

Original Research Article

The Modified Triple Test- A Diagnostic Approach to Palpable Breast Lumps

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ABSTRACT

Background

In India, breast carcinoma is the 2nd most common malignancy in women. Incidence increases every year which ranges approximately 20-32%. Incidence of breast cancer shows "AGE SHIFT" over the past twenty years in India that is incidence increased from 6 to 17% in the age group of 30-40 years. The 'Modified Triple Test' utilizes-Physical Examination, Ultrasonography of the breast as the radiological method, and FNAC for the diagnosis of palpable breast lumps. It is gaining acceptance with the recent advances in technology and refinements in the interpretative criteria of sonographically characterized masses.

Methods

A prospective cross sectional study of 50 female patients attending the out patient department of General Surgery, K.R. Hospital, Mysore, between March 2022 to January 2024, with the complaint of a palpable lump/lumps in the breast was undertaken.

Results

Most commonly affected age group being 30-39 years. Incidence increased from 7 to 16% between the age group of 30 and 40 years. The calculated P - value for parity study is 0.017 and it is shown that malignancy is common among nulliparous. For the menstrual status, the calculated p-value is 0.044 is significant. The breast tumor is common at left side account for about overall 54% age. Fibroadenoma is the most common benign tumor. It was inferred from the study that clinical examination has a sensitivity of 87.5% which means that around 12.5% of the breast carcinoma cases are missed clinically. Results of Modified Triple Test

were Sensitivity: 100%, Specificity: 97.37%, PPV: 91.67%, NPV: 100%. Hence the modified triple test can be used as a reliable and fairly accurate means of diagnosis of breast carcinoma.

Conclusion

Our results show that the diagnostic accuracy of physical examination breast USG and FNA/CNB combined is comparable to that of histological examination. Ultrasound replacing mammography serve as an effective imaging modality in palpable breast lumps and is also more comprehensive. CNB is a suitable alternative when FNA is inconclusive, also offers additional information. Thus the use of MTT to complement findings in differential diagnosis of a lesion in a symptomatic women seeking medical care deserves acceptance and further evaluation.

Keywords- FNA, CNB, malignant, benign, breast lump.

INTRODUCTION

Until a few years ago, it was generally believed that breast tumor should be excised and histologically examined to determine its nature with certainty – because the preoperative physical assessment alone was associated with too much uncertainty. Breast lumps are one of the common problems encountered in women. These lumps are frequently seen in younger to middle aged women and often go undetected for various reasons. They have different etiologic causes and can be either malignant or benign. Early recognition of any malignancy plays an important role in increasing survival. There is a requirement of a system to detect malignancy earlier and reduce the time needed for the identifying of malignant lumps. A few years ago, it was commonly believed that breast lump should be excised and histologically examined to determine its nature with certainty – because the preoperative physical examination alone was associated with too much uncertainty. With the advent of mammography, a radiological tool became available to make a pre-operative diagnosis of the breast with a reasonable degree of accuracy. However, it was the introduction of 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.

AIMS AND OBJECTIVES

The study is conducted with the objective of assessing the combined and individual reliability of the Modified Triple Test in making a pre-procedural diagnosis of palpable breast lumps.

The components of the Modified Triple Test are :

1. Clinical Examination (C/E)
2. Breast Ultrasonogram (USG)
3. Fine Needle Aspiration Cytology/Core Needle Biopsy (FNAC/CNB)

MATERIALS AND METHODS

A prospective cross sectional study of 50 female patients attending the out patient department of General Surgery, K.R. Hospital, between March 2022 to January 2024, with the complaint of a palpable lump/lumps in the breast was undertaken, all 50 patients were subjected to MTT

Inclusion criteria

- Female patients with palpable breast lump.
- Age group of more than 15 years.

Exclusion criteria

- Male patients
- Female patients with clinically evident advanced stage breast disease

As per inclusion and exclusion criteria patients were selected. Total numbers of 50 patients were included in the study.

Methodology

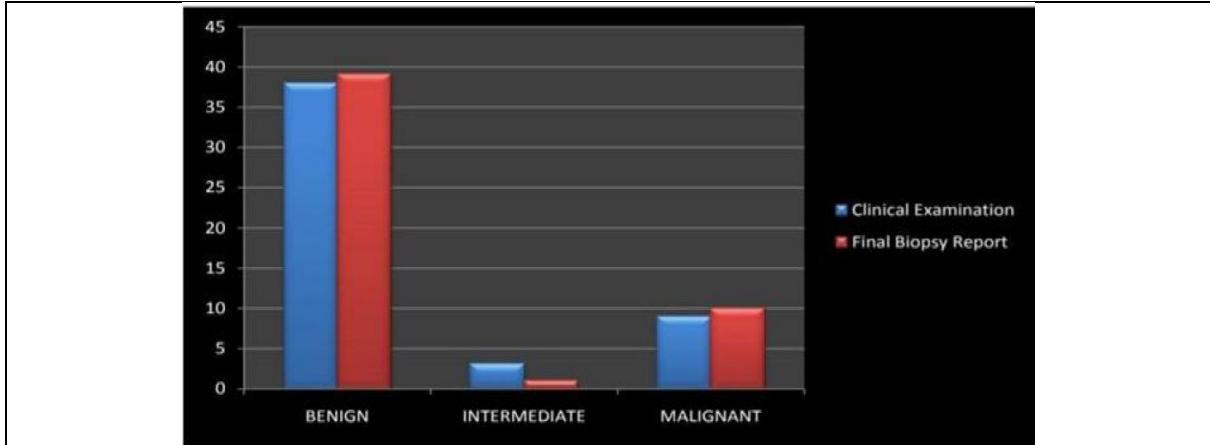
Initially, the complete clinical examination (performed) after getting informed consent. Ultrasound Imaging of both breast and axilla done before any invasive procedure to avoid possible architectural distortion. Finally, the tissue diagnosis with FNAC/CNB based on 5 tier system of FNAC reports.

All patients at the end of MTT categorized as Benign, Suspicious and Malignant with each component of MTT. Those who are diagnosed as clear cut benign tumor(score<4) on three tests were subjected to incisional biopsy and for others with suspicious or malignant lesion(score 5 and 6) were to proceed with excisional biopsy. Finally, all the individual component and combined results of Modified Triple Test, explored against the HPE report of incisional / excisional biopsy.

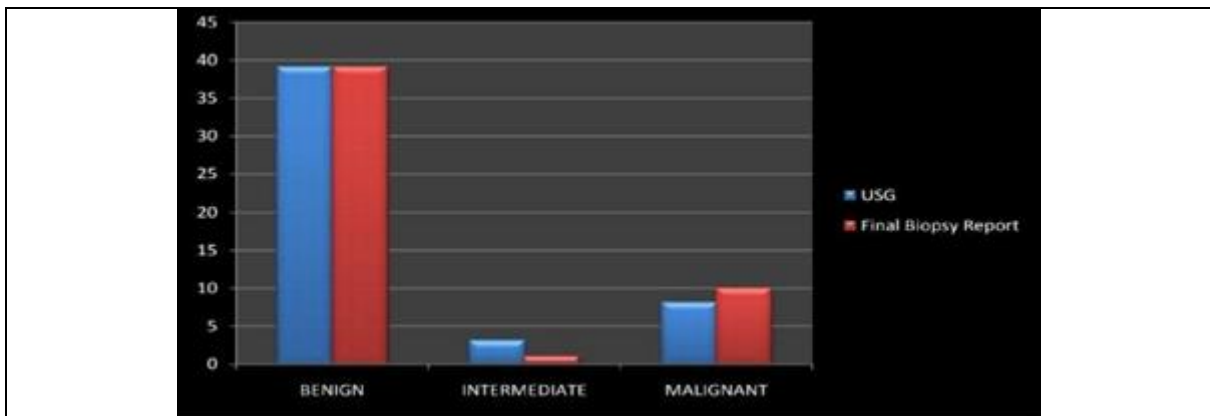
RESULTS

In this study population, based on the age group, the 15 years patients as youngest and 64 years is being the oldest. Most commonly affected age group being 30-39 years show incidence increased from 7 to 16% between the age group of 30 and 40 years. Breast lump is most common among the group between 30 and 39 years old patient. Parity study compared the occurrence of benign and malignancy disease among nulliparous and multiparous women. Results were reported as % age and total numbers of patients. Among 10 nulliparous women, 6 were found to be breast carcinoma. The calculated P - value for parity study is 0.017 and it is shown that malignancy is common among nulliparous. The comparison of menstrual status of women shows that premenopausal women prevailing benign tumor is common, whereas in the case of perimenopausal and postmenopausal women malignant tumor is common one. Based on the results, most of the patient's tumor were observed at U/O and least patient at L/I. This fact is due to estrogen receptors more prevailing at U/O quadrant which is reported as 63%.

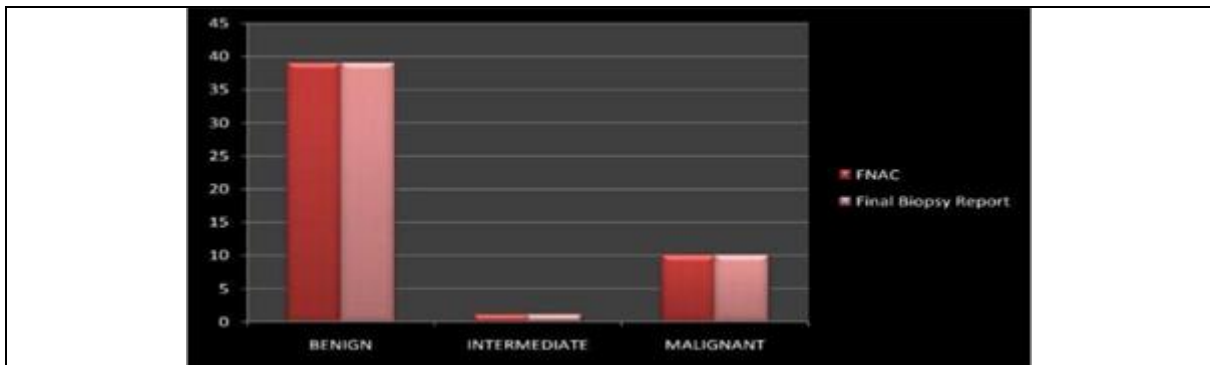
Histopathological Report says Fibroadenoma is the most common benign tumor. It was inferred from the study that clinical examination has a sensitivity of 87.5%. Which means that around 12.5% of the breast carcinoma cases are missed clinically. Ultrasound breast has high sensitivity and negative predictive value of 100%. FNAC has a sensitivity of 90%, it has a positive predictive value of 100%. So those who are diagnosed to be positive for malignancy can be taken up for definitive surgical management without any further investigations for confirmation of diagnosis. The study shows that the combined results of Modified Triple Test are comparable to the histopathological diagnosis of the biopsy specimen. Hence the modified triple test can be used as a reliable and fairly accurate means of diagnosis of breast carcinoma.



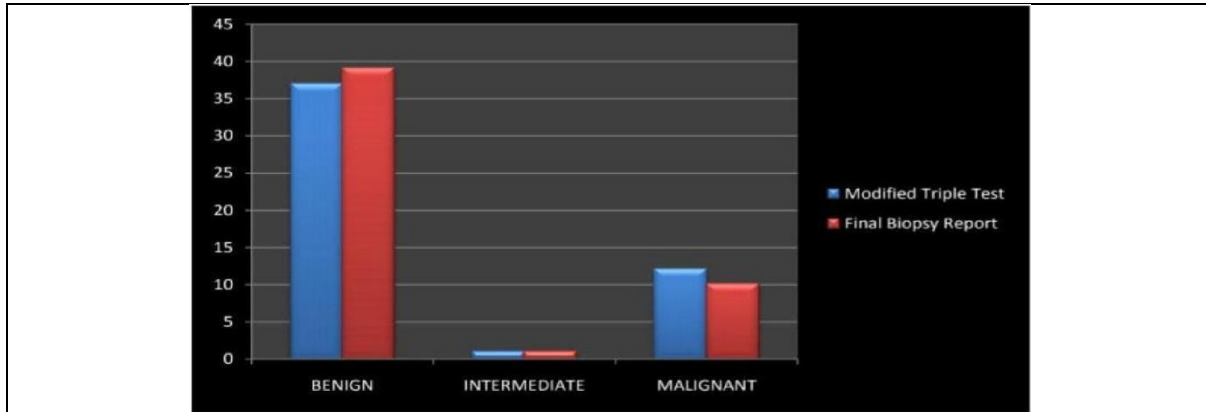
Bar diagram 1: showing the comparision of clinical examination results against final biopsy report



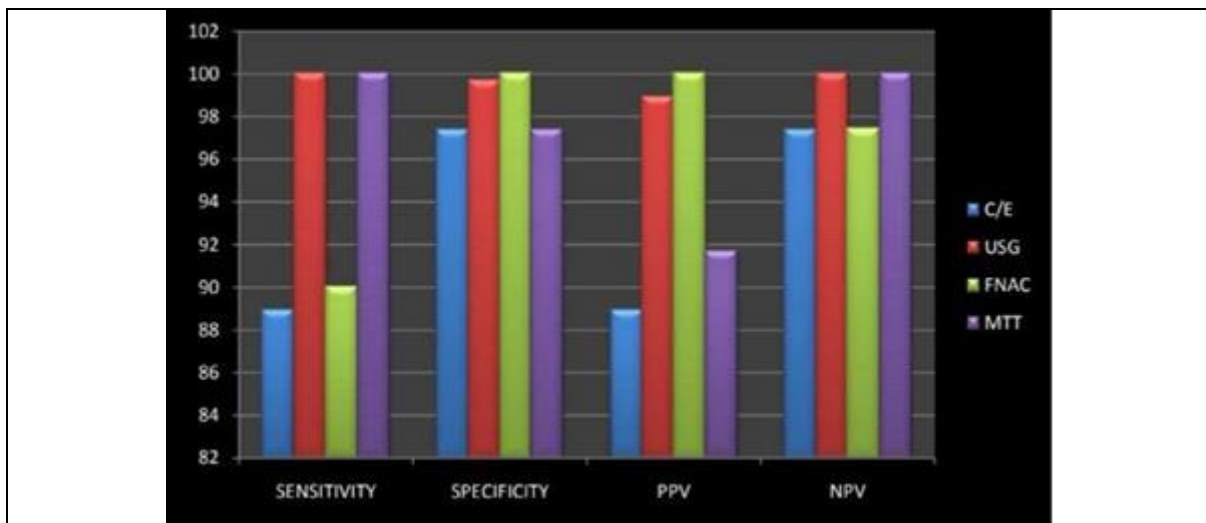
Bar diagram 2: Study results of USG against final biopsy report



Bar diagram 3: comparing the study results of FNAC against biopsy report



Bar diagram 4: Combined result of MIT against biopsy report



Bar diagram 5: Individual component and combined result of Modified Triple test

DISCUSSION

In 1987 Hermansen C. et.al studied 650 breast tumors patients and applied ‘Triple test’ which was a triad of clinical examination, mammography and FNAC in the assessment of palpable breast tumors. He concluded that the diagnostic accuracy of the triple test is comparable to that of final histological examination report studied.⁽¹⁾

Hardy JR. et. al. assessed 143 patients with palpable breast mass with clinical examination, mammography, ultrasound, magnetic resonance imaging (MRI) and FNAC and concluded that the combination of cytology and ultrasound was best in correctly diagnosing malignancy of breast.⁽²⁾

Lawrence N Bassett et al., assessed the usefulness of mammography and ultrasound in women less than 35 years of age (total of 1016 women) over a period of 8 years of study. This study showed that mammography was not very useful in women less than 35 years of age. On the other hand ultrasound was useful in avoiding unnecessary breast lump biopsies and for this reason, USG proves to be a reliable investigation in women less than 35 years.⁽³⁾

In the year 1996, Vetto JJ .et. al. studied 55 women below the recommended age. of screening mammography with Modified Triple Test’(C/E, USG; FNAC/CNB). The study showed a high specificity and negative predictive. value of 100% for malignancy. They concluded . that use of. MTT for diagnosing a palpable breast mass. in younger women has high diagnostic accuracy.^(4,5)

Hatada T et. al. studied 114 lesions. retrospectively and compared the results obtained by standard FNAC with that of ultrasound guided FNAC with surgical findings. and were. found have. an accuracy of 65% and 86% respectively. They concluded that USG-guided FNAC is highly useful in the preoperative diagnosis especially in patients with tumor less than 2cm.⁽⁶⁾

Bhavinder et al carried out a prospective study to assess the diagnostic performance of FNAC, ultrasound, and clinical examination individually and in combination for the identification of palpable breast lump in 50 patients. In comparison to histology, clinical assessment demonstrated a 99% sensitivity, 100% specificity, 100% positive predictive value, and 80% negative predictive value.⁽⁷⁾

According to Kaufman et al⁽⁸⁾ the sensitivity of MTT was 100% and negative predictive value was 100%. However Ahmad et al concluded that the sensitivity of triple test was 100% and specificity was 100%.⁽⁹⁾

Clinical Assessment begins with proper history taking then with examination of breast. A palpable breast mass may be identified when it becomes sufficiently large to be differentiated from. surrounding breast tissue – usually detected by the patient or the physician.

CONCLUSION

In recent years in India, westernization and increased sedentary life style resulted in increased incidence of breast cancer. With present knowledge and public awareness about cancer breast, the cancer phobia is increased in among the female.

Our study includes assessment of individual and combined diagnostic accuracy of Modified Triple Test in women of more than 30 years of age with palpable breast lump.

On summation of all the three components of Modified Triple test., results were almost identical to final histopathological report of incisional and excisional biopsy specimen. On concluding the study results Modified Triple Test had a sensitivity, specificity, positive predictive value and negative predictive value of 100%, 97.37%, 91.67% and 100% respectively. With the available study results, we infer that benign cases can be safely followed up without further procedure(open biopsy) that avoiding the surgical morbidity and scar and also those found to be malignant on MTT can directly proceed to definitive surgical management

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