ORIGINAL RESEARCH PAPER

Pathology

THE HISTOPATHOLOGICAL SPECTRUM OF BREAST LESIONS IN LUMPECTOMIES AND CORE BIOPSIES

KEY WORDS: Fibroadenoma, infiltrating ductal carcinoma

Dr. Palak M. Lakhani Third Year Resident, Department of Pathology, Gujarat Adani Institute of Medical Sciences, Bhuj- 370001.

Dr. Pooja H. Katharotiya Third Year Resident, Department of Pathology, Gujarat Adani Institute of Medical Sciences, Bhuj- 370001.

Dr. Nikita M. Modh* Assistant Professor, Department of Pathology, Gujarat Adani Institute of Medical Sciences, Bhuj. *Corresponding Author

Dr. Rushita M. Makadia Second Year Resident, Department of Pathology, Gujarat Adani Institute of Medical Sciences, Bhuj- 370001.

ABSTRACT

INTRODUCTION: Breast tissue is a modified sweat gland which exhibits a wide spectrum of pathological lesions comprising of benign and malignant lesions.

MATERIALS AND METHODS: This prospective study of lumpectomies, core and tru cut biopsy specimens was conducted from August 2020 to August 2021 in the department of Pathology of Gujarat Adani Institute of Medical Sciences college, Bhuj.

RESULT: Out of 132 biopsies received, 105 (80.7%) cases were diagnosed as benign lesions, 25 (19.3%) cases were diagnosed as malignant lesions and 2 cases were inconclusive for diagnosis. Out of 105 benign lesions, 69 cases were diagnosed as fibroadenoma and out of 25 malignant lesions, 20 cases were diagnosed as infiltrative ductal carcinoma. Benign lesions were more common in second and third decade of life and malignant lesions were common in fourth and fifth decade of life.

CONCLUSION: The present study emphasizes the spectrum of benign and malignant lesions of breast in lumpectomy and core biopsy specimens received at the histopathology department of Gujarat Adani Institute of Medical Sciences, Bhuj.

INTRODUCTION

Breast tissue is a modified sweat gland which exhibits a wide spectrum of pathological lesions, usually presenting as palpable masses ranging from inflammatory, non-inflammatory, non- neoplastic and neoplastic lesions.[1] Cancer of breast has emerged as the leading site of cancer in most urban populations. It has rapidly replaced cancer cervix as the most common cancer in women in India.[2] Fortunately, most of the breast lesions are diagnosed as benign breast lesions.[3] The spectrum of breast lesions consists of benign lesions including fibroadenoma, phyllodes tumour, gynaecomastia, breast abscess & chronic mastitis, malignant lesions including ductal carcinoma, lobular carcinoma, colloid carcinoma and medullary carcinoma. Benign breast lesions incidence begins during the second decade of life and peaks in the fourth and fifth decades, while the incidence of malignant breast lesions increases after menopause.[4] Majority of the breast lesions initially present with a lump in the breast which is very sensitive for female patients due to which they might not report timely to the doctor for an examination.[5]

The current study aims to study the histopathological spectrum of breast lesions encountered in small biopsies, excluding mastectomy specimens, received at the histopathology department.

MATERIALS AND METHODS

This prospective study was conducted in the Department of Pathology, Gujarat Adani Institute of Medical Sciences, from August 2020 to August 2021. These biopsy specimens were fixed in 10% formalin solution for 24 hours. The tissue was processed routinely, and paraffin embedded tissue were cut on microtome to the thickness of 4 microns. The sections were stained with Haematoxylin and Eosin stain and reported.

INCLUSION CRITERIA: All lumpectomy specimens, core biopsies and tru cut biopsies received for histopathological examination suspected for neoplastic and non-neoplastic lesions of the breast during the study period were included in the study.

EXCLUSION CRITERIA: All mastectomy specimens were excluded from the study.

RESULTS AND OBSERVATION

Out of 132 biopsies received, 105 (80.7%) cases were diagnosed as benign lesions, 25 (19.3%) cases were diagnosed as malignant lesions and 2 cases were inconclusive for diagnosis. Benign lesions comprises of Fibroadenoma(69 cases, 65.7%), mastitis(08 cases, 7.6%), Fibrocystic disease(07 cases, 6.6%), abscess(04 cases, 3.8%), tubular adenoma(03 cases, 2.8%), granulomatous mastitis(02 cases, 2%), benign phyllodes tumour (02 cases, 2%), duct ectasia (02 cases, 2%), ductal hyperplasia (02 cases, 2%), galactocele(01 case, 0.9%), lactational changes(01 case, 0.9%), lipoma (01 case, 0.9%), papilloma(01 case, 0.9%) and other cases (02 cases, 1.9%). Malignant lesions comprise of invasive ductal carcinoma (20 cases, 80%), invasive lobular carcinoma (01 case, 4%), malignant phyllodes (01 case, 4%), colloid carcinoma (01 case, 4%), invasive ductal carcinoma with medullary features (01 case, 4%) and invasive carcinoma with neuroendocrine features (01 case, 4%). Benign lesions were more common in second and third decade of life and malignant lesions were common in fourth and fifth decade of life. (Table 1)

Table 1: Age wise distribution of various Breast Lesions

Age group	Benign	Malignant
10-20	25	00
21-30	40	00
31-40	25	09
41-50	11	09
51-60	04	03
>60	00	04
Total	105(80.7%)	25(19.3%)

Table 2: Frequency of distribution of benign and malignant breast lesions in present

Benign	Frequency	Malignant	Frequency
Fibroadenoma	69 (65.7%)	Infiltrating ductal carcinoma	20 (80%)

Mastitis	08 (7.6%)	Lobular carcinoma	01 (4%)
Fibrocystic disease	07 (6.6%)	Medullary carcinoma	01 (4%)
Abscess	04 (3.8%)	Colloid carcinoma	01 (4%)
Tubular adenoma	03 (2.8%)	Malignant phyllodes tumour	01 (4%)
Granulomatous mastitis	02 (2%)	Invasive carcinoma with neuroendocrine features	01 (4%)
Benign phyllodes	02 (2%)	--	--
Ductal hyperplasia	02 (2%)	--	--
Duct ectasia	02 (2%)	--	--
Galactocele	01 (0.9%)	--	--
Lactational changes	01 (0.9%)	--	--
Lipoma	01 (0.9%)	--	--
Papilloma	01 (0.9%)	--	--
Others (keratinous cyst)	02 (1.9%)	--	--
Total	105 (100%)	Total	25 (100%)

DISCUSSION

The breast tissue is composed of specialized epithelium and stroma that is capable of turning into benign or malignant lesions. The human breast consists of six to ten major duct systems. The overlying skin of the breast is lined by keratinizing squamous epithelium that dips into the orifices of the nipple and then abruptly changes to a double-layered cuboidal epithelium that continues to line the ducts. The larger ducts further branch and eventually lead to the terminal duct lobular unit. Two cell types line the ducts and lobules. They are the luminal epithelial cells that overlay the myoepithelial cells.[6] The benign spectrum of breast lesions includes fibroadenoma, phyllodes tumour, mastitis, and breast abscess and the malignant spectrum includes ductal carcinoma, lobular carcinoma, tubular carcinoma, mucinous carcinoma, medullary carcinoma, papillary carcinoma, and metaplastic carcinoma.[7] In general, benign breast lesions are more common than malignant breast lesions.[8] (Table 3) The risk factors for breast lesions include multiparty, low parity, low age at first childbirth, and late menopause, all these to only highlight the fact toward excessive circulating oestrogen.[9,10]

In our study, out of 130 lumpectomy and core biopsy specimens, 80.7% comprised benign breast lesions while 19.3% was constituted by malignant lesions. In western countries and Africa, the percentage of malignant breast lesions is usually high (10% and 21%, respectively).[11,12] In the present study, the most common benign lesion was found to be fibroadenoma (65.7%) and the most common malignant lesion was infiltrative duct cell carcinoma (80%).

Fibroadenoma develops from a terminal duct lobular unit due to the uncoordinated proliferation of the epithelial and stromal component and it might involve a part of the surrounding tissues also which creates a pseudo capsule due to the expansive growth of the lesion.[13] (Figure 1)The stromal element of fibroadenoma undergoes myxoid degeneration such as sclerosis, hyalinization, or calcification while the epithelial element may present as proliferative or non-proliferative aspects of breast parenchyma which includes apocrine metaplasia, ductal hyperplasia, sclerosing adenosis, and florid adenosis which is defined as complex.[14,15]

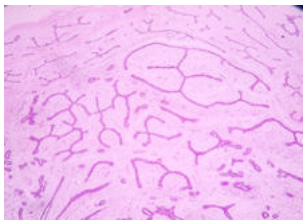

Figure 1: Well circumscribed and encapsulated intracanalicular fibroadenoma. (10x, HE stain)

Phyllodes tumour and duct papilloma were the other benign lesions with 2% and 1% incidence each in this study. Phyllodes tumour, in general, accounts for 2–3% of all fibroepithelial breast diseases and has a peak incidence in the perimenopausal age or can occur before 20 years of age. The lesion has marked intraductal growth of intralobular stroma with leaf-like projections (phyllodes leaf) which is pathognomonic of this disease.[16] (Figure 2) Ductal papilloma usually presents with secretion in the nipple.

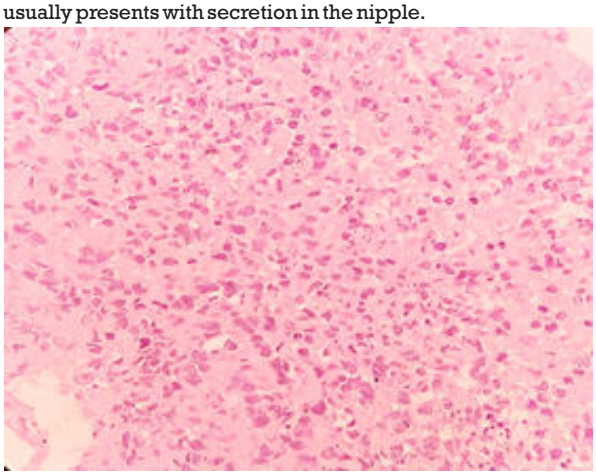

Figure 2: Stromal proliferation with cytological atypia and mitotic figures suggestive of malignant phyllodes tumour. (40x, HE stain)

Infiltrative duct cell carcinoma (Figure 3) was seen in 20 core biopsies of the total 25 malignant specimens received (80% incidence). This incidence is lower than Malik and Bharadwaj[17] study (88.20%) and Kulkarini[18] *et al*. study (84.85%) conducted in the year 2003 and 2009, respectively.

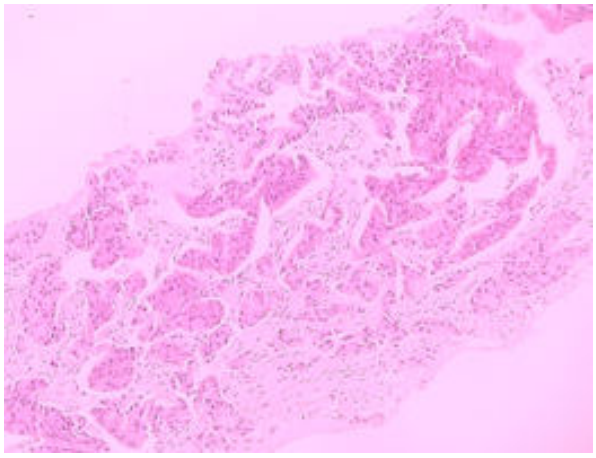

Figure 3: Proliferation of malignant ductal cells with infiltration into fibrofatty stroma suggestive of infiltrating ductal carcinoma. (10x, HE stain)

Table 3: Comparison of present study with other studies

	Fibroadenoma	Benign total	Infiltrating ductal carcinoma	Malignant total
Present study	65.7%	80.7%	80%	19.3%
Kulkarni[18] et al.	62.32%	80.7%	84.85%	19.3%
Sree ND[19] et al.	46.35%	81.62%	79.41%	18.37%
Shanthi V[20] et al.	51%	72%	78.57%	28%
Amr[21] et al.	30.7%	84.8%	89.92%	15.2%
Ghodasara NM[22] et al.	43.9%	71.31%	80.3%	28.69%

CONCLUSION

In the present study, the most common benign lesion is fibroadenoma with a 65% incidence and the most common malignant lesion is infiltrating ductal carcinoma with 80%

incidence. The peak incidence of benign lesions is in the age group of 21–30 years, and the peak incidence of malignancy is seen in 31–50 years. The present study emphasizes the spectrum of benign and malignant lesions of breast in lumpectomy and core biopsy specimens received at the histopathology department of Gujarat Adani Institute of Medical Sciences, Bhuj.

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