

Original Article

Usefulness of Triple Test Score for Breast Lesions

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Abstract

Objective: Evaluating the usefulness of the Triple Test Score (TTS) in breast lesions.

Materials and Methods: Medical records of 100 cases were evaluated and TTS was calculated based on of physical examination, mammography and fine-needle aspiration cytology findings. The diagnostic value of TTS was assessed according to histopathology results.

Results: Of the 23 lesions with score of 5, which considered as suspicious, 7 were benign and 16 were malignant . TTS less than or equal to 4 has a specificity of 100% and TTS greater than or equal to 6 has a sensitivity of 100%.

Conclusion: The TTS reliably guides evaluation and treatment of breast lesions. TTS 3 or 4 are always benign and breast lesions with scores greater than or equal to 6 are malignant and should be treated accordingly.

Keywords: Triple test score – breast - lesion

Introduction

Breast disease and its symptoms generate much media attention. The majority of patients referred to a breast clinic have benign disease.¹ Since 1970, breast cancer presented as a palpable mass in 90% of patients.² While the approach to a solid palpable breast mass is often open surgical biopsy, the malignant/benign breast biopsy ratio in the United States averages only about 1:4, or 20%.^{3,4} Triple diagnosis has been used to decrease the open biopsy rate for solid breast masses. In 1975, Johansen coined the umbrella term Triple Test, which is defined as the evaluation of palpable breast masses by history/physical examination, mammography, and fine-needle aspiration cytology (FNAC) in women aged 40 years and older.⁵ In 1995, Vetto et al, found that approximately 40% of cases in his experience had no concordant tests, thus requiring biopsy.⁶ In 1998, Morris et al, improved the triple test with the concept of a triple test Score (TTS), in which each component of the triple test was rated as benign, suspicious, or malignant, and assigned 1,

2, or 3 points, respectively.⁷

Materials and Methods

The data of all women aged 40 years or older referred to our breast clinic between 1st November 1998 and 31st July 2003 were included. Patients' medical records including history/physical examination, mammography and FNAC in association with postoperative pathology results were retrospectively analyzed. A same breast surgeon examined and operated all patients. The clinical impression following examination and evaluation of the symptoms was documented as benign, suspicious or malignant. All cases who did not have a mammogram within a year of their referral to our breast clinic were routinely subjected to two-view mammography, oblique and cranio-caudal views were obtained and supplemented with additional views, as required. The mammograms were reported by one breast radiologist. In our study, classifications of the American College of Radiology (ACR) for BIRADS mammographic patterns were

considered as follows: Category 1, 2 (negative, benign): Benign, category 3 (probably benign): suspicious and category 4, 5 (suspicious, highly suggestive of malignancy): malignant.⁸

FNAC was performed in a patients with a palpable abnormality such as a discrete lump, circumscribed area of thickening or asymmetrical nodularity. Cytology was also performed on certain nipple discharges (e.g., blood stained, single duct). Two breast cytopathologists provided this service. An immediate report was given using the standard reporting categories: Benign, Suspicious and Malignant. Each element of the TTS was given a score of 1, 2, or 3 point for benign, suspicious, or malignant findings. Patient data, the results of clinical follow-up, and pathology results were collected. Sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV) of TTS were calculated according to histopathologic results. Analyses were performed with SPSS version

11.5 for windows software package.

Results

This study during period (1st November 1998 and 31st July 2003), 6400 files were conveyed 100 files had three main diagnostic features of this procedure, includes physical examination, mammography, FNAC in association with post operation pathology result. The Characteristics of the 100 study patients are presented in Table 1. As summarized in Table 2. 31 % breast lesions had a TTS of 3 or 4 points. All were benign on post operation pathology results. There were no cases of DCIS diagnosed on post operative surgery. In this study, Physical examination (6 FP; 8 FN) and Mammography (8 FP; 4 FN) and FNAC (4 FP; 7FN), The sensitivity and specificity of the individual test elements for all the data are summarized in Table 3.

Table 1.Characteristics of the 100 breast cancer patients who underwent Triple Test Score (TTS)

Age (Years)	
Mean	51.4 ± 7.4
Range	40-75
Breast lesion lateralization	
Right	51
Left	49
Type of tumor	
Benign	38
Ductal in situ	17
Lobular in situ	1
Invasive ductal	26
Invasive lobular	4
Invasive other	14

Table 2.Results of the Triple Test Score and post operation pathology results

Triple Test Score	No. or Percent	Malignant, Percent
3	28	0
4	3	0
5	23	16
>=6	46	100

Table 3.Stadstical Comparison of Triple Test Elements and Triple Test Score

Measure	Physical Examination	Mammography	Fine-Needle Aspiration	Triple Test score
Sensitivity	87%	93.5%	89%	98%
Specificity	86%	79%	90%	100%
P.P.V	90%	88%	93%	100%
N.P.V	80%	88%	83%	97%

Conclusions

The TTS retains its diagnostic sensitivity and specificity of 100% when the score does not equal 5 points. Thus, when the TTS was less than or equal to 4, it had a specificity of 100% and when the TTS was greater than or equal to 6, it had a sensitivity of 100%. Therefore, we continue to regard the TTS as a powerful clinical tool that permits rapid, minimally invasive, and accurate diagnosis of breast malignancies. In this study, the accuracy is 99%. We believe that in our practice, the "Triple Test Score" diagnosis service provides a reliable and accurate means of establishing a rapid diagnosis and is a safe and efficacious process for managing the ever-increasing number of patients presenting with breast masses. In this theory, it is possible that a woman could receive over treatment of a benign or premalignant lesion with this scoring system, and we inform women of this possibility.⁹ we are therefore confident of the safety of basing treatment decisions on this 3-part evaluation.

Diagnosis by TTS may also offer an advantage to women who elect to have their cancer treated by a modified radical mastectomy. It is the standard of care for women who have had prior biopsy to have the biopsy site excised along with the mastectomy.

The primary reason that TTS method appears to be less costly is the reduction in the need for open biopsy. We limited this analysis to assessment of the direct costs of open biopsy and a single adverse consequence post biopsy infection from the payer perspective. Vetto et al,⁶ reported that the use of the TTS can result in charge reductions of at least \$1412 per case. As that calculation was made at a time when 40% of our patients were still undergoing open biopsy for definitive diagnosis, use of the TTS can be expected to further lower patient charges.6zone advantage of this article comparing with the others is that all of them have post surgical pathologic results. For this reason the T.T.S sensitivity and specificity of this articles differs than the rest.

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