Triple Assessment in Evaluation of Breast Lump

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Abstract

Background: *The breast triple assessment is a hospital-based assessment clinic that allows for the early and rapid detection of breast cancer. The triple-assessment aims to provide a quick and simple outpatient approach to diagnosis and allow for the early intervention in the treatment of breast cancer. At each stage of the triple assessment, the suspicion for malignancy is graded to create an overall risk index. The key here is to establish whether this is likely a benign lesion or whether the patient should go onto have more definitive biopsy and further intervention.*

Materials and Methods: *A total of 100 patients were involved in prospective, randomized observational study in department of general surgery admitted with breast lumps in GREAT EASTERN MEDICAL SCHOOL AND HOSPITAL. Patients belonging to10 and 70 years presenting with breast lump are included in the study.*

Results: *in the present study we found 94% of cases i.e. 94 cases give concordant results while results of 6 patients shows non-concordance either benign or malignant. But none of the results shows the malignant one as benign.*

Conclusion: *The clinical examination has low sensitivity and thus should always be corroborated with other modalities of investigation. FNAC gives fairly good results in terms of sensitivity and specificity. USG and Mammography have given consistent and acceptable results. When three modalities of investigation viz. physical examination, imaging, and FNAC is combined the sensitivity, specificity and accuracy increases more than any of individual tests.*

Introduction

Breast cancer is the2[ND] most common malignancy in women worldwide, however, benign lesions of the breast are far more frequent than malignant ones. With the use breast imaging and the extensive use of needle biopsies, the diagnosis of a benign breast disease can be accomplished without surgery. It is to distinguish between in situ and invasive breast cancer so most appropriate treatment modality can be established. The triple test for breast diseases involve,

1. Clinical assessment
2. Imaging modality– Mammography
3. Fine needle aspiration biopsy/cytology

In modified triple test ultra-sonogram is used instead of mammography.

When combined in the triple assessment, a definitive diagnosis can be made when the

diagnoses concur, suggesting that the triple assessment has a high sensitivity, specificity. Mammography is preferred method for breast cancer screening. But when mammography reveals a non-palpable breast lesion further imaging studies are often required to more precisely identifying the characteristics and location of the mass.

Aim of study

Aims: The study role of the triple assessment test in making a pre-procedural diagnosis of palpable breast lumps.

Methodology

Source of Data

The material of the study comprised of 100 patients admitted with breast lumps admitted GREAT EASTERN MEDICAL SCHOOL AND HOSPITAL during period of December 2018 to September 2019.

Method of Collection of Data

A Proforma drafted for the study of all patients with breast complaints, like lump, nipple

discharge, Evaluation will be done by history, clinical

examination, mammography, Ultrasonogram, FNAC and HPE.

Sample size: 100 patients

Sampling method: Simple random sampling

Inclusion Criteria: Females between 10 and 70 years presenting with breast lump with or without associated symptoms.

Exclusion Criteria: Patients with Open biopsy and HPE performed prior to presentation to our hospital.

Results

1. Age Distribution

Out of 100 cases, 31(31%) patients had malignancy and rest 69(69%) patients had a benign lesion. All the patients were above the age of 15 years. The mean age if malignancy cases was 51+/- 9.8(28-67 years).

The mean age of benign cases was 27.63+/- 8.25(10-60 years). The distribution is tabulated here under:

Table: Age variables among malignant and benign cases

	Total Patients	Malignant cases	Benign cases
Mean	34.88	51	27.63
Median	32	53	26
Mode	24	54	24
SD	12.64	9.83	8.25
Min age	10	28	10
Max age	67	67	60
Total	100	31	69

2. Site of Breast Lump: Out of 100 patients, 4(4%) patients had lesions in both the breasts. All these were benign. 20(64%) patients of malignant lesions were in the right breast. Similarly, benign

lesions also had right sided predominance. Following chart and table summarise the laterality of lesions in the breast, and incidence of simultaneous bilateral lesions.

Table: incidence of bilateral lesions and distribution of lesion according to side

breast lump side	Histopathological diagnosis		Total
	benign	Malignant	
both	4(4.66%)	0(0.00%)	4(4%)
Left	29(43)	11(36%)	40(40%)
right	36(52)	20(64%)	56(56%)
TOTAL	69(100)	31(100%)	100(100%)

3. Quadrant Distribution: 46% of malignant lump was in the right upper outer quadrant compared to 38.3% of benign lump.

4. Distribution of Cases on Clinical Examination; After history and complete physical examination, provisional diagnosis of benign lesion was made in 75(75%) patients, and that of malignant lesions in 25(25%) patients

Lesions	number of cases	Percentage
Benign	75	75%
Malignant	25	25%
total	100	100

5. Distribution of Cases According to Ultrasound Scans: On ultrasound scan,70(70%) lesions were diagnosed as benign compared to 30(30%) patients to have malignant features. In this calculation, suspicious lesions have been Converted And Statistically Treated As Malignancy

Lump Defined On Us Scan	Total Of Cases	Percentage
Benign	70	70%
Malignant	30	30%
Total	100	100

6. Distribution Of Cases According To Mammography: Of 33 Patients Who Underwent Mammographic Examination, 28(84.8%) Patients Had Malignant Features.

Table: Distribution Of Cases According To Mammography

Mammography	Total	Percentage
Benign	5	15.2
Malignant	28	84.8
Total	33	100

7. Distribution of Cases as per FNAC:
FNAC resulted in 68(68%) lesions to be classified as of benign nature and32 (32%) as malignant or suspicious of malignancy. Following chart and table summarise these findings.

Table: distribution of cases in FNAC results

FNAC	total	Percentage
benign	68	68
Malignant	32	32
total	100	100

7. Distribution of Cases as per FNAC:
FNAC resulted in 68(68%) lesions to be classified as of benign nature and 32 (32%) as malignant or suspicious of malignancy. Following chart and table summarise these findings.

Table: distribution of cases in FNAC results

FNAC	total	Percentage
benign	68	68
Malignant	32	32
total	100	100

Histopathological Diagnoses

8. Benign Cases: Most common diagnoses patients in the benign group was fibroadenoma 31(45%) followed by fibrocystic disease/ changes,24(35%) and fibro adenomatoid hyperplasia constituting 12(17%) patients. One patient each had juvenile fibroadenoma and phyllode's tumour.

Table: Different diagnoses of the breast lesions that were benign at histopathology

Distribution of benign cases		
histopathological diagnosis	number	Percentage
FAH	12	17
FCC/FCD	24	35
Fibroadenoma	31	45
JUVENILE	1	1
PHYLLOIDES	1	1
TOTAL	69	100

9. Concordance in Physical Examination, Imaging and FNAC

94% of cases i.e. 94 cases give concordant results while results of 6 patients shows non-concordance either benign or malignant. But none of the results shows the malignant one as benign.

Combined

Diagnostic value of the combined tests (combination of clinical diagnosis, imaging and FNAC was calculated and shown in following table. 93.6%cases showed concordant results i.e. either all benign or malignant. One case in the benign group turned out to be malignancy in histopathological examination. However, none of the cases diagnosed as malignancy turned out to be of benign nature the histopathological examination. Non concordant results were observed in 8 cases.

The sensitivity was 96.29% whereas specificity and positive predictive value were 100% respectively. The overall accuracy of triple test was 98.9%.

Table: Comprehensive table showing the combined sensitivity, specificity, negative predictive value, positive predictive value and accuracy of the tests.

Triple test	histopathology		total	sensitivity TP/TP+FN	specificity TN/TN+FP	PPV	NPV TN/TN+FN	Accuracy TP+TN/TP+TN+FP+FN
	benign	malignant				TP/TP+FP		
benign	67	1	68					
malignant	0	26	26	26/26+1	67/67+0	26/26+0	67/67+1	67+26/94
total	67	27	94	96.29	100	100	98.5	98.9

Discussion
Epidemiological Data
Carcinoma of the breast Is the most common site-specific cancer in women. Our study shows majority of patients had benign lump (69%). Of 100 patients who selected for study after fulfilling inclusion criteria, all patients were regularly followed-up till completion of study. In the present study the mean age of malignant cases was 51 ± 9.8(28-69 years). The mean age of benign cases was 27.63 ± 8.25(10-60years). This finding is similar to some other studies reporting age ranging from 45-55 years.

All the lumps were found more commonly situated at the upper and outer quadrants of breast, 68% of benign lumps and 74% of malignant ones, compatible to findings with other studies and also because of the anatomical organisation of breast volume, more than 3/5 [th] of the breast tissue lies in upper outer quadrant.

Comparison of Triple test results with other studies
The following table compares the present study with different 6 studies undertaken at different parts of world since 2005 in terms of sensitivity, specificity, PPV, NPV, and accuracy of the tests. The results are comparable in all aspects. The accuracy of tests when combined is 97%.

Table: showing comparison of triple test with various studies

AUTHOR	YEAR	SE	SP	PPV	NPV	ACCURACY
Martelli G et al	2005	95%	……….	100%	……	……
Vetto J et al	2008	100%	57%	74%	100%	100%
Steinberg et al	2008	95%	100%	……..	…….	……
Morris A et al	2010	100%	100%	73.50%	100%	……
Ghimire Bikal et al	2012	100%	95.20%	96.70%	……	98%
Jan masooda et al	2014	100%	99.30%	93.30%	100%	……
present study	**2017**	**96.70%**	**97.10%**	**93.75%**	**98.50%**	**97%**

Conclusion
The clinical examination has low sensitivity and thus should always be corroborated with other modalities of investigation. FNAC gives fairly good results in terms of sensitivity and specificity. USG and Mammography have given consistent and acceptable results. When three modalities of investigation viz. physical examination, imaging, and FNAC is combined the sensitivity, specificity and accuracy increases more than any of individual tests. When all three diagnostic modalities are in agreement for a diagnosis of malignant disease, the combination of clinical examination, FNAC, USG has excellent concordance with the result of excisional biopsy, and in this situation definitive treatment may be carried out. If all three modalities are in a agreement with diagnosis of benign disease, a period of close observation with repetition of FNAC may be safely entertained.

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