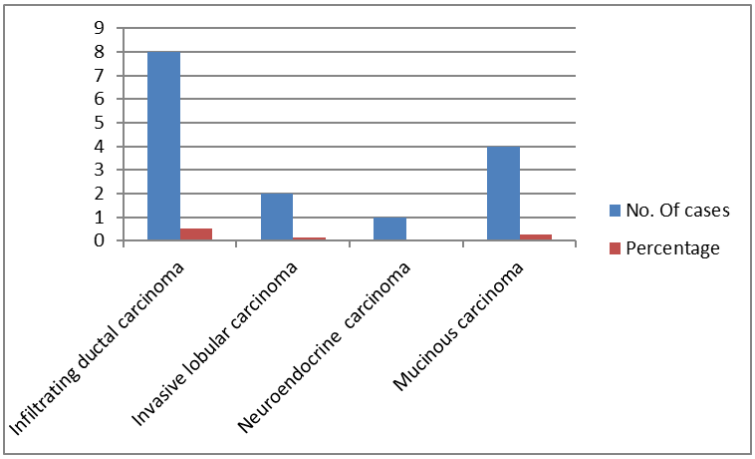

Fig 3: Histomorphological distribution of malignant lesions

Discussion

Breast lesions are detected commonly due to the increase in awareness and knowledge regarding the self examination of breast lesions by the women. Hence more number of women attending the OPD's resulting in the diagnosis of disease at early stages leading to the reduced morbidity & mortality.

In our study, 45.94% of benign lesions were found in the age group <20 years of age and no malignant lesions were found in this age group, similar results were obtained by Kalyani *et al.* i.e. 26.35% of benign lesions and no malignant lesions. Ali Ageep[12] found 37.16% of benign lesions in age group 21-30 years and 0.15% of malignant lesions in age group <20 years. Peak age group for malignant lesions was 41-50 years of age which is compared with other studies as shown in the Table no. 4.

Fig 1: H&E photomicrograph showing arrangement of ducts in low magnification (10x)

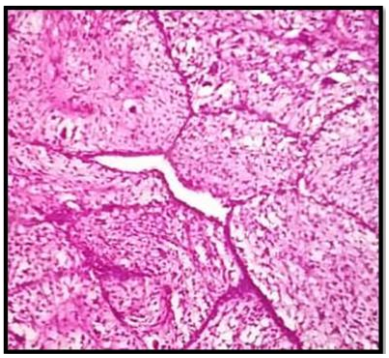

Fig 2: H&E Photomicrograph of Phyllodes tumor showing glands arranged in leaf like pattern in low magnification (10x)

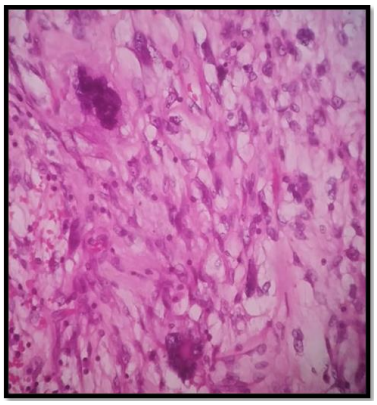

Fig 3: H&E Photomicrograph showing multinucleate giant cells in Bengin Phyllodes tumor high magnification (40x)

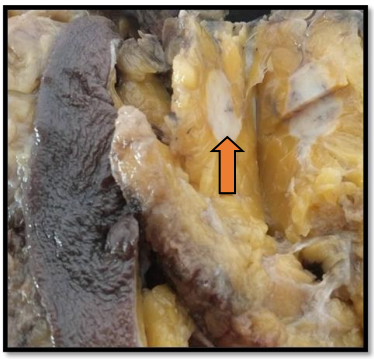

Fig 4: Gross image of grey white IDC tumor in a mastectomy specimen

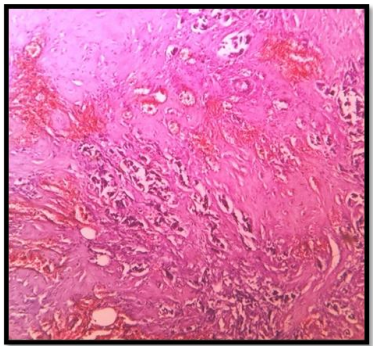

Fig 5: H&E Photomicrograph of Infiltrating Duct cell carcinoma showing tumor cell arrangement in low magnification (10x)

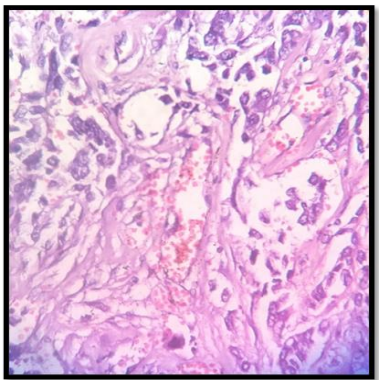

Fig 6: H&E Photomicrograph showing tubular arrangement of ducts in Infiltrating duct cell carcinoma high magnification (40x)

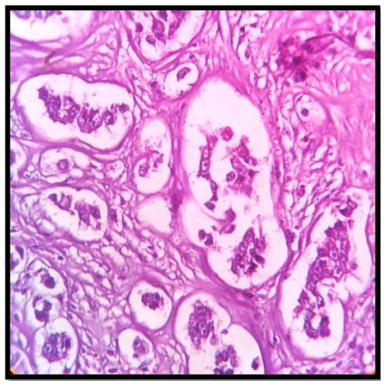

Fig 7: H&E Photomicrograph showing tumor cells arranged in comedo pattern

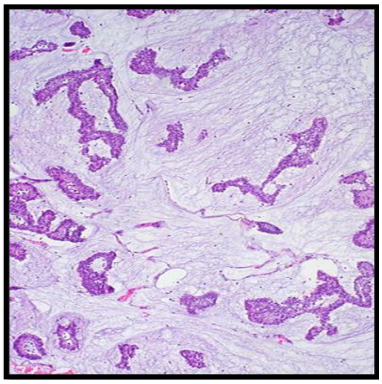

Fig 8: H&E Photomicrograph of mucinous carcinoma showing tumor cells floating in mucin (10 x)

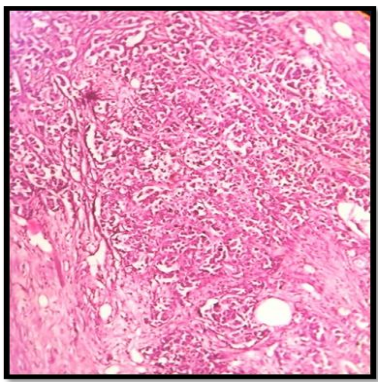

Fig 9: H&E Photomicrograph of neuroendocrine carcinoma, tumor cell in solid cell nests arrangement in low magnification (10x)

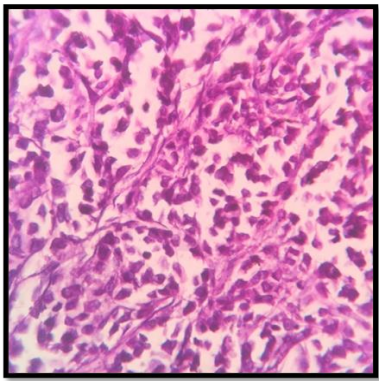

Fig 10: H&E Photomicrograph of neuroendocrine carcinoma showing monotonous small round pleomorphic tumor cells at high magnification (40x)

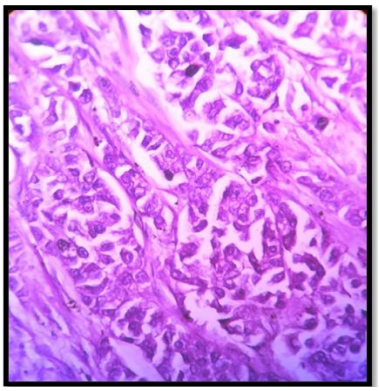

Fig 11: H&E Photomicrograph of neuroendocrine carcinoma showing monotonous small round pleomorphic tumor cells, separated by delicate fibrous septae at high magnification (40x)

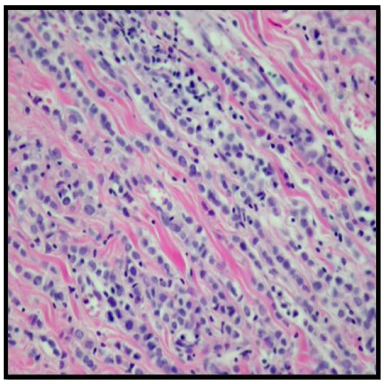

Fig 12: H&E Photomicrophraph showing Indian file pattern arrangement of tumor cells in lobular carcinoma breast.

Table 4: Age wise comparison with the other studies

Age group	Present study		Ali Ageep study		Kalyani *et al.* study	
	Benign	Malignant	Benign	Malignant	Benign	Malignant
<20 years	42.85%	0%	20.9%	0.15%	26.35%	0%
21-30 years	25.71%	6.66%	37.16%	0.58%	20.15%	0%
31-40 years	17.14%	46.65%	16.11%	1.31%	20.93%	7.75%
41-50 years	11.42%	20%	3.77%	5.66%	6.20%	6.98%
51-60 years	2.85%	13.33%	0.87%	5.52%	2.33%	5.43%
>60 years	0%	13.33%	3.49%	4.95%	1.55%	2.33%

In the present study, out of 50 cases, 70% of cases were benign and 30% were malignant, correlating with other studies shown in the table number 4 in which studies of Kalyani *et al.* [1], Arya *et al.* [13], Rasheed *et al.* [14], Arunima *et al.* [15], Zena Habeeb *et al.* [10], Nazar Hussain *et al.* [16] and Malik R [17], were comparable with our present study and showed almost equivalent results that benign lesions are more common than malignant lesions.

Table 5: Comparison of benign & malignant lesions with other studies

	Present Study	Kalyani *et al.*	R.C. Arya	Rhasheed *et al.*	Arunima *et al.*	Zena habeeb	Nazar Hussain *et al.*	Malik R
Benign	70%	77.5%	62.66%	78%	71.9%	63%	54.071%	89%
Malign Ant	30%	22.5%	37.34%	22%	28.1%	13.2%	24.1%	11%

The present study shows left side breast dominance (53.5%) and the findings are similar with the studies of Raju *et al.* [18], Kalyani *et al.* [1], Ngwogu *et al.* [7]; while right side dominance was seen in the studies of Mima. B. Sangma [19] (48%) and M. Kumar [20] (47.63%).

In our study Fibroadenoma was the most common benign lesion, with a peak incidence in the 2nd and 3rd decade, followed by fibrocystic disease which correlated with the studies of Kalyani *et al.* [1], Arunima *et al.* [15], Jadhav *et al.* [21], Pankaj *et al.* [9], Dayanand *et al.* [22], Amna Khurshid [23], and Anmod G. L [24]. Among the malignant lesions, Infiltrating Duct Cell Carcinoma- not other specified was the commonest tumor followed by Invasive Lobular Carcinoma. Kalyani *et al.* [1], Arunima *et al.* [15], Jadhav *et al.* [21] also found IDC-NOS as the commonest tumor, but their 2nd commonest malignancy was different from the present study.

The present study shows 90% female patients and 10% male patients affected with breast neoplasms. In kalyani *et al.* study, percentage of female patients was higher than male patients i.e. female patients are 86% and male patients are 13.2%. M.A. Mil *et al.* showed 94.11% female patients and 5.85% male patients showing both studies correlated with the present study.

Conclusion

In the present study we found Benign lesions are more common than Malignant lesions with a peak incidence in the 2nd and 3rd decade. Female patients affected were 98% showing left breast dominance. Malignant lesions are common at 40-60 years of age. Most common benign lesion was Fibroadenoma and malignant was Infiltrating Duct Cell Carcinoma-Not Otherwise Specified.

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