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Spectrum of Breast Lesions In Hadauti Region Of Rajasthan: A case series of 430 cases.

Pathology

Dr Rajshree Bhati Associate Professor,Department Of Pathology, Government Medical College,Kota.

Dr Shakti Dhar Pathak Consultant & Laparoscopic Surgeon, S.N Pareek Hospital,Kota.

Dr Vandana Pathak Associate Professor, Department Of Pathology, Government Medical College,Kota.

Dr Deepti Sukheeja Assistant Professor, Department Of Pathology, Government Medical College,Kota.

Dr Swati Namdev Senior Demonstrator, Department Of Pathology, Government Medical College, Kota

ABSTRACT

The frequency of breast cancer is increasing. It is second most common cancer in females. A number of lesions cause differential diagnostic dilemma at clinical and microscopic level. Aim of the study is to analyze the histomorphological spectrum of breast diseases. All biopsies, lumpectomies and mastectomies received during 2016 were included. Breast specimens represented 5.77% of total specimens. 323 cases (75%) presented with lump. 23 (5.34%) were males and 407 (94.65%) females with a sex ratio of 1:17.6. Benign lesions was the largest group 276 (64.18%) followed by malignant lesions 106 (24.65%). Benign and malignant lesions were most profound in 21-30 and 41-50 years respectively. Fibroadenoma 135 (31.39%) amongst benign and infiltrating duct carcinoma 96 (22.32%) amongst malignant were most common. Inflammatory lesions amounted to 48 (11.16%). Mastitis 30 (6.97%) cases was most common amidst them. Few unusual cases also seen. Study showed a wide spectrum of lesions.

KEYWORDS

fibroadenoma, infiltrating, carcinoma, mastectomy.

Introduction

Breast cancer forms the second most common malignancy after cervical cancer in India [1]. Incidence and mortality is high even in most developed countries. There is a wide variation in the spectrum of breast diseases in various countries or ethnic groups. Breast lumps are a cause of concern both for the patients and surgeon because of the risk of cancer.[2] Various orientation programmes have been tabulated by government as well as non-government organisations to educate women about self detection of breast lumps. Breast lump, once detected, is a matter of concern for the entire family. A number of non-neoplastic and neoplastic lesions cause differential diagnostic dilemma at clinical and microscopic level. Epithelial proliferative lesions associated with benign conditions are also alarming because of their propensity to malignant transformation and hence needs to be managed accordingly. The aim of this study is to analyze the histomorphological spectrum of breast diseases with respect to different age groups in the surgical specimens received in pathology department of government medical college, kota which caters to the hadauti region of Rajasthan.

Material and Methods

All the breast biopsies ,lumpectomies and mastectomies received during the entire 2016 were included in this retrospective study. All the clinical details were retrieved from the requisition forms. Small biopsies were given as such, while adequate pieces were given from the lumps. Pieces from modified mastectomy specimens were given according to the standard protocol. Microscopic examination of the formalin fixed and paraffin processed tissue was done after haematoxylin and eosin staining. Special staining and Immunohistochemistry was done whenever required. STATISTICAL ANALYSIS: A data sheet was prepared by acquiring all the clinical details along with the gross, microscopic, rare and interesting findings. Final data is processed and evaluated in percentage by comparing with total number of specimens using MS Excel 2010.

Results

Out of total 7458 surgical specimens received in the histopathology department, 430 (5.77%) were breast specimens. Out of 430 breast specimens, majority 319 (74,18%) were lumpectomies. Tru-cut biopsy was done in 18 (4.18%) patients [table1].

TABLE No 1: Distribution of type of specimens of Breast

S. No.	Type of surgery	No of cases n=430	Percentage %
1.	Lumpectomy	319	74.18%
2.	Mastectomy	93	21.62%
3.	Biopsy	18	04.18%

Majority of patients reported with painless, non tender lump in 323(75%) cases, followed by vague ill defined lump with mild tenderness 52 (12%) cases. 34 (8%) cases presented with redness, induration and pain. Only 9 (2.0%) cases presented with retracted nipple, nipple discharge and other skin changes. 12 (2.79%) cases had lump in axilla [table2]. Most of the lumps 206 (55%) were located in the left breast.

TABLE No 2: Distribution of type of presenting symptoms

S. No.	Presenting symptom	No of cases n=430	Percentage %
1.	Lump breast	297	69.07%
2.	Ill defined lump with vague tenderness	78	18.14%
3.	Redness, induration and pain	34	7.91%
4.	Retraction of nipple, nipple discharge and skin changes	09	2.09%
5.	Lump axilla	12	2.79%

23(5.34%) cases were males and the remaining were females (94.65%). The M:F ratio was 1:17.6. Maximum number 124 (28.83%) of cases belonged to 21-30 year age interval closely followed by 97 (22.55%) cases in 31-40 years and 93 (21.62%) cases in 11-20 year group. Females out number males in all age groups, few cases even occurred in 71-80 (0.69%) and 81-90 (0.23%) year age groups. Males also showed maximum incidence in 11 to 30 yrs age interval. No breast lesion was observed in the first decade in either sex, the youngest patient being 12 yrs old [table3].

TABLE No 3: Distribution of Age and Sex in Breast lesions

Age range	Female	Male	Grand Total n=430	Percentage %
11-20 years	86	7	93	21.62%
21-30 years	117	7	124	28.83%
31-40 years	94	3	97	22.55%
41-50 years	69	1	70	16.27%
51-60 years	24	3	27	6.27%
61-70 years	13	2	15	3.48%
71-80 years	3	-	3	0.69%
81-90 years	1	-	1	0.23%
Grand Total	407	23	430	100%
Percentage %	94.65	5.34	-	100%

Amassed data showed 48 (11.16%) cases were inflammatory lesions. Mastitis was the largest category of inflammatory lesions accounting to 30 (6.97%) cases. 10 (2.1%) cases of mastitis were of 41-50 year age group followed by 9 (1.9%) cases in 21-30 year age bracket. Chronic

non-specific mastitis was the most perpetual variant 14 (3.22%) cases followed by granulomatous mastitis 8 (1.86%) cases, 4 (0.93%) cases of tubercular and 2(0.46%) cases each of subacute and lymphocytic mastitis. There were 4 (0.93%) cases of galactocele, 3 of them belonged to 21-30 year age group. We also diagnosed 4 (0.93%) cases each of abscess, epidermal cysts, duct ectasia and 2(0.46%) cases of fat necrosis [table4][table5][figure1]

TABLE NO 4: Category wise distribution of Breast lesions

S. No.	Type of Breast lesion	No of cases n=430	Percentage %
1.	Inflammatory	48	11.16%
2.	Benign	276	64.18%
3.	Malignant	106	24.65%

TABLE NO 5: Distribution of Inflammatory Breast lesions

Age range / Lesions	11-20 years	21-30 years	31-40 years	41-50 years	51-60 years	Grand total	Perccentage%
Abscess	3		1	-	-	4	0.93%
Duct ectasia	-	1	2	1	-	4	0.93%
Epidermal cyst	-	2	1	1	-	4	0.93%
Fat necrosis	-	-	1	1	-	2	0.46%
Galactocele	1	3	-	-	-	4	0.93%
Mastitis	2	9	8	10	1	30	6.97%
Total age-wise%	6	15	13	11	1	48	11.16%

The largest group thus analyzed was benign breast lesions accounting to 276 (64.18%) cases. Maximum 102 (23.7%) cases belonged to 21-30 year age interval followed by 87 (20.22%) cases in 11-20 year age group. Fibroadenoma was the most frequent pathological phenomenon, comprised of 135 (31.39%) cases of total breast cases and 48.91% of the benign breast group. It showed a decline in incidence with increasing age. Data showed 65 (14.95%) ,45 (10.35%) and 21 (4.83%) cases in 11-20, 21-30 and 31-40 year age groups respectively. Out of 135, 16(3.68%) cases were of juvenile fibroadenoma and one was cellular fibroadenoma. Next pathology in this group was fibrocystic change comprising of 81 (18.83%) cases. Maximum 32 (7.36%) patients belonged to 21-30 year age interval followed by 28 patients in 31-40 year age group. However 5 (1.16%) cases occurred in 51-70 year age range. 8 (1.86%) cases showed florid epithelial hyperplasia and 7 (1.64%) cases were detected with atypical ductal hyperplasia. 10 (2.32%) cases exhibited combined features of fibroadenoma and fibroadenosis hence diagnosed as fibroadenomatosis. Maximum patients 7(1.64%) belonged to 21-30 year age interval. Accessory breast tissue in axillary lump was diagnosed in 9 females (2.09%). 8 (1.76%) patients were operated for lump breast showed a benign phyllodes tumor. 3 (0.69) cases belonged to 41-50 year age interval and 2 (0.46%) cases each in 11-20 and 2l-30 year age groups. Gynaecomastia was diagnosed in 23 (5.29%) male patients operated for lump breast. 14 (3.25%) cases occurred in 11-30 year age group but occasional cases were seen even in older age groups. No neoplasm was seen in male breast [table6][table7][figure1] [figure2].

TABLE No 6: Distribution of Benign Breast lesions

Age range / Lesions	11-20 years	21-30 years	31-40 years	41-50 years	51-60 years	61-70 years	Grand total	Percentage %
Fibroadenoma	65	45	21	4	-	-	135	31.39 %
Fibrocystic change	7	32	28	9	3	2	81	18.83 %
Fibroadenomatosis	1	7	1	1	-	-	10	2.32%
Gynaecomastia	7	7	3	1	3	2	23	5.34%
Accessory breast	1	5	2	1	-	-	9	2.09
Benign Phyllodes tumour	2	2	1	3	-	-	8	1.86%
Interesting unusual cases	4	4	2	-	-	-	10	2.32%
Grand total	87	102	58	19	6	4	276	64.18 %
Percentage %	20.22	23.71	13.48	4.41	1.39	0.93	-	64.18 %

TABLE NO 7: Distribution of epithelial hyperplastic lesions

S. No.	Epithelial hyperplasia	No of cases n=81	Percentage
1.	Usual epithelial hyperplasia	53	65.43%
2.	Moderate epithelial hyperplasia	13	16.04%
3.	Florid epithelial hyperplasia	8	9.87%
4.	Atypical Ductal Hyperplasia	7	8.64%

106 (24.65%) cases revealed as malignant. Most common malignancy 96 (22.32%) specimens was infiltrating duct carcinoma, no special type. 32(7.36 %) cases belonged to 41-50 year age group followed by 23 (5.58%) cases and 19 (4.65%) cases in 31-40 and 51-60 year age range respectively. 8 (1.85%) cases of infiltrating duct carcinoma showed associated ductal carcinoma in situ. 6 (1.39%) cases displayed comedopattern and 2 (0.46%) showed cribriform pattern. An unusual case of intracystic papillary carcinoma (0.23%) and 2 (0.46%) cases of paget's disease were reported in association with infiltrating duct carcinoma. 75 (78.12%) cases of infiltrating duct carcinoma were grade 2 according to Nottingham Modification of Bloom Richardson grading system. Malignant breast showed fibrocystic change with epitheliosis as the most continual associated finding in the non-involved portion. 80 (83.33%) cases of malignancies showed metastatic carcinoma in the axillary lymph nodes. Interesting rare cases of malignancy were also detected. 1(0.23%) case each of lobular, mucinous, medullary, atypical medullary and mixed (infiltrating duct and lobular) carcinoma were also observed. We have reported 2 (0.46%) cases of malignant phyllodes[table8][table9][figure1] [figure2]

TABLE NO 8: Distribution of Malignant Breast lesions

Age group / Lesions	21-30 years	31-40 years	41-50 years	51-60 years	61-70 years	71-80 years	80-90 years	Grand total (n=106)	Percentage %
Duct carcinoma	5	23	34	19	11	3	1	96	22.32 %
Medullary carcinoma	-	-	1	-	-	-	-	1	0.23 %
Atypical Medullary carcinoma	-	-	1	-	-	-	-	1	0.23 %
Lobular carcinoma	-	-	1	-	-	-	-	1	0.23 %
Colloid carcinoma	-	-	1	-	-	-	-	1	0.23 %
Mixed carcinoma	-	-	1	-	-	-	-	1	0.23 %

Malignant phyllodes	1	1	-	-	-	-	-	2	0.46 %
Unusual lesions	-	-	2	1	-	-	-	3	0.69 %
Grand total (age-wise)	6	24	41	20	11	3	1	106	24.65 %
Percentage %	1.39	5.53	9.53	4.65	2.55	0.69	0.23	24.65	-

TABLE NO 9: Distribution of Grade of Duct carcinoma (NST) in Breast lesions

S. No.	*Grade	No of cases n=96	Percentage
1.	BR Grade 1	18	18.75%
2.	BR Grade 2	75	78.12%
3.	BR Grade 3	3	3.12%

*According to the Nottingham modification of Bloom Richardson grading system

10 interesting benign and 3 rare malignant breast lesions were also diagnosed. In benign, 6 (1.39%) cases were of tubular adenoma. 4 (0.93%) cases of tubular adenoma belonged to 11-20 year age group. 1 (0.93%) case each of diffuse neurofibroma, lipoma, nipple adenoma and syringocystadenoma papilliferum were also found. Rare malignancies were one (0.23%) case each of lymphoma, pleomorphic sarcoma and sebaceous carcinoma [table10][figure3].

In some cases Immunohistochemistry was also required and done which included benign,in-situ and malignant lesions [Figure 4A-F] .In Infiltrating duct carcinoma Estrogen Receptor ,Progestron Receptor and Her2-Neu was also done for prognostic and therapeutic purposes.

TABLE No 10: Distribution of Unusual breast lesions

Age range / Lesions	11-20 years	21-30 years	31-40 years	41-50 years	51-60 Years	Total	Percentage %
BENIGN						n=10	
Tubular adenoma	4	1	1	-	-	6	1.39%
Nipple adenoma	-	-	1	-	-	1	0.23%
Lipoma	-	1	-	-	-	1	0.23%
Neurofibroma	-	1	-	-	-	1	0.23%
Syringocystadenoma papilliferum	-	1	-	-	-	1	0.23%
MALIGNANT						n=4	
Pleomorphic sarcoma	-	-	-	-	1	1	0.23%
Non Hodgkin's lymphoma	-	-	-	1	-	1	0.23%
Sebaceous carcinoma	-	-	-	1	-	1	0.23%
Intracystic papillary carcinoma in association with IDC	-	-	-	-	1	1	0.23%

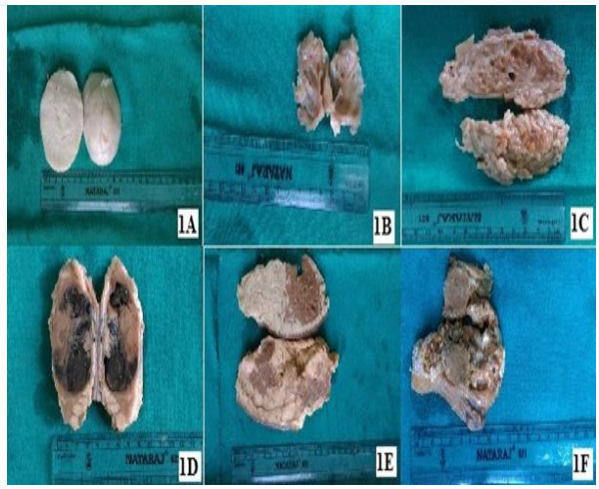


Figure1: Gross pictures showing 1A-fibroadenoma. 1B-fibrocystic change showing multiple cysts. 1C-duct ectasia showing dilated ducts. 1D-intracystic papillary carcinoma. 1E-infiltrating duct carcinoma.1F-medullary carcinoma showing well circumscribed growth.

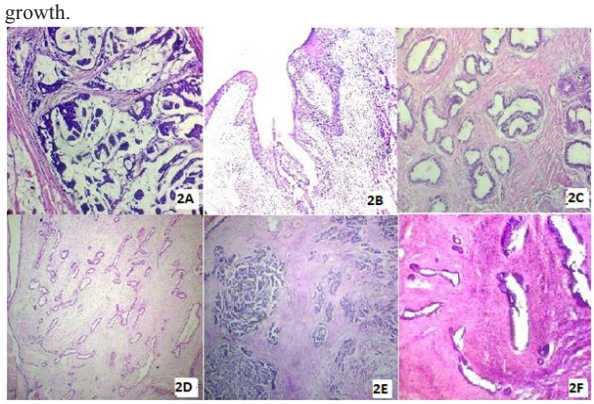


Figure 2: Microscopic pictures of 2A-mucinous carcinoma showing malignant cells floating in mucin pool. 2B-paget's disease showing malignant cells infiltrating squamous epithelium. 2C-columnar cell change in fibrcystic disease of breast. 2D-fibradenoma. 2E-infitrating duct carcinoma showing gland formation and malignant cells in nests. 2F-sclerosing adenosis.

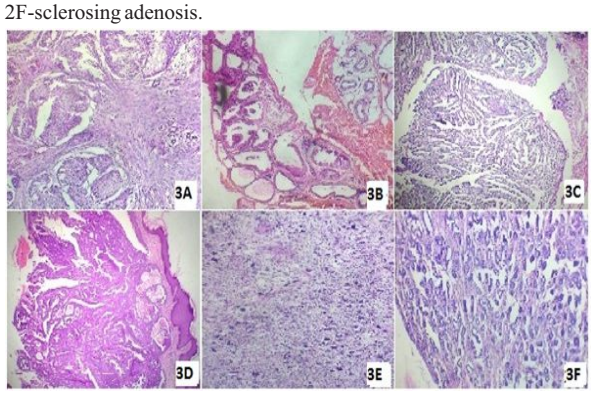


Figure 3:Microscopic pictures of 3A-sebaceous carcinoma. 3B-syringocystadenoma papilliferum. 3C-intracystic papillary carcinoma. 3D-nipple adenoma. 3E-pleomorphic sarcoma. 3F-tubular adenoma.

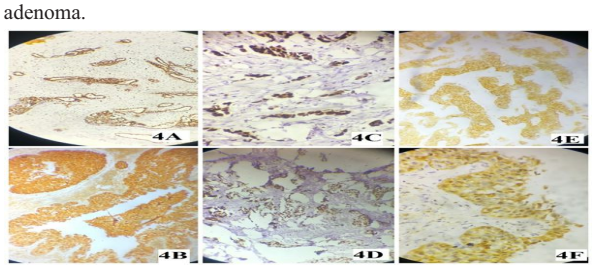


Figure 4: 4A: Immunohistochemistry with Estrogen Receptor (ER) expression in fibroadenoma(10x).4B: Epithelial Membrane Antigen (EMA) in atypical ductal hyperplasia(40x). 4C AND 4D: ER and PR positive Infiltrative Duct Carcinoma 4E: Her-2-Neu Positive Infiltrative Duct Carcinoma 4F: Smooth Muscle Actin(SMA) positive in Ductal Carcinoma In Situ(40x).

Discussion

The famous dictum of Rindfleisch 1875 that the breast is the foster-mother of tumor study is still largely true [3]. It is detected in 20 per 1,00,000 women[1] and is emerging also in developing countries. Many times it is difficult to differentiate malignant and non malignant breast diseases, hence thorough microscopic examination is mandatory to prevent unnecessary financial and emotional burden on the victim. This also helps in saving breast tissue in those having benign or inflammatory lesions. Mastectomy is a psychological trauma to the victim so nowadays even in malignancy detected in initial stages, breast saving surgeries are advised emphasising precise diagnosis. Besides clinical examination, use of ultrasonography, mammography, fine needle aspiration cytology and tru-cut biopsy have increased diagnostic yield. Though recent advanced techniques like endocrinology, immunology and nuclear medicine have come in existence, histopathology examination remains gold standard for confirmation of diagnosis. The commonest symptom is the lump for which patient seeks medical advice and all the breast lumps are assumed to be carcinoma until proved otherwise. The most common causes of breast lump are fibrocystic change, fibroadenoma and the carcinoma of breast in ascending order[4].

We received 430 (5.77%) breast specimens in entire 2016 which is much higher than the study done by Singh U.R. et al [2] and Shweta Pai et al[5]. Increased awareness of breast carcinoma has significantly improved the health seeking behaviour of the patients with breast diseases[5]. This partially explains the increased number of specimens received in each category.

Maximum number of cases (124) 28.83% belonged to 21-30 year age interval similar to the study done by Kiran HS et al[6] and Singh U.R et al [2]. No breast lesion was seen in the first decade in concordance with Kiran HS et al[6].

Inflammatory diseases of breast are uncommon accounting to less than 1% of women with breast symptoms [5]. They can be traumatic, infectious or idiopathic in origin. On palpation, it ranges from firm lump in variety of mastitis to soft and cystic in abscess. These are cause of local symptoms and discomfort and also many mimic malignancy. Duct ectasia has to be differentiated from carcinoma not only clinically but also radiologically. Our study showed a higher incidence 48 (11.16%) cases of inflammatory lesions than by Bafekeer S et al[8] but lower than Mehta et al[9]. Maximum 30 (6.97%) cases in inflammatory category were of mastitis. Chronic non-specific mastitis 14 (3.22%) cases was the largest group followed by granulomatous mastitis similar to the study done Malik et al[10], Shweta Pai et al[5] and Olu Eddo et al[11]. Mastitis is most frequent in 41-50 year age group similar to Shweta Pai et al[5].

Amassed data showed that 64.18% (276 cases) were benign lesions parallel with the study done by Kiran HS et al [6]. Benign breast diseases are more prevalent as compared to malignant [7]. Breast diseases comprised of a number of lesions including developmental abnormalities, hormonal changes, epithelial proliferation, stromal proliferations and neoplasms. Lesions arising from epithelial and stromal tissue should be classified separately. The most common benign lesion was fibroadenoma constituting a total of 135 (31.39%) cases of the total breast diseases and 49.27% of the total benign lesions similar to study done by Mansoor et al[12] and Rahman et al [13]. This clearly concludes that fibroadenoma is the most common benign breast lesion. Incidence of fibroadenoma is lower than the study done by Thakral A et al [14]. The maximum number of cases 65 (14.95%) occurred between 10-20 year of age comparable with the study done by Vishal G. et al[15]. 2 cases showed stromal hypercellularity hence reported as cellular fibroadenoma. Fibroadenoma followed by fibrocystic change 81 (18.83%) cases formed the major bulk 216 (50.22%) of the total benign lesions which is similar to the finding of Singh U.R. et al [2]. The real incidence of fibrocystic change is difficult to estimate and diagnosis depends a great deal on individual clinician and pathologist acumen[2]. The presence and absence of epithelial hyperplasia and its character is now regarded as a mandatory form of sub-classification of fibrocystic change. 8 (9.87%) cases showed florid epitheliosis while 7 (8.64%) cases were found to be atypical ductal hyperplasia. The importance of many benign lesions lies in their ability to mimic cancers and not all benign lesions are free of risks[7]. Thus, proliferative lesions of breast should be evaluated accurately. These should be diagnosed and conveyed to the surgeons and patients properly for further management and follow-up so that malignant change should be recognised at the earliest possible.

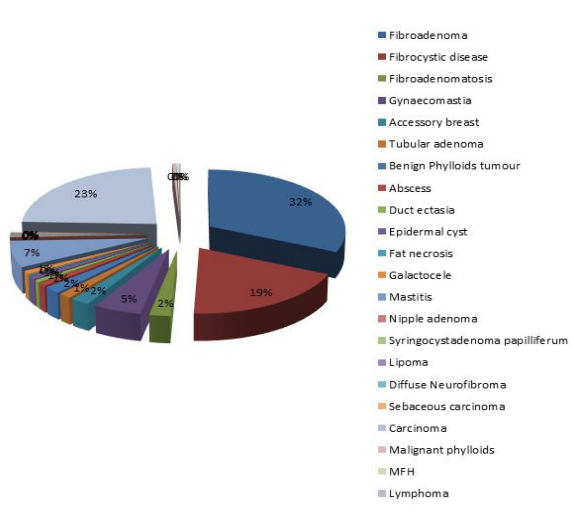
Breast is a modified sweat gland and one of the typical site of neoplasm in the human body which is influenced by fluctuations in sex hormones during adolescent and reproductive age groups. The physio-morphological alterations in mammary gland produce a variety of disease patterns both in males as well as in females. All the male breast 23 (5.34%) cases showed gynaecomastia. Incidence is in concordance with Singh U.R et al[2]. Data showed 10 cases (2.3%) of phyllodes tumor slightly lower than the study done by Thakral et al[14] who reported 3% incidence. Out of these, 2 were malignant and 8 were benign. Maximum cases occurred between 41-50 year age interval with an age range of 11-50 year while Vishal G. et al [15] reported maximum cases in the 31-40 year age group.

6 cases (1.38%) of tubular adenoma of the breast were reported. Most cases fell in 11-20 year age in agreement with Vishal G. et al[15]. Uncommon benign tumors like lipoma, neurofibroma and syringocystadenoma papilliferum were also seen (1 case each). There are only 2 case reports of syringocystadenoma papiliferum in the literature [2].

106 (24.65%) cases had malignant lesions in concordance with the study done by Ishtiag ahmed chaudhary et al[16]. A total of 55 (14.5%) cases belonged to 31-50 year age interval at par with Singh UR et al [2]. 41 (9.53%) cases of malignant lesions were found in 41-50 year age interval. Carcinoma was the most common neoplasia comprised of 101 (23.48%) cases of total breast lesions and 95.28% of malignancies. Infiltrating Duct carcinoma, no special type was the most frequent malignancy accounting to 96 (22.32%) cases of total breast lesions and 90.56% of malignancies. Infiltrating Duct carcinoma, no special type was also most common malignancy in the studies done by Mansoor et al [12], Rehman et al [13] and a lot of other authors. Grading was done according to Nottingham modification of Bloom Richardson grading system. Most of the infiltrating duct carcinomas 75 (78.12%) cases belonged to BR grade 2 as also seen in the study done by Vishal G. et al[15]. Metastasis was seen in 80 (83.33%) cases of carcinomas. Metastasis to lymph node should always be reported as it carries a poor prognosis[7]. A large variety of tumors were seen in this study, there were a single case each (0.23%) of lobular, mucinous, mixed and sebaceous carcinoma, pleomorphic sarcoma and lymphoma. 2 cases (0.46%) each of medullary carcinoma and malignant phyllodes tumor were also reported.

Thus this study has showed a histopathological variety of breast lesions and several rare interesting findings.[graph 1]

Graph 1: Distribution of various breast lesions



CONCLUSION

The incidence of breast carcinoma is increasing nowadays especially amongst younger age groups so intensive training programmes should be held to educate people regarding self detection of breast lumps.

Each and every breast lump should be delved into thoroughly regardless of age and presentation by latest available modalities and also by cytopathologist and histopathologist because at times clinical and radiological findings are nonspecific. Proliferative lesions of breast should be subjected to detailed examination considering the risk of malignancy associated with them. Early diagnosis of malignancy should be the motive so as to preserve maximum breast tissue and to decrease morbidity and mortality.

Detailed study of summarised data has yielded enlightening results about the histopathological variety of breast lesions and several rare interesting findings.

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