

Modified Triple Assessment in the Diagnosis of Breast Lump

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Abstract

Background and Aim: Doctors commonly hear from women who have breast lumps. Since the majority of them are benign, excluding cancer necessitates a thorough examination, precise diagnosis, and effective treatment. Breast cancer is suggested as the diagnosis following a clinical examination. The current study's objectives were to analyse the modified triple assessment's sensitivity and specificity for detecting breast lumps as well as to assess the modified triple test's diagnostic effectiveness.

Material and Methods: The current study involved 130 randomly selected female patients with breast lumps who were admitted to the female surgical unit at a tertiary care centre during the study period. Using a complete patient history, a targeted clinical examination, radiological imaging (mammography, ultrasonography (USG), and fine-needle aspiration cytology (FNAC)), the patients were tested for probable malignant disease at its onset (early stage).

Results: During their clinical breast exams, 69 people had lumps that ranged in size from more than 2 cm to 5 cm in diameter, and 21 of those patients had lumps that were larger than 5 cm in diameter. Three people had soft consistency, and the rest 38 patients had firm consistency, according to the majority of patients who underwent clinical breast examinations, which included 79 patients in total.

Conclusion: The modified triple evaluation, which has a 98% overall accuracy rate for diagnosing breast cancer in women with breast lumps, is a very useful diagnostic tool. The modified triple assessment, which assisted in the earlier diagnosis of breast tumours, led to the majority of cases being found at stage I or stage II. (T1 or T2, N0 or N1, M0).

Keywords: Breast lump, Fine-needle aspiration cytology, Mammography, Ultrasonography.

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Introduction

Breast cancer is the second most frequent type of cancer in women worldwide, yet benign breast lesions are significantly more frequent than malignant ones.[1] Breast imaging and comprehensive needle biopsies can be used to diagnose a benign breast illness without surgery. Differentiating between in situ and invasive breast cancer is crucial to select the optimal treatment strategy. The breast disease triple test consists of three steps: clinical assessment, mammography, and fine-needle aspiration cytology.[2-4] Numerous symptoms, such as breast soreness, nipple discharge, cystic lesions, and—most frequently—a lump, can indicate a breast problem. Cancer cannot be ruled out even though the majority of them turn out to be benign. Therefore, careful examination, a precise diagnosis, and a firm course of treatment are necessary for any type of breast lump. Prior to a few years ago, the common opinion was that a breast tumour should be excised and histologically examined in order to determine its nature with confidence because the preoperative physical evaluation alone was associated with too much uncertainty. Prior to a few years ago, the prevalent belief was that a breast cancer should be excised and histologically examined in order to determine its exact kind because a preoperative physical examination alone was associated with too much uncertainty. Mammography was eventually developed, providing access to a radiological technique that allowed surgeons to precisely diagnose breast abnormalities prior to surgery. The advent of fine needle aspiration cytology (FNAC), however, fundamentally changed how individuals saw the problem. The "triple test"—a physical examination, a mammogram, and a FNAC—were developed to evaluate breast lumps and are now the gold standard for the work-up of the same. For people who display symptoms that may be connected to the disease, the

diagnosis of breast cancer is made using the Modified triple evaluation in accordance with National Institute for Health and Clinical Excellence (NICE) criteria. Breast cancer is the second most common malignancy in women and the second leading cause of cancer death, despite the fact that the majority of lumps are benign. A fibroadenoma is the most common benign breast lump, while invasive ductal carcinoma is the most common cancer. The prevalence of the condition has dramatically increased among women under the age of 40.[5,6] Only 50% of breast cancer patients are still alive and disease-free ten years after their diagnosis.[7] It is possible to increase cancer detection while decreasing unnecessary tests and treatments with a thorough and precise review.[8] A multidisciplinary approach to management is crucial. The triple assessment technique was used in this study to pre-procedure diagnose palpable breast masses. The goal of the study is to assess modified triple testing's improved and distinctive dependability for pre-procedural breast lump identification. The components were ultrasound and the clinical assessment. FNAC/CNB.

The current study sought to investigate the sensitivity and specificity of the modified triple evaluation for breast lump diagnosis. to assess the diagnostic efficacy of the modified triple test in detecting breast masses.

Material and Methods

The current investigation was conducted on 130 randomly chosen female patients with breast lumps who were admitted to the female surgical ward during the study period at a tertiary care facility. The study included women who had breast lumps or abnormal changes in the texture of their breasts. Using a complete patient history, a targeted clinical examination, radiological imaging (mammography, ultrasonography (USG),

and fine-needle aspiration cytology (FNAC)), the patients were tested for probable malignant disease at its onset (early stage).

The inclusion criteria are women who report having a breast lump that can be felt as a discrete lesion and is slightly different from the surrounding breast tissue. Each patient is subjected to the Triple test. Based on the examination, the masses are categorised as benign or malignant.

Exclusion criteria include patients having open biopsy and HPE completed before presenting to our institution, as well as women with metastatic breast cancer who make an evident diagnosis.

The study lasted for two years. The study included 130 patients with breast lumps who were older than 15 years.

This cross-sectional study included female patients who were admitted to the female surgical ward of general surgery or who attended the surgery OPD and complained of breast lumps. These patients were assessed thoroughly using the modified triple assessment, which included a clinical breast examination, sono mammography of both breasts with both axillae, and FNAC of the lump after a thorough explanation of the study's objectives to the participants.

Statistical Analysis

After being merged and entered into a spreadsheet software (Microsoft Excel 2007), the gathered data was organized, entered, and

exported to the data editor page of SPSS version 15 (SPSS Inc., Chicago, Illinois, USA). For each test, the levels of significance and confidence were set at 5% and 95%, respectively.

Results

According to the current study, the age range in this series that is most prevalent is between 34 and 47. The average age is 37.28 ± 12.47 . The oldest patient was 72 years old, and the youngest patient was 17 years old. Out of 130 patients, all had palpable breast lumps as their primary symptoms. We also noticed that 14 patients also had lumps in their axillae as supplementary symptoms, followed by 11 patients with soreness over the breast and 5 patients with nipple discharge. In the current study, the right side breast lump was more prevalent on 72 patients as opposed to the left side breast lump on 58 patients, with a right to left ratio of 1.3. In this set of breast lump cases, we discovered that 66 individuals had upper outer quadrant involvement, while just six patients had lower inner quadrant involvement.

According to the current study, 69 patients had clinical breast exams, and the most common lump size was between >2 cm and 5 cm in diameter. In 21 patients, the lump size was greater than 5 cm. The majority of patients who underwent clinical breast examinations revealed that there were 79 patients overall, three of them had soft consistency and the remaining 38 patients had hard consistency.

Table 1: Mammographic findings of study participants (n=80)

Findings	No of participants (%)
Well circumscribed mass with regular margins	59 (73.7)
Density lesion with microcalcification	5 (6.25)
Density lesion with irregular margins and spiculation	4 (5)
Density lesion with microcalcification, irregular margins and spiculation	12 (15)
Total	80

Table 2: USG impression (n=130)

Findings	No of participants (%)
Fibroadenoma	60 (46.1)
Fibro adenosis	22
Galactocele	3
Traumatic fat necrosis	5
Phyllodes	7
Ductal cell carcinoma	23
Lobular cell carcinoma	8
Total	130

Discussion

Key elements in the early diagnosis of breast sickness include self-examination of the breast and public understanding of the fundamentals of cancer. Clinical signs of initial breast cancer are scarce. The majority of the time, a painless breast mass is present, and skin retraction, nipple discharge of erosion, or an axillary mass are less frequent.

If any two of the three components—or one of the FNAC components—are positive for malignancy, the triple evaluation is deemed positive; otherwise, it is considered negative. Thirty patients' clinical examinations suggested the presence of malignant illness, and thirty of those patients had their histology corroborate the diagnosis. Similar to this, only 80 of the 90 patients with a benign diagnosis on the basis of clinical examination had their diagnosis supported by histopathology; the other ten patients were given a malignant diagnosis.

Histology revealed malignant breast disease in 40 individuals. There was a significant ($p < 0.05$) p-value, 80% sensitivity, 100% specificity, 100% positive predictive value, and 92.5% negative predictive value found. Yang *et al.* found that the sensitivity, specificity, and positive predictive value of a clinical examination were 88%, 92%, and 67%, respectively.[9] Bhavinder *et al.* performed a prospective study to evaluate the diagnostic effectiveness of clinical examination, ultrasonography, and FNAC

independently and in combination for the goal of identifying palpable breast masses in 50 patients.[10]

In 80 individuals, FNAC supported a benign diagnosis. Although histology supported a benign diagnosis in 79 cases, it revealed malignancy in one patient. The positive predictive value for FNAC was 100%, the specificity was 100%, and the sensitivity was 97.01%. The negative predictive value was 98.21%. Our results agreed with other investigations' conclusions. Mohammed *et al.* found that FNAB had a 100% positive predictive value, a 90% sensitivity, and a 100% specificity.[11]

In their prospective investigation, Ronak Chaudhari *et al.* discovered that the sensitivity and specificity were 100% and 96.77%, respectively, and the positive predictive value was 95.00% for all 50 patients who underwent FNAC. Ultimately, this correlation was determined to be with the histological diagnosis.[12] When compared to the results of histology, we discovered that the modified triple assessment's results had a specificity of 97.40%, a sensitivity of 100%, a positive predictive value of 93.50%, a negative predictive value of 100%, and a p value of 0.001. Our findings were compared favorably to the existing literature. Kaufman *et al.* discovered that the triple assessment's sensitivity and negative predictive value were both 100%.[13]

A triple method can produce the highest levels of diagnostic accuracy in the non-operative diagnosis of breast sickness by integrating the results of imaging, clinical examination, fine needle aspiration cytology (FNAC), and/or core biopsies. The diagnosis accuracy is better than 99% when the results from all three modalities agree. It's noteworthy to note that impalpable lesions, which don't require a clinical exam, have also yielded results with comparable levels of accuracy. The main objective of cytopathology's role in the diagnosis of breast sickness is the examination of cells discovered in nipple discharges and those extracted from solid and cystic lesions using a tiny needle.

A relatively modern diagnostic tool, aspiration cytology, is gradually finding a position in the breast surgeon's diagnostic toolkit. A blood-colored discharge is a well-established symptom of cancer of the larger ducts, with or without Paget's disease of the nipple. Preoperative diagnosis using a combination of clinical examination, mammography, and either biopsy using a wide bore cutting needle or aspiration cytology using a narrow hypodermic needle has become more significant in recent years rather than attempting to combine tissue diagnosis and mastectomy during the same operation.

This is due to the declining significance of the fast frozen section in the detection of breast cancer. The development of more accurate tests for metastatic disease that will eliminate the need for extensive surgery, the rising trend of patients choosing their own treatments, and the realisation that potentially less invasive surgery will result in equal to or improved survival as well as reduced postoperative morbidity all make accurate preoperative diagnosis essential. The principle "every palpable mass must be assessed and clarified" is underlined in studies on the assessment of breast lumps in

the medical literature. The term "Triple test" was created in 1987 by Hermansen C. *et al.* to refer to the three diagnostic techniques of a physical examination, mammography, and FNAC.

They prospectively assessed 650 breast cancers at that time. He got to the conclusion that the diagnostic effectiveness of the triple test is comparable to that of a histological study. When 143 people with palpable breast lumps were evaluated using clinical examination, FNAC mammography, ultrasound, and magnetic resonance imaging (MRI), Hardy JR *et al.* found that the combination of cytology and ultrasound was the most accurate way to detect cancer. Lawrence N.

Bassett *et al.* assessed the usefulness of mammography and sonography over an eight-year period in 1016 women under the age of 35. Mammography is not beneficial for women under the age of 35, according to this study. Younger women underwent sonography as their initial evaluation since it helped avoid unnecessary biopsies. However, it failed to distinguish benign from malignant solid tumours or find carcinomas that were not palpable. Purasri P *et al.* did a retrospective review of 603 individuals with breast masses using the Quadruple test (C/E/USG/ Mammography/FNAC).

A stepwise logistic discriminant analysis was used to produce a special diagnostic indicator. In 98% of the women under 35, the diagnosis was correctly anticipated by this. According to Hatada T *et al.* (2014) [14]'s retrospective examination of 114 lesions, standard FNAC and ultrasound-guided FNAC had diagnostic accuracies of 65% and 86%, respectively, when compared to surgical outcomes.

Conclusion

The modified triple evaluation is a very helpful diagnostic tool with an overall

accuracy of 98% for assessing patients with breast lumps and for identifying individuals with breast cancer. The majority of breast tumours were discovered at stage I or stage II (T1 or T2, N0 or N1, M0), thanks to the modified triple evaluation, which helped to diagnose tumours at an earlier stage. It was discovered that triple evaluation may be completed without any issues on an outpatient basis rather than requiring hospitalisation. The modalities are either minimally invasive or noninvasive.

In terms of histology, we discovered that the triple assessment's sensitivity was 100% and its specificity was 97.10%. Therefore, Modified Triple Assessment is a quick, painless, economical, and patient-friendly diagnostic method for the diagnosis of breast lumps. Limitations include pregnancy, younger women, patients with breast implants, advanced breast cancer, and occasionally difficult coordination between pathologists and radiologists.

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