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COMPARISON OF DIAGNOSTIC EVALUATION OF FNAC AND SONOGRAPHIC FEATURES WITH HISTOPATHOLOGY IN BREAST LUMP

General Surgery

Dr. R. Maheswari Professor, Department of General Surgery, Sree Mookambika Institute of Medical Sciences, Kulasekharam.

Dr. Joe Thomas Rajkumar Junior Resident, Department of General Surgery, Sree Mookambika Institute of Medical Sciences, Kulasekharam.

Dr. Indran G. P. Nair* Junior Resident, Department of General Surgery, Sree Mookambika Institute of Medical Sciences, Kulasekharam. *Corresponding Author

Dr. Stanly Sajan Junior Resident, Department of General Surgery, Sree Mookambika Institute of Medical Sciences, Kulasekharam.

ABSTRACT

Background: Breast diseases and tumours are frequently seen in outpatient department. Women are becoming more aware, and with that awareness comes more anxiety and stress as they mistake every breast symptom for cancer. Hence, in hopes of assuring patients and provide the best treatment possible, a method of conclusive diagnosis for those who appear with breast lumps in the outpatient clinic is required. An important part of diagnosing these lesions is the use of Sonomammography or breast ultrasound (USG), fine needle aspiration cytology (FNAC), and histopathological evaluation. **Aim:** To find out the outcome of comparison of Diagnostic Evaluation of FNAC, Sonomammography with Histopathological features in case of breast lump in a Tertiary care centre. **Materials and Method:** The present study is a retrospective study conducted for a period of 18 months in a tertiary care centre in south India. A total of 71 cases were included in the study. Clinical data, sonographic findings, cytology and histopathological examination findings were collected. Result were analysed using SPSS 20.0 version and the association was tested using Chi square test. **Results:** Among 71 cases FNAC report findings suggest 33.8% were malignant, 56.3%benign and 9.9% inconclusive while USG report findings suggest 31% were malignant, 56.3% benign and 12.7% inconclusive. On comparison with histopathological diagnosis, nipple discharge, pain over lump, constancy of the swelling, axillary node involvement, USG and FNAC showed statistical significance All the 71 patients included in study were subjected to some form of surgery. FNAC showed sensitivity of 92.31%, specificity of 88.89%, positive predictive value (PPV) of 82.76%, negative predictive value (NPV) of 95.24% and 90.14% accuracy. USG showed sensitivity of 84.62%, specificity of 88.89%, PPV of 81.48%, NPV of 90.91% and 87.32% accuracy. **Conclusion:** While histological diagnosis following the biopsy is still the gold standard, FNAC offers greater accuracy than other investigational modalities prior to surgery. For the early identification and treatment of breast lumps, FNAC, sonography, histopathology, and combinations of all three modalities are beneficial.

KEYWORDS

Breast lesions, Fine Needle Aspiration Cytology, Histopathology, Sonography.

INTRODUCTION

Breast lumps or masses are indeed a prevalent condition amongst women of reproductive age. Breast illness affects 25% of women. Breast lumps can have a variety of reasons, from naturally occurring adenosis to extremely aggressive malignancy.[1]

As opposed to developed nations where knowledge of breast diseases is less of a barrier. Developing nations like India face significant challenges in educating and guiding their citizens with the appropriate awareness methods so that they can seek medical advice faster in order to diagnose any breast lesion, regardless of whether it is a malignant or benign disease, and the quicker method of investigating it correctly.[2,3]

The increasing prevalence of breast lumps has brought attention to the importance of early detection, efficient clinical evaluation, and precise diagnosis of breast illness. Economical constraints, a meagre health care budget, and the expensive expense of sophisticated testing techniques prevent patients in poor nations like India from receiving an early diagnosis.[4] Surgeons can make a confident diagnosis in 95% of patients by combining clinical examination, Ultrasonography (USG), Fine Needle aspiration Cytology (FNAC), and histological tests since we are aware that each diagnosing technique has both strengths and limitations.[5]

For surgeons and practising doctors, the triple evaluation catalogue in determining the precise type of disease underlying a breast tumour is a new help. Sonomamography assists in providing information on the disease's nature, including whether it is benign or malignant. The FNAC, which had a significant impact in the past, is still an excellent approach for locating the pathology.[6] Above all, the histopathologic characteristics of the lump after excision biopsy or other radical operations continue to be the gold standard for moving forward with additional treatment and patient monitoring.[7]

Although a clinical assessment of breast lump and the patient age can reveal information about the type of the lump, a histological examination is required to make the final diagnosis.[7] Also, by contrasting the clinical opinion with the definitive histological diagnosis, the reliability of clinical examination was also assessed. Several researches have been conducted using two parameters and have demonstrated their comparability; however, in the current investigation, sonography was added as a third parameter to improve the comparative efficacy.

AIMS AND OBJECTIVES

To study the outcome of Comparison of Diagnostic Evaluation of FNAC, Sonomammography with Histopathological features in case of breast lump in a Tertiary care centre.

Materials And Methods

Present study was a cross sectional study conducted in Department of General Surgery in a tertiary care centre in south India for a period of 2years (January 2019 to December 2021). Ethical approval was obtained. Based on the study conducted by Mahajan NA et al.[8] the sample size was calculated as follows,

$N = 4pq/d2$

$= 4 \times 58.5 \times 41.5/11.7 \times 11.7$

$= 71$

All outpatients attending the OPD of general surgery with palpable breast lump who were willing to participate in the study were included in the present study. Patients who were not willing to do investigations and not willing to participate in the study were excluded.

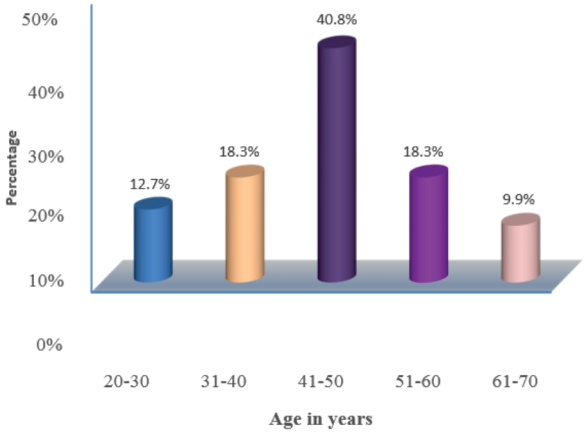
Written informed consent was taken and all the selected patients were explained in detail about the procedure and by ensuring the privacy, clinical examination was done. After clinical examination the patients were sent for sonography and Fine Needle Aspiration Cytology evaluation. Later the patients were posted for surgery, depending upon the nature of disease. Breast conservative surgery and modified radical mastectomy (MRM) was done for malignant cases, while excision biopsy was done for all benign lesions. Preoperatively the all patients were evaluated and then posted for surgery. The specimens were sent in 10% Formalin for histopathological examination. The reports were

collected from histopathology lab. Postoperatively the patients were observed for complications like discharge, suture site infection etc. the patients were discharged after suture removal and were asked to come back for follow up and further treatment if required as in cases of malignancies.

Data were entered in excel sheet. Statistical Analysis was carried out using SPSS 20.0 version. Sensitivity, Specificity, Positive predictive value (PPV), Negative predictive value (NPV) and diagnostic accuracy was assessed. Chi square test was done to assess statistical significance. A p value <0.05 was considered statistically significant.

OBSERVATION AND RESULTS

On the analysis of present study, it was found that mean age of the participants was 45years with the maximum number of patients were in the age group of 41 – 50 years seen in 29(40.8%) cases (Graph 1). Mean duration of symptoms were 6.44±2.82. Most of the participants had duration in the range 5 to 8 months in 32(45.1%) patients.



Graph 1: Distribution Of Age Among The Study Participants (n=71)

Pain over the swelling was seen in 37(52.1%) cases and 34(47.9%) cases without pain and 13 (18.3%) cases had nipple discharge. Right breast was commonly affected than left breast 37(52.1%) and 34(47.9%) cases respectively. Upper outer quadrant involvement was seen in 34 (47.9%) patients followed by lower outer quadrant 16 (22.5%), upper inner quadrant 14 (19.7%) and lower inner quadrant 7(9.9%) cases. The consistency of the breast mass varies from firm to hard in consistency, firm swelling was note in 47(66.20%) cases and hard swelling was noted in 23(32.40%) cases.

Among the 71 patients presented with breast lump, 47(66.2%) patients underwent Excision biopsy, 21(29.6%) underwent MRM and 3(4.2%) patients were treated with BCS as they were eligible for the same. Among the benign cases, fibroadenoma was the most common histopathological diagnosis seen in 29(40.8%) cases and invasive carcinoma breast NST 20(28.2%) was the most common malignant diagnosis.

Histopathology examination showed no inconclusive diagnosis while USG and FNAC test methods had inconclusive diagnosis 9(12.7%) and 7(9.9%) respectively. The diagnosis of different test methods was given in Table 1.

Table 1: Diagnosis Of Different Test Methods

Test methods	Benign	Malignant	Inconclusive
USG	40(56.3%)	22(31%)	9(12.7%)
FNAC	40(56.3%)	24(33.8%)	7(9.9%)
Histopathology	45(63.4%)	26(36.6%)	0(0%)

Comparison of histopathology diagnosis with other parameters was given in table 2. On comparison with histopathological diagnosis, nipple discharge, pain over lump, constancy of the swelling, axillary node involvement, USG and FNAC showed statistical significance as the p value was less than 0.05.

Table 2: Comparison Of Histopathology Diagnosis With Other Parameters

Parameters	Histopathology diagnosis		X2 (Df)	p value
	Benign	Malignant		
Nipple discharge			15.79	<0.001
Present	11 (42.3)	2 (4.4)		
Absent	15 (57.5)	43(95.6)		
Pain over lump			10.430	0.001
Present	7 (26.9)	30 (66.7)		
Absent	19 (73.1)	15 (33.3)		
Laterality			1.460	0.227
Right	16 (61.5)	21 (46.7)		
Left	10 (38.5)	24 (53.3)		
Consistency			47.34	<0.001
Firm	4 (15.4)	43 (95.6)		
Firm to Hard	1 (3.8)	0		
Hard	21 (80.8)	2 (4.4)		
Axillary node involvement			21.263	<0.001
Present	12 (46.2)	1 (2.2)		
Absent	14 (53.8)	44 (97.8)		
USG			61.425	<0.001
Benign	0	40 (88.9)		
Inconclusive	4 (15.4)	5 (11.1)		
Malignant	22 (84.6)	0		
FNAC			64.485	<0.001
Benign	0	40 (88.9)		
Inconclusive	2(7.7)	5 (11.1)		
Malignant	24(92.3)	0		

Sensitivity, Specificity, PPV, NPV and diagnostic accuracy of clinical examination, USG and FNAC was depicted in table 3.

Table 3: Sensitivity, Specificity, PPV, NPV And Diagnostic Accuracy Of Various Methods

	Clinical examination	USG	FNAC
Sensitivity	80.77%	84.62%	92.31%
Specificity	95.56%	88.89%	88.89%
PPV	91.30%	81.48%	82.76%
NPV	89.58%	90.91%	95.24%
Diagnostic Accuracy	90.14%	87.32%	90.14%

DISCUSSION

The present study included 71 patients of age more than 20 years with breast lump were admitted and treated in Sree Mookambika institute of medical sciences during a period of 2 years. On the analysis of present study, among 71 patients it was found that the most common age group of the participants were in the age group of 41 – 50 years observed in 29(40.8%) patients. This was comparable to the study done by Mohan B et al.[9] where the most common age group affected was 41 to 50 years. Studies conducted by Dixit et al.[10] and Gorasiya B et al.[11] found that the most common age group affected in their study was 21 to 30 years and 21 to 40 years respectively.

Pain over the swelling was seen in 37(52.1%) cases and 13 (18.3%) cases had nipple discharge Selvakumaran et al.[12] in their study most patients presented with complaints of a lump in the breast, pain or a combination of both. 84 patients presented with lump without any other complaint; 24 patients complained of pain alone and 58 patients complained of a lump with associated pain.

Right sided breast lesion and upper outer quadrant was commonly involved in the present study. Bao et al.[13] in their study that patients with tumors in the upper-outer quadrant of both sides and the right central portion have a better prognosis than patients with tumors at other locations. Dixit N et al.[10] found predominance of left-sided breast lesions in 247 (48.2%) cases, followed by the right side in 231 (45.1%) cases. This was in contrast to the present study.

Ghodsara et al.[14] in their study 59.09 % cases were MRM specimens, followed by 16 (27.6%) cases with lumpectomy and 1(1.7%) case with Breast conservative surgery. This was contrast to the present study, where excision biopsy was done in 47(66.2%), which was the most common surgical procedure done for breast lesions. Most common benign and malignant lesion in the present study was fibroadenoma and invasive carcinoma breast NST respectively. This was comparable to Ghodsara et al.[14] Padmom L et al.[15] and Yogalakshmi S et al.[16]

USG showed sensitivity of 84.62%, specificity 88.89%, PPV 81.48%, NPV90.91%. This was little lower than the findings by Khoda L et al.[17] the sensitivity, specificity, PPV and NPV for USG in diagnosing breast

lesion was 91.6%, 100%, 100% and 97.3% respectively. FNAC showed sensitivity of 92.31%, specificity 88.89%, PPV 82.76%, NPV 95.24%. The sensitivity, specificity, PPV and NPV for FNAC in diagnosing breast lesion by Dixit et al.[10] was 95%, 99.5%, 98.3% and 98.6% respectively, by Chauhan V et al.[18] was 98.9%, 99.2%, 97.8% and 99.6% respectively and by Ahuja S et al.[19] was 79.2%, 100%, 100% and 90.9% respectively.

Though relatively a fresh modality ultrasound has gained widespread popularity due to easy availability of the equipment, it is less expensive and is non-invasive and can provide accurate information in tumors more than 2mm. FNAC also provides better accuracy than other modalities of investigations, the diagnostic accuracy for clinical examination and FNAC was little higher than USG. Moreover, in the present study USG and FNAC test methods had inconclusive diagnosis in 9(12.7%) and 7(9.9%) cases respectively but histopathological diagnosis was conclusive for all 71 cases. This proves that histopathological examination remains the remains the gold standard method for correct diagnosis, which also helps in patient care, follow up and further treatment.

In a prospective study by Bhavinder et al.20 done to assess the diagnostic performance of clinical examination, ultrasonography, and FNAC both separately and together for the assessment of palpable breast lump in 50 patients, it was found that histopathological examination had 99% sensitivity, 100% specificity, PPV of 100%, and NPV of 80% when compared to clinical assessment. In another study conducted by Kanase VV et al.21 showed that sensitivity and specificity was 100% and 96.77%, respectively, and the positive predictive value was 95.00% for Fifty patients with breast lumps who underwent FNAC when compared to histopathological diagnosis.

CONCLUSION

Appropriate counselling is necessary for women in the reproductive year group to recognize any suspicious breast lumps, report them right away to the healthcare doctors, and receive a precise diagnosis of the disease condition. For surgeons and practicing doctors, the triple evaluation catalogue in determining the precise type of disease underlying a breast tumour is a new help. The USG aids in providing information on the disease nature, including whether it is benign or malignant. FNAC played a significant role in the past and is currently an excellent approach for identifying the pathology. Above all, the histopathologic characteristics of the lump after excision biopsy or other radical surgeries continue to be the gold standard for moving forward with additional treatment and patient monitoring. In conclusion, many breast diseases can be addressed quickly and more effectively with good history taking, examination, investigations, and surgical therapy.

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