Original Research Article

Modified triple assessment in the diagnosis of breast lump in Bihar, India

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Abstract

Background: Breast lump is a common complaint of women presenting to surgeons. Most of them are benign, careful evaluation, exact diagnosis and definitive treatment is mandatory to rule out cancer. The diagnosis of breast cancer is suggested on clinical examination. Currently a combination of three tests, i.e. clinical examination, radiological imaging (mammography, ultrasonography) and pathology called as triple assessment test is used to accurately diagnose all palpable breast lumps. Together they give sensitivity of 100%. The triple assessment is taken as positive if any of the three components, two are positive or positive report of FNAC and negative only if all of its components are negative for malignancy. **Methods:** A descriptive cross sectional study was conducted in the Department of General Surgery, Indira Gandhi Institute of Medical Sciences, Patna, Bihar, India from December 2016 to July 2017. A total of 300 patients with a breast lump were included in this study. A detailed history, focused clinical examination, radiological imaging and FNAC were used as diagnostic tools for screening of the patients.
Results: The result of individual components as overall M.T.T was compared with the final histopathological examination. Result of physical examination showed sensitivity 92.67% and specificity 96.67% for diagnosing malignant breast lesion. The ultra-sonography revealed 91.33% of sensitivity, 98.66% of specificity. FNAC revealed that 96.25% sensitivity while specificity was 99.57%. **Conclusion**: Thus, triple assessment is an easily available, cost effective, least invasive, rapid and patient compliant diagnostic tool for diagnosis of breast lump.

Keywords: Modified triple assessment, Clinical examination, Mammography, Ultrasonography, Fine-needle aspiration

Introduction

Patients with breast problems make up a major part of the patient load at general surgical out-patients clinical. With the increasing public and professional awareness each year large number of young women are being referred to general surgeons with palpable breast lump. Breast problems can present themselves in number of ways like breast pain, nipple discharge, cystic lesions and more commonly a lump. Majority of them prove to be benign, but probability of the diagnosis of cancer not be excluded. So careful evaluation, exact diagnosis and definite treatment is mandatory in any type of breast lump.

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Until a few years ago, it was generally believed that breast tumour should be excised and histologically examined to determine its nature with certainty because the preoperative physical assessment alone was associated with too much uncertainty. Eventually, with the advent of mammography, a radiological tool became available to the surgeons to make a pre-operative diagnosis of the breast with a reasonable degree of accuracy. However, it was the introduction of Fine needle aspiration cytology (FNAC) that changed the entire outlook to the matter. The combination of physical examination mammography and FNAC came to be called upon as the "triple test" for assessment of breast lumps and has now become the gold standard in the work-up of the same. According to National Institute for Health and Clinical Excellence (NICE) guidelines, for patients with symptoms that could be caused by breast cancer, diagnosis is made by Modified

triple assessment. The combination of physical examination, sono mammography and FNAC came to be called upon as the "Modified Triple Test".Evaluation of a breast cancer starts with components of the triple test including clinical breast examination, mammography and fine needle aspiration alone or in combination, While open biopsy provides more data, it results in undesirable cosmetic problems [1-4].There is strong evidence for the value of using the triple assessment to estimate the probability of malignancy and guide the evaluation of breast cancer.

The aim of our study was to the role of modified triple assessment in diagnosis of breast lump and sensitivity and specificity of modified triple assessment with regards to histopathology.

Material and Methods

A descriptive cross sectional study was conducted in the Department of General Surgery, Indira Gandhi Institute of Medical Sciences, Patna, Bihar, India from December 2016 to July 2017, after taking the approval of the protocol review committee and institutional ethics committee.

The research was carried out in professorial surgical unit of Medical Hospital. All 300 patients had undergone surgery (lumpectomy, wide excision or mastectomy) and final histopathology report was included in this study. The patients without final histopathology report were excluded from this study. The results of the individual components were compared with final histological examination.

Results

Table 1: Age group with clinical diagnosis

Age Group	Clinical diagnosis		Total number	Percentage of malignant lesion
	Malignant	Benign		
Below 20 yrs	_	25	25	0%
20-30 yrs	01	51	52	1.92%
30-40yrs	15	49	64	23.43%
40-50 yrs	48	43	91	52.74%
50-60 yrs	25	22	47	53.19%
Above 60 yrs	11	10	21	52.38%
Total	100	200	300	33.33%

Table 2: Age group with ultrasonographic findings

Age Group	Ultrasonograpic finding		Total number	Percentage of malignant lesion
	Benign	Malignant		
Below 20 yrs	25	_	25	0%
20-30 yrs	64	2	66	3.03%
30-40yrs	41	23	64	35.93%
40-50 yrs	46	34	80	42.5%
50-60 yrs	20	24	44	54.54%
Above 60 yrs	10	11	21	52.38%
Total	206	94	300	31.33%

Table 3: Overall findings by the components of Triple Test

Type of lesion	Clinical diagnosis	USS	FNAC/Core biopsy	Histopathology
Benign	200	206	204	197
False negative	9	6	4	
Malignant	100	94	96	103
False positive	7	5	01	

Table 4: Benign lesions: ultrasonographic finding

Ultrasonic diagnosis	Number of Diagnosis	Percentage among all benign lesion	Percentage among overall breast lesion
Fibro adenoma/Giant fibroadenoma	106	51.45%	35.33%
Fibrocystic disease	65	31.55%	21.67%
Inflammatory lesion	21	10.19%	7%
Cystic lesion	14	6.79 %	4.66%

Table 5: FNAC/Core biopsy and Histopathological confirmation

Lesion	FNAC/Core biopsy	Histopathological confirmation
Fibro adenoma	95	97
Fibrocystic	70	64
Inflammatory	21	26
Cystic	16	10
Carcinoma	96	103

Table 6 specificity and Sensitivity of test

Category	Sensitivity	Specificity	PPV	NPV
Clinical diagnosis	92.67%	96.67%	93.67%	95.33%
Ultrasono graphic finding	91.33%	98.66%	97.87%	96.88%
FNAC/ Corebiopsy	96.25%	99.57%	99.25%	96.87%

Discussion

Breast cancer is the commonest malignancy in females and a leading cause of cancer related deaths worldwide. Mammography is an essential component in the assessment of breast cancer. It serves to characterize and determine the extent of the mass and to evaluate the breast for occult lesion.[5-7] The sensitivity of diagnostic mammography has been reported in most studies to be around 90% and specificity about 88%.[5,6,8-10] The known false negative rate of mammography is between 8% and 10%.[5,8] In modified triple test, mammography has been substituted by ultrasonography. Breast

ultrasound has been found to be an adjuncts to mammography in breast examination.[5,11,12] Ultrasonography shows 93.1% sensitivity, 95% specificity, 93.1% positive predictive value[11,7] For clinical examination, Yang et al (1996) reported a sensitivity, specificity and positive predictive value as 88 %, 92%, and 67% respectively.[13] Current study revealed a higher sensitivity and specificity for clinical examination. However the results depend on the experience of the surgeon who is doing the examination. On a experienced hand, the clinical examination alone is a valuable test for diagnosing breast cancer.

Like clinical examination, the results of ultrasonography is also depends on the competency of radiologists. On a study done by Manisha et al. the concordance for histopathology was 96.7% and sensitivity was 100%, specificity was 96.4%, positive predictive value was 66.7%, and negative predictive value was 100%.[8] Pande et al. have done a study which revealed the sensitivity, specificity, positive predictive value and negative predictive value as 95%, 94.10%, 95.50% and 93.75% respectively.[14] The current study revealed better values for ultrasonography like above studies. Senitivity- 91.33%, Specificity-98.66%, positive predictive value- 97.87% and negative predictive value- 96.88%.On the same study, Dr. Manisha Nigam[8] found that concordance for FNAC was 97.3%, sensitivity was 100%, specificity 97.1%, positive predictive value was 86.7% and negative predictive value was 100%. Mohammed et al. found that FNAC had a positive predictive value of 100%, sensitivity of 96.6% and specificity of 100%.[15] The current study concluded that FNAC is the best among all other components of MDT.

The final diagnosis was made based on the histopathological findings which identified 103 breast lesions as malignant lesion. Among them, only one had the negative results for all components of MDT (%). It reflects that MDT can be used as a diagnostic tool for breast cancer in clinical setting.

Conclusion

The modified triple test is valid and reliable with high degree of accuracy for diagnosis of breast lump as in our studies and other studies. The aim of the modified triple test is to avoid unnecessary open biopsy and to proceed to definitive therapy. High frequency high quality sonography system has significant technical improvement in modified triple test. The modified triple test can reliably guide the evaluation and management of breast lump.

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