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ORIGINAL RESEARCH

Frequency and Prevalence of Various Breast Lesions on FNAC and Histopathological Correlation

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Abstract

Background: Benign as well as malignant breast lesions are quite common in Indian population. The current study was carried out with aim of studying the frequency and prevalence of various breast lesions on FNAC and histopathological correlation.

Materials & Methods: 241 patients presenting with palpable breast lump of variable duration in FNAC clinic who were clinically stable patient were subjected to FNAC.

Results: There were 188 benign and 38 malignant lesions with size <5 cm, 2 benign and 13 malignant lesions with size 5-10 cm. In 200 benign lesions, right side was involved in 93, left side in 84 and bilateral side in 14 cases. In 51 malignant lesions, right side was involved in 17 and left side in 33. C1 comprises of inadequate in 2, C2 had fibroadenoma in 129, gynacomastia in 19, benign phyloid in 3, granulomatous mastitis in 9, breast abscess in 7, fibrocystic change in 1, fibroadenosis in 2, benign breast disease in 12, lactational mastitis in 1 and duct ectasia in 1 case. C3 comprises of proliferative disease with atypia in 4, C4 suspicious for malignancy in 8 and C5 malignancy in 43 cases. FNAC showed maximum benign lesions (74) in age group 10-20 years followed by 21-30 years (66) and 31-40 years (24). Malignant lesions were maximally seen in age group 41-50 years (15) followed by 51-60 years (13) and 31-40 years (12). Cytological type was benign in 184, atypical in 4, suspicious in 8, malignant in 43 and unsatisfactory in 2 cases. Out of 24 cytological benign lesions, 23 were histologically benign and 1 was malignant. 2 atypical malignant found to be histologically malignant, 1 suspicious malignant found to be malignant and 11 cytological malignant was histologically malignant. Sensitivity of FNAC was 84.2%, specificity was 95.8%, PPV was 94.1% and NPV was 88.4%.

Conclusion: FNAC is a rapid, cheap, safe, and effective method for the primary categorization of palpable breast lump.

Key words: FNAC, Breast, Mass

Introduction

Benign as well as malignant breast lesions are quite common in Indian population. It is the second most common cancer site after cancer cervix.[1] Currently 75000 new cases of breast cancer are detected in India yearly. Due to its increasing incidence, morbidity and mortality breast cancer is the commonest malignant tumor responsible for 18.4% of all female cancers worldwide.[2]As it is the leading cause of death from cancer in women, the major concern of

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the surgeon and the responsibility of the surgical pathologist lies in the ability to differentiate a benign from a malignant lesion.[3]

Mammography is other screening diagnostic modality for a breast lump which is routinely used method with simple, low cost with high accuracy. Benign breast lesions are round to oval in shape with regular, linear margin, homogenous echo texture and hypoechoic.[4] whereas malignant breast lesions are irregular in shape with ill-defined speculated margins and micro calcification present. Due to increase in public awareness and advancement in screening led to early detection and planning of treatment in breast carcinoma. Consequently, decreased morbidity and mortality rate particularly in younger women.[5] FNAC method was introduced as a primary test in the treatment of breast carcinoma. The application of FNA (Fine Needle Aspiration) for the diagnosis of palpable breast masses was first introduced by Martin and Ellis in 1930. FNAC is safe, reliable, and time saving outdoor procedure. FNAC is useful in diagnosis and further planning of treatment without need for biopsy.[6]The current study was carried out with aims of studying the frequency and prevalence of various breast lesions on FNAC and histopathological correlation.

Materials & Methods

This was 1 year retrospective study was carried out from April 2021 to April 2022. Informed written consent from each patient was obtained. Following inclusion and exclusion criteria was used- Inclusion criteria was patients presenting with palpable breast lump of variable duration in FNAC clinic and clinically stable patient. Exclusion criteria were patients not willing (No informed consent) and patients undergoing chemotherapy.

Physical examination of breast mass by palpation was done. Procedure was done using 24 gauge needle fitted on 10 ml disposable syringe. Smears were stained with hematoxylin and eosin and Papanicolaou stain. The patients were followed up for mastectomy or biopsy, histopathological finding were noted. Results were tabulated and assessed statistically. P value less than 0.05 was considered significant.

Results

Table I Distribution of cases

Gender	Benign	Malignant
Male	19	1
Female	165	54
Total	184	55
M:F Ratio	0.091:1	

Table I shows that male had 19 benign and 1 malignant and female had 165 benign and 54 malignant lesion. M:F ratio was 0.091:1.

Table II Tumor size distribution

Size in (cm)	Benign	Malignant	Total	%
<5	188	38	226	93.7
5-10	2	13	15	6.3
>10	0	0	0	

Table II shows that there were 188 benign and 38 malignant lesions with size <5 cm, 2 benign and 13 malignant lesions with size 5-10 cm.

ISSN: 0975-3583,0976-2833 VOL13, ISSUE 08, 2022

Table III Tumor side distribution

Side	Benign	Malignant	Total	%
Right	93	17	110	45.6
Left	84	33	117	48.5
B/L	14	0	14	5.9

Table III shows that in 200 benign lesions, right side was involved in 93, left side in 84 and bilateral side in 14 cases. In 51 malignant lesions, right side was involved in 17 and left side in 33.

TABLE IV Cytological spectrum of various palpable breast lesion as per reporting categories

Cytology category	Cytology Dx	Number of cases	Percent
C1	Inadequate	2	0.8
C2	Fibroadenoma	129	53.52
	Gynacomastia	19	7.8
	Benign phyloid	3	1.2
	Granulomatous mastitis	9	3.7
	Breast abscess	7	2.9
	Fibrocystic change	1	0.4
	Fibroadenosis	2	0.8
	Benign breast disease	12	4.9
	Lactational mastitis	1	0.4
	Duct ectasia	1	0.4
C3	Proliferative disease with atypia	4	1.6
C4	Suspicious for malignancy	8	3.31
C5	Malignancy	43	17.84

Table IV shows that C1 comprises of inadequate in 2, C2 had fibroadenoma in 129, gynacomastia in 19, benign phyloid in 3, granulomatous mastitis in 9, breast abscess in 7, fibrocystic change in 1, fibroadenosis in 2, benign breast disease in 12, lactational mastitis in 1 and duct ectasia in 1 case. C3 comprises of proliferative disease with atypia in 4, C4 suspicious for malignancy in 8 and C5 malignancy in 43 cases.

Table V FNAC result age wise benign and malignant

AGE	BENIGN	MALIGNANT	TOTAL
10-20	74	0	74
21-30	66	2	68
31-40	24	12	36
41-50	19	15	34
51-60	5	13	18
61-70	4	5	9
>70	0	2	2
Percent	79.6	20.4	100

Table V shows that FNAC showed maximum benign lesions (74) in age group 10-20 years followed by 21-30 years (66) and 31-40 years (24). Malignant lesions were maximally seen in age group 41-50 years (15) followed by 51-60 years (13) and 31-40 years (12).

ISSN: 0975-3583,0976-2833 VOL13, ISSUE 08, 2022

Table VI Cytological spectrum of various palpable breast lesion

Cytological type	Number of cases	Percentage
benign	184	76.34
atypical	4	1.6
suspicious	8	3.31
malignant	43	17.84
unsatisfactory	2	0.8
total	241	100

Table VI shows that cytological type was benign in 184, atypical in 4, suspicious in 8, malignant in 43 and unsatisfactory in 2 cases.

Table VII Histopathological correlation with cytopathological spectrum of lesion

Cytological type	Histologically benign	Histologically malignant	Total
Benign	23 (95.8)	1 (4.1)	24
Atypical	0	2(100%)	2
Suspicious	0	1(100%)	1
Malignant	0	11 (100%)	15

Table VII shows that out of 24 cytological benign lesions, 23 were histologically benign and 1 was malignant. 2 atypical malignant found to be histologically malignant, 1 suspicious malignant found to be malignant and 11 cytological malignant was histologically malignant.

Table VIII Efficacy of FNAC

Sensitivity %	Specificity%	Positive Predictive Value %	Negative Predictive Value%
84.2	95.8	94.11	88.46

Table VII shows that sensitivity of FNAC was 84.2%, specificity was 95.8%, PPV was 94.1% and NPV was 88.4%.

Discussion

Benign as well as malignant breast lesions are quite common in Indian population. It is the second most common cancer site after cancer cervix in Indian females. Currently, 75,000 new cases of breast cancer are detected in India yearly.[7]This figure must be viewed against the backdrop that the National Cancer Registry and the Hospital-based Tumor Registries hardly sample 3% of the total population. Locally advanced breast cancer constitutes >50-70% of the patients presenting for treatment. The information on the epidemiology of breast cancer in India is very limited, except for a few reports on limited samples.[8]Although open surgical biopsy is the 'gold standard' for diagnosis of palpable breast lesions, in recent years two types of minimally invasive breast biopsy techniques, core needle biopsy (CNB) and fine needle aspiration cytology (FNAC), have become established for the diagnostic evaluation of palpable breast lesions.[9] A triple test consisting of clinical examination, mammography and FNAC is considered the gold standard in making a definitive assessment of breast lumps.[10]The current study was carried out with aims of studying the frequency of various breast lesions on FNAC and histopathological correlation.

We found that male had 19 benign and 1 malignant and female had 165 benign and 54 malignant lesion. There were 188 benign and 38 malignant lesions with size <5 cm, 2 benign and 13 malignant lesions with size 5-10 cm. YalavarthiS et al[10]includes 125 cases out of which 101 cases (80.8%) were benign and 24 cases (19.2%) were malignant.

We observed that 200 benign lesions, right side was involved in 93, left side in 84 and bilateral side in 14 cases. In 51 malignant lesions, right side was involved in 17 and left side

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in 33. C1 comprises of inadequate in 2, C2 had fibroadenoma in 129, gynacomastia in 19, benign phyloid in 3, granulomatous mastitis in 9, breast abscess in 7, fibrocystic change in 1, fibroadenosis in 2, benign breast disease in 12, lactational mastitis in 1 and duct ectasia in 1 case. C3 comprises of proliferative disease with atypia in 4, C4 suspicious for malignancy in 8 and C5 malignancy in 43 cases. Ibikunleet al[11]determined the histopathologic correlation of fine needle aspiration cytology FNAC of breast masses. In the five years under review (2010–2014), a total of 289 FNAC of breast lumps were done. The aspirates were obtained from 275 (95.2%) females and 14 (4.8%) males. There were 161 cases of FNAC with corresponding tissue for histological correlation giving a biopsy rate of 55.7%. The sensitivity of FNAC in determining the final histologic diagnosis was found to be 99.4% while the specificity was 100%. FNAC was able to determine final histologic diagnosis conclusively in 86.3% of cases.

We found benign and malignant lesion in 23(60.52) and 15(39.47) respectively. FNAC showed maximum benign lesions (74) in age group 10-20 years followed by 21-30 years (66) and 31-40 years (24). Malignant lesions were maximally seen in age group 41-50 years (15) followed by 51-60 years (13) and 31-40 years (12). Cytological type was benign in 184, atypical in 4, suspicious in 8, malignant in 43 and unsatisfactory in 2 cases. The findings of Dey and Luthra[12] in 1999 indicate that the presence of associated fibrocystic disease may be misleading because it can mask a malignancy. Hypo cellularity and relatively mild nuclear atypia are the most common reasons for failure to diagnosis a malignant breast lesion. In these cases careful attention to extreme nuclear monomorphism and absence of naked bipolar cells along with radiologic suspicion should suggest a diagnosis of malignancy.

We found that out of 24 cytological benign lesions, 23 were histologically benign and 1 was malignant. 2 atypical malignant found to be histologically malignant, 1 suspicious malignant found to be malignant and 11 cytological malignant was histologically malignant. Sensitivity of FNAC was 84.2%, specificity was 95.8%, PPV was 94.1% and NPV was 88.4%. Abdeli-Hadiet al[13]investigated the role that core needle biopsy can play as a complementary diagnostic tool for breast cancer in selected cases. The specificity and sensitivity of FNAC were 99.3% and 96.7%, respectively. The overall positive predictive values and negative predictive values were 99.3% and 96.7%, respectively. The shortcoming of the study is small sample size.

Conclusion

Authors found that FNAC is a rapid, cheap, safe, and effective method for the primary categorization of palpable breast lump. It is highly accurate method for diagnosis of breast lump preoperatively to ovoid undue surgery and inconvenience during biopsy. FNAC of breast lump should be used as preliminary investigation in outdoor patient department. Benign breast lesions are common than malignant lesions. The most common benign tumor in the present study was fibroadenoma and most common malignant tumor was invasive ductal carcinoma.

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ISSN: 0975-3583,0976-2833 VOL13, ISSUE 08, 2022

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