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ANALYTICAL AND COMPARATIVE STUDY OF PRESENTATION OF VARIOUS BREAST LESIONS WITH THEIR CYTOLOGICAL & HISTO-PATHOLOGICAL FINDINGS IN WESTERN INDIA

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Abstract:

Background : Breast is a dynamic organ undergoing physiological changes throughout the reproductive period of a woman. Significant morphological changes occur due to the action of hormones and growth factors leading to most of the breast pathologies. Palpable breast lump is second most common presentation, the Pain being the first. Though histo-pathological diagnoses is a universally accepted confirmatory mode of diagnosis & follow up, FNAC of breast lumps is an important part of Tripple assessment.

Aims: The purpose of this study is to analyze breast diseases causing breast lump with special reference age, presentations, sizes, Triple assessment with fine-needle aspiration, clinical diagnosis and to evaluate the histology of the cases diagnosed as suspicious of malignancy. Early diagnosis will help in better management of the case, reduce undue anxiety of the patient in benign cases and reduce morbidity and mortality.

Material & Method: Prospective study, of total of 200 patients were done. All were investigated by triple assessment. Finally Cyto-histological correlation was done.

Result: Out of 200, 152 cases (76%) were benign with maximum number of cases of fibroadenoma (75/200), followed by benign fibrocystic diseases (49/200), Duct ectasia (15) galactocele (7), phyllodes tumor (5) and Inflamatory mass (4cases). Breast carcinoma found in 41 cases out of 200 , DCIS in 4 cases and malignant variant of Phylods tumour in 3 cases in the present study. Majority of cases (62.36 %) were 21-40 age group. Most of the cases with benign findings were below 40 yrs. of age. Most of the cases with malignant findings were beyond 40 yrs. of age. 122 cases were found in Superolateral quadrant of Breast (61%). Post-op. Biopsy done in all cases which reported 75 cases of FA and 49 cases of Fibrocystic disease/adenosis. IDC was found in 41 cases and DCIS in 4 cases.

Conclusion: In this, we concluded that breast lump was the most common presentation with most patients visiting late to surgeon. Fibroadenoma is the most common of the benign lesions. We also concluded that Triple assessment test has 100 % accuracy to diagnose nature of lesions. We also found 100% correlation between FNAC and histology.

Keywords: Breast lump, Benign breast lesion, Triple assessment, FNAC

Introduction

The mammary gland undergoes cyclical changes thorough out reproductive life. It is also a unique organ that is not fully formed at birth. Breast is a dynamic organ undergoing physiological changes throughout the reproductive period of a woman. Significant morphological changes occur in breast right from the onset of puberty till menopause due to the action of hormones and growth factors leading to most of the breast pathologies.

So breast diseases occur during reproductive life and during menopausal period indicate relation of these diseases to hormonal stimulation. Benign lesions of breast are the most common lesions which account for 90% of all breast disorders. Most of the benign epithelial lesions are labeled by many pathologists with variety of terminologies such as Cystic disease, Fibrocystic disease, Cystic mastitis, Cystic mastopathy, Epithelial hyperplasia, Mammary dysplasia, Benign breast disease.

Palpable breast lump is second most common presentation, the Pain being the first (Kumar et al., 1999). Pathological or physiological nipple discharge is also worrisome presentation. It accounts 10 to 15% of women with benign breast diseases. A breast mass and a cyst need histological diagnosis whereas the breast pain (mastalgia) remains the most common symptom.

Fibroadenoma of the breast is a common cause of a benign breast lump in pre-menopausal women. Fibrocystic disease is a histological term that refers clinically to a large group of syndrome presented as lump or lumpiness. Though BBD constitutes the majority of breast complaints, it is a neglected entity. The vast majority of women presenting with breast symptoms have an underlying benign etiology. Breast cancer has taken precedence over BBDs since it is more fearsome although number of females with BBDs is substantial. Up to 30% of the women who suffer from BBDs will require treatment at some time in their lives. Incidence of benign lesions is common in the second decade reaching on its peak at third and fourth decade of life. Risk factors for benign and malignant breast diseases include low parity, nulliparity, low age at first birth and late menopause, highlighting the fact towards excessive circulating estrogen levels. Breast cancer is one of the most frequently occurring cancer and cancer related deaths are highly prevalent worldwide, which has become a major public health challenge. It has also been presents as unknown origin tumor and also one of the first tumors to be ruled out in the presence of tumor of unknown origin in women. In India, though the incidence of breast carcinomas is lower than the west yet it is the second most common malignant tumor in females comprising 16 to 21% , the first being carcinoma cervix.

Though histo-pathological diagnoses is a universally accepted confirmatory mode of diagnosis & follow up, FNAC (fine needle aspiration cytology) of breast lumps is an important part of Tripple assessment (Clinical examination, imaging and FNAC) of palpable breast lumps. FNA is used to obtain a neat accurate pre-operative diagnosis, which acts as a prerogative to the surgeons for the plan of management. It is also helpful in prognostication of tumor factors – like hormones receptor status. Besides Fine needle aspiration cytology (FNAC) of breast, Core-cut Biopsies and Mastectomy specimens are frequently sent for histo-pathological examination. Many of the breast lesions are clinically suspected as malignant lesions but diagnosed as benign after Histo-pathological examination. So, The combination of FNA, Clinical examination and Sonomammography has been suggested as a triple test for the preoperative diagnosis of breast lesions. The advantage of these test lies in the fact that they are simple to perform, cost-effective and rapidly accepted by the patient. This more rapid diagnostic approach helps to allay the anxiety caused by delays in scheduling, performing, and interpreting an open biopsy.

A benign diagnosis allows surgery to be avoided in the majority of cases, while a positive diagnosis of carcinoma allows pre-operative discussion with the patient and proper treatment planning with minimal morbidity.

Immunohistochemistry is a diagnostic tool for the classification of tumor and up to date several breast markers has been postulate such as beta-catenin, FAK, PIP, MUC1,PSE, e- cadherin, cytokeratin7 (CK7), estrogen and progesteron receptors, gross cystic disease fluid,

mammaglobin (MAG)-A and MAG-B. The varied pattern of breast lesions attracted our attention to study them in detail. The purpose of this study is to analyze breast diseases causing breast lump with special reference age, presentations, sizes, Triple assessment with fine-needle aspiration (FNA), clinical diagnosis and to evaluate the histology of the cases diagnosed as suspicious of malignancy. Early diagnosis will help in better management

of the case, reduce undue anxiety of the patient in benign cases and reduce morbidity and mortality.

Material & Methods

It is a prospective study, was conducted in Dept. of General Surgery at Dr. Sammpurnanand Medical College & MG Hospital from February 2016 to January 2017. A total of 200 patients were included as simple random sampling. A detailed clinical history of all patients were taken and examined clinically. Then all were investigated by triple assessment. Finally Clinical findings, Radiological findings and Cyto-histological correlation was done.

Inclusion criteria :

Female patients attending the SOPD / IPD with a suspicious /definite breast lesion/Lump.

Exclusion criteria :

1. Superficial skin lesions of Breast such as sebaceous cyst and papilloma.

2. Acute Brest conditions like Mastitis /Abscess

Assessment of breast lumps done by clinical assessment, imaging and cyto-pathological examination. Data collected were analyzed and the following variables were studied:

- Age distribution of the different types of lumps.
- Duration and mode of presentation of lumps (at least for one month).
- Ethnicity, background, marital and parental status.
- Clinical features and any association with malignancy.
- The ratio of benign to malignant lumps.
- FNAC accuracy and HPE

After clinical examination patients were sent for imaging (ultrasound / sono-mammography). Then cyto-pathological correlation done either by FNAC or biopsy or both. Biopsies included either core biopsy or surgical excision biopsy. The occurrences of different variables were given in absolute figure and also in percentages where appropriate for comparison. Statistical package for Social Sciences (SPSS) version 15.0 was used for data analysis.

Results

Table 1: Age wise distribution of cases

Age in Years	No. of cases
<20	22
21-30	62
31-40	72
41-50	25
51-60	10
61-70	5
71-80	4
Total	200

The mean age of patients presenting with breast lump was 28.5 years. Majority of cases (62.36 %) were 21-40 age group.

Table 2: Reasons for late presentation of cases

Reason	Patient no.	%
Painless lump	38	19
Financial constraints	62	31
Lump might disappear	26	13
Delayed referral to tertiary care facility	25	12.5
Lump does not disturb	20	10
Awareness problem	22	11
No reason given	7	3.5

The duration of symptoms before presentation ranged from 7 days to 24 months with an overall median duration of 4 months (+IQR of 2 to 6 months). The median time interval between onset of symptoms and presentation at the surgical OPD was 1 week, 2 months and 4 weeks for breast pain, breast lump and nipple discharge, respectively.

Table 3 : Clinical Diagnosis of cases in OPD

Clinical Diagnosis	Frequency	(%)
Malignant lump	38	19
Fibroadenoma	78	39
Fibrocysytic disease	44	22
Normal Breat	4	02
Duct ectasia	11	5.5
Galactocele	6	3
Inflammatory mass	8	4
Phyllodes Tumor	3	1.5
Recurrent Mass (Cancer)	6	3
Others	2	1
Total	200	100

So, Most of the patients were clinically diagnosed as Benign Breast diseases (61%) followed by malignant lump (19 %)

Table 4 : Quadrant-wise case distribution of symptoms

Quadrant	No. of cases
Superolateral	122
Superomedial	21
Inferolateral	33
Inferomadial	13
Central	11

Most of the Lump were found in Superolateral quadrant of Breast (61%).

Table 5 : Case distribution according to size of lumps

Size	Benign Cases	Malignant Cases
< 3 cm	131	8
>3 cm	31	30

Most of the cases with benign lump were of < 3 cm size (80 %) whereas most malignant lump were > 3 cm size (78%). This suggests that larger lump is more prone to develop malignancy.

Table 6 : Mode of Lump Discovery

Mode of Lump Discovery	No. of cases
By breast self examination (BSE)	28
Accidental discovery by self	106
Attention drawn by breast pain	29
By Patients husband	1
By clinician/doctors	9
Mode not stated	27

The lumps were discovered by breast self examination in 28 (14%) patients, accidental discovery in 106 (53%) patients. Attention was drawn to the lump by pain in 29(14.5%).

Table 7: Different types of presentation

Presentation mode	No. of cases
Breast Lump only	98
Breast Lump with pain	76
Breast Lump with nipple discharge	09
Nipple discharge only	04
Pain only	06
Lump + Pain+ Nipple discharge	07
Lump with palpable Axillary nodes	14

Most patients presented with lump only (49%) and 2nd m/c - lump with pain (38%).

Table 8 : Diagnosis of subjects After Triple Assessment (CLINICALLY+ULTRASONOGRPHY+ FNAC)

Diagnosis	Frequency	(%)
Malignant lump	45	22.5
Fibroadenoma	80	40
Fibrocysytic disease	45	22.5
Duct ectasia	13	6.5
Galactocele	6	3
Inflammatory mass	6	3
Phyllodes Tumor	5	2.5
Total	200	100

Diagnosis after triple assessment (pre-operatively) indicated that Fibroadenoma and Fibrocystic diseases is the most common (62.5%) disease in breast lump cases followed by malignancy (22.5%).

Table 9 : Age distribution of benign cases

Diagnosis	Age Groups (in years)				
	<20	20-30	30-40	>40	Total
Fibroadenoma	16	32	32	0	80
Fibroadenosis/fibrocystic	4	9	32	0	45
Galactocoele	0	4	2	0	6
Inflammatory mass	1	5	0	0	6
Duct Ectasia	1	12	0	0	13
Phyllods Tumor	0	0	0	2	2
Total	22	62	66	2	152

Most of the cases with benign findings were below 40 yrs. of age. 84.2% cases were 20-40 yrs. age group.

Table 10 : Age distribution of malignant cases

Diagnosis	Age Groups (in years)					
	<20	20-30	30-40	40-50	>50	Total
Breast carcinoma	0	0	6	21	18	45
Phylods Tumor (malignant)	0	0	0	2	1	3
Total	0	0	6	23	19	48

Most of the cases with malignant findings were beyond 40 yrs. of age. 60% cases were 30-50 yrs. age group.

Table 11: Postoperative Histo-pathological Diagnosis

Diagnosis	Frequency	(%)
Breast carcinoma (IDC)	41	20.5
Fibroadenoma	75	37.5
Fibrocysytic disease/ Adenosis	49	24.5
DCIS	4	2
Phyllodes (benign)	1	0.5
Phyllodes (borderline)	1	0.5
Phyllodes (malignant)	3	1.5
Duct ectasia	15	7.5
Galactocele	7	3.5
Inflammatory mass	4	2
Total	200	100

Post-operatively Histopathological examinations(Biopsy) of all cases done which suggested that breast cancer was noted in 22.5% cases whereas benign report was noted in rest all cases.

Discussion

Here, total 200 cases of breast lumps were investigated and studied, in which 24 % cases were malignant and 76 % were benign (Table-8 & 11). Yeoh *et al*. studied 1533 breast masses on FNAC and found that 70.4% cases were benign and 4.4% cases were malignant. Similarly, Ganiat *et al*. studied 757 cases on FNAC and found that maximum number of cases were benign (50.2%), which was followed by malignant cases (31.4%), suspicious malignant cases (9.5%), and inflammatory cases (7.4%). Also Rathi, *et al* from 2008-2010, studied 128 cases, in which 21 cases (17.21%) were malignant and 82.79% cases were benign. The percentage of benign cases in our study was closer to that of Rathi et al. In the present study, 152 cases (76%) were benign with maximum number of cases of fibroadenoma (75/200), followed by benign fibrocystic diseases (49/200), Duct ectasia (15) galactocele (7), phyllodes tumor (5) and Inflamatory mass (4cases). Breast carcinoma found in 41 cases out of 200 , DCIS in 4 cases and malignant variant of Phylods tumour in 3 cases in the present study.

The mean age of patients presenting with breast lump was 28.5 years in our study. Majority of cases (62.36 %) were 21-40 age group. Most of the cases with benign findings were below 40 yrs. of age. 84.2% cases were 20-40 yrs. age group. Most of the cases with malignant findings were beyond 40 yrs. of age. 60% cases were 30-50 yrs. age group Hussain *et al* also found that the maximum number of patients were in the age group of 31-40 years. Khemka *et al*. found that benign lesions of breast were more commonly seen in younger age groups (30-34 yrs). Ganiat *et al*. observed that most patients with malignant lesions were in the fourth to seventh decade of life. Most (122 casesout of 200) of the Lump were found in Superolateral quadrant of Breast (61%) followed by inferolateral quadrant (33 cases). Rathi *et al* , Hussain *et al*. and Khemkha *et al*. also observed Superolateral quadrant as the commonest site.

In our study, Most of the patients with benign breast lump (131/162) were of < 3 cm size (80 %) whereas 30 out of 38 cases of malignant lump were > 3 cm size(78%) . *Ballo et al* and *rathi et al* also found the similar results. In present study the lumps were discovered by breast self examination (BSE) in 28 (14%) patients . Lump were accidental discovery in 106 (53%) patients. Attention was drawn to the lump by breast pain in 29 (14.5%). Overall ,most patients presented with lump only(49%) and 2nd commom presentation was lump with pain (38%).

Analysis of Clinical Examination & FNAC with His-to-pathology

In our study ,Pre-operative diagnosis after triple assessment (clinic-radiology & FNAC) indicated that Fibroadenoma (80 cases) and Fibrocystic diseases (45) is the most common (62.5%) disease in breast lump cases followed by malignancy (45 cases) (22.5%). Post-op. Histopathological examinations (Biopsy) done in all cases which reported 75 cases of FA and 49 cases of Fibrocystic disease/adenosis . Breast carcinoma (IDC) was found in 41 cases and DCIS in 4 cases. Phylods Tumour with malignant component reported in 3 cases. So in comparision, between Triple test (especially FNAC) and Histopathologic examination results in our study no discrepancy was noted. So, considering histopathological diagnosis as the gold standard, we found that the sensitivity and specificity of FNAC to detect benign and malignant lump was 100% in our study. There was 100% cytological and histological correlation. We also noted that the sensitivity and specificity of clinico-radiological investigation to detect a benign case was 99% and 96%, respectively and to detect a malignant case , it was found to be 98% and 100%, respectively.

Conclusion

In this, we concluded that breast lump was the most common presentation with most patients visiting late to surgeon. Most lumps discovered accidentally ,by pain or by breast self examination. Fibroadenoma is the most common of the benign lesions, is similar to that reported by other clinicians in India and worldwide. We also concluded that Triple assessment or test has 100 % accuracy to diagnose benign or malignant lesions of breast. We also found 100% correlation between FNAC and histology which reconfirms the fact that clinical examination of the patient and FNAC are important part of triple assessment of a patient.

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