

Role of Modified Triple Test Scoring System for Evaluation of Palpable Breast Masses in Women Under Age 40

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ABSTRACT

This prospective analytical clinical study was carried out to determine if a modification of the triple test score in which ultrasonography is substituted for mammography could be developed to rapidly and accurately assess breast mass in women under 40 years of age. Total hundred women were included in this study. Women younger than 40 years with palpable masses were evaluated utilizing modified triple test scoring. Surgical oncologist performed physical examination radiologist performed ultrasonography and cytopathologist did FNAC. All the patients were below age 40; about 50% were between 25-29 years. The youngest patients were of 20 years of age. Seventy-five patients were married and 25 were unmarried. Eleven % of the patients gave history of breast cancer in one of their family members. All the patients have a breast lump; most of the patients found their lumps incidentally while palpating them; however 38% of the patients had associated pain. Weight loss and anorexia was present in 3(3%) cases. Most of the patients

53(53%) presented with breast problem of less than three month duration, 26(26%) presented with complaints of 4-6 months duration while 21(21%) having duration of complaints more than 6 months. Fifty-five cases (55%) of breast lump were found on left side as compared to right 45(45%). We thus conclude that to minimize delay and, therefore, reduce anxiety in majority of patients presenting to hospital and to avoid unnecessary out patient follow up and open biopsy, a policy of modified triple assessment (where ultrasonography is substituted for mammography especially female under the age of 40 years) with immediate reporting to provide a “one stop” diagnostic service proved highly beneficial for patients. The triple test score thus modified and named as modified triple test score (MTTS).

Key Words: Modified triple test score (MTTS); Palpable breast masses; Benign; Malignant.

INTRODUCTION

Human breast tissue because of hormonal influence is subjected to physiological variations leading to a number of pathological conditions both benign and malignant¹. Carcinoma breast is a leading cause of cancer deaths among females the world over, Approximately 182,800 new cases per year occur in USA, causing 40,800 deaths per year and the tool to minimize the death toll is early diagnosis of ca breast. The triple test scoring system was developed to pick up breast carcinoma in early stages of the disease. The mammogram was the part of the TTS with

sensitivity of 87%.^{2,3} People like crystal et al in 2003, Susan k in 2005, corsetti et al 2006 and sahin et al 2007 argued that USG in younger patients with dense breast tissues was having a sensitivity of 89% in detecting abnormalities in symptomatic breasts.^{4,5,6,7} Though the use of ultrasonography as a diagnostic modality in breast conditions is relatively fresh, yet it has gained a wide popularity. It is a non-invasive easily available, cheaper and accurate tool in diagnosing breast masses. It is very helpful in pre surgical assessment of tumor size of even 2mm.⁸

Among the imaging techniques commonly used, the role, advantages and limitations of mammography, ultrasound (US) and colour Doppler ultrasound are well known and extensively described in literature.⁹ Ultrasound represents an additional diagnostic tool that raises the detection rate of benign and malignant breast lesions. It is the method of choice for differentiating solid from the cystic lesions, for further characterizing mammographic findings and better appreciating palpable breast lesions. B-mode ultrasonography is used in every day practice.¹⁰ Fine-needle aspiration cytology has a high diagnostic accuracy rate (97%) in the hands of experienced clinical and cytopathologists.¹¹ Present study was carried out in an effort to determine, whether In our set up the results of modified triple test scoring system (MTTS) are comparable with that of conventional TTS system in patients of less than 40 years of age having breast masses.

MATERIAL AND METHODS

Total hundred female patients having palpable breast lumps and under 40 years of age attending surgical outpatient department Lahore General Hospital Lahore were included in this prospective analytical study which was carried out for one year (Jan, 2009 to December 2009). Patients 40 years and older, having any previous breast surgery and those with impalpable breast lumps were excluded from study. Women younger than 40 years with palpable breast masses were evaluated utilizing modified TTS (MTTS). Surgical oncologist preformed physical examination, radiologist preformed ultrasonography and cytopathologists preformed FNAC. Each component of the MTTS was scored independently by the consultant, as benign, suspicious, or malignant. The findings of each examination were scored, giving 1 point for each benign finding; 2 points for each suspicious finding and 3 points for each malignant finding. The final MTTS was the sum of three independent scores. Data analysis was computer based. Computer software SSPS ver. 10.0 was used to calculate frequencies and percentages of the variables included in Performa.

RESULTS

In our study 100 female patients were included; majority of these were Muslim housewives, only three of them were Christians and three were working women. (Table-1) All the patients were below the age

of 40 years. About 50% were between 25-29; the youngest subject was 20 years of age. (Table-2) Seventy-five patients were married and twenty-five were unmarried. Eleven out of hundred patients gave the history of breast cancer in one of their family members. Among them 4 had their elder sisters, 4 had their mothers and 3 had their grandmothers with history of breast cancer. All the patients have breast lump. Most of the patients found their lumps incidentally while palpating, however some patients noted their lumps due to pain. The most common associated symptoms were pain in the lump which was experienced by 38 cases (38%). Weight loss and anorexia was present in 3 cases (3%). Fifty-three (53%) patients were presented with breast problem of less than 3 months duration, 26 patients (26%) presented with 4-6 months duration while 21 patients (21%) presented with the complaints of more than 6 months (Table-3). Fifty-five cases (55%) of breast lumps were found in left breast as compared to right side 45 (45%) (Table-4). Examination of breast by surgical oncologist revealed skin over the breast was normal in all cases; none of them having nipple discharge. Upper outer quadrant was the most common site of the tumor (37%) one patient had lump in the central part of the breast (Table-5) sixty four (64%) lumps were found to be firm in consistency, 23 patients (23%) had hard and 13 patients (13%) had soft lump (Table-6). All the lumps were mobile. Most of the lumps i.e., 99(99%) were less than or equal to 5cm and only 1(1%) was measured more than 5cm in size (Table-7). A total of 100 breast masses were evaluated in women (mean age 30 years, range 20 to 39). Eight nine (89%) had a MTTS of 3 points (concordant benign). All these masses were benign on clinical follow up or on open biopsy done on patients request (n=9). Four masses (4%) had MTTS of 4 points. All four masses were benign on follow up (n=3 by biopsy, n=1 by clinical follow up). Five masses (5%) had MTTS of 5 points. All underwent biopsy analysis, and one was proved to be malignant. Two masses had MTTS \geq 6 points and both were malignant on biopsy. The overall malignancy rate for this series was 3% (table 8-11).

Table 1:
Frequency distribution of subject according to their religion

Religion	Number	Percentage
Islam	97	97.0
Christian	03	03.0
Total	100	100.0

Table 2:
Age distribution

Age(yrs)	Number	Percentage
20-24	35	35.0
25-29	45	45.0
30-34	15	15.0
≥35	05	05.0
Total	100	100.0

Table-3:
Duration of symptoms at time of presentation

Duration(months)	Number	Percentage
1-3	53	53.0
4-6	26	26.0
>6	21	21.0
Total	100	100.0

Table 4:
Distribution of subjects according to side of breast

Side	Number	Percentage
Left breast	55	55.0
Right breast	45	45.0
Total	100	100.0

Table 5:
Quadrants of breast

Quadrants	Number	Percentage
Upper outer quadrant	37	37.0
Upper inner quadrant	34	34.0
Lower outer quadrant	18	18.0
Lower inner quadrant	10	10.0
Central	1	1.0
Total	100	100.0

Table 6:
Consistency of tumor

Consistency	Number	Percentage
Hard	23	23.0
Firm	64	64.0
Soft	13	13.0
Total	100	100.0

Table 7:
Size of Lump (cm)

Size	Number	Percentage
≤5cm	99	99.0
>5cm	1	1.0
Total	100	100.0

Table 8:
Histopathological type

Type	Number	Percentage
Benign	97	97.0
Malignant	3	3.0
Total	100	100.0

Table 9:
Management

Management	Number	Percentage
Conservative (no surgery)	47	47.0
Excision of fibro adenoma	50	50.0
Lumpectomy (BCS) + auxiliary clearance+ chemotherapy + anti estrogen drug	1	1.0
Neo-adjuvant followed MRM + anti estrogen	1	1.0
MRM followed by chemotherapy +anti – estrogen	1	1.0
Total	100	100.0

Table 10:
Distribution of benign, suspicious and malignant cases using MTTs

MTTS	Benign	Suspicious	Malignant
Clinical examination	89	4	7
Ultrasonography	96	2	2
FNAC	96	2	2

Table11:
Modified triple test score

Diagnosis	Number	Score
Benign	89	3
Benign	4	4
Suspicious	5	5
Malignant	2	≥6

DISCUSSION

Breast cancer, which robs us all too frequently and prematurely of our mothers, sisters, wives and daughters, remains the leading organ site of cancer incidence and also remains invariably fatal if it is not cured by our initial efforts. It is the most common cancer in women all over the world. The incidence is increasing in the intermediate and low risk population of the South-East and South Asian countries.⁹ In Pakistan and India, patients present with breast cancer at an earlier age than in western countries.¹⁰ The tumors in women under 40 years of age are important because, they behave more aggressively as compared to the older patients. In a series of 980 cases, young women had an increased risk of regional failure and also increased risk of distant failure.^{11,12} It is also somewhat more difficult to detect abnormalities in young women because their breasts are firmer and more cystic than those of older women.^{13,14} Breast disease and its symptoms generate much media

attention. Patients have high expectations for the successful and efficient management of their symptoms. There is also an increasing professional requirements (e.g. through published guideline) on the part of clinicians for improved healthcare delivery for these patients.¹⁵ This public and professional awareness and concern has led to a change in the referral patterns of patients with breast symptoms. An increasing number of patients therefore, are being referred for specialist opinion with the benign to malignant ratio consistently rising.¹⁶ Most of these patients however, are in state of heightened anxiety until they have undergone specialist assessment, the necessary investigation and eventual reassurance.¹⁷ The MTTS scoring system which substitutes ultrasonography for mammography in women younger than age 40 years. 3D US allows to demonstrate breast masses in multiple planes. Distorsion of the surrounding soft tissues is an important sign indicative of malignancy.¹⁸ Use of computer algorithm may improve radiologist accuracy in distinguishing malignant from the benign breast masses on 3D US volumetric images. The same diagnostic accuracy as the TTS (Triple Test Score). It has 100% diagnostic accuracy when the MTTS is more than 5 points. In addition, the scoring system derived in this series for diagnosing breast masses using the MTTS is identical to that derived for the TTS. Masses with a MTTS of 3 and 4 points are benign and may be safely followed. Masses of a MTTS ≥ 6 points are all malignant and may proceed to definitive therapy. Only the masses with a MTTS of 5 points cannot be diagnosed and will require open biopsy. The MTTS reliably guides evaluation and treatment of palpable breast masses in women under age 40. MTTS 3 or 4 are always benign and with scores greater than or equal to 6 are malignant and should be treated accordingly. This approach avoids open biopsy in the majority of cases, while capturing all malignancies. The MTTS provides equivalent diagnostic effectiveness but substantially lower cost than traditional management.¹⁹ Such masses however, constituted only 5% of breast masses in this series. Thus 95% of women less than age 40 with palpable breast masses may spared an open biopsy, while still capturing all malignancies. Breast biopsies for benign breast masses result in scarring and disfigurement. However, it is the 3% malignancy rate for breast masses in this age group that prompts the excessive

number of breast procedures that are done, all in order to avoid missing the rare case of breast cancer. Furthermore there is a documented "trial of error" women aged 45 or younger with a self discovered breast mass and a false negative mammogram. In younger women false negative rate of mammography approaches 80%. This clinical trial of error include assuming that patient is too young to have breast cancer, that a negative mammograms and failure to obtain either cells or tissue from the mass for diagnostic evaluation.²⁰ The MTTS provides a multidisciplinary approach that approaches each of these errors specifically. Firstly, all young women with a breast mass are evaluated with an attitude that the mass is malignant until proved otherwise. Secondly, rather than relying on mammography, ultrasonography is utilized, which has a much lower false negative rate (Table-10) in this age group. Lastly, cells or tissue are obtained for analysis in every case; either by FNA or by opens biopsy in instances of a non-diagnostic MTTS of 5 points. Importantly the MTTS avoids these pitfalls of the "trial of error" while producing no scarring or disfigurement for the vast majority of women with benign breast masses.

CONCLUSION

To minimize delay and, therefore, reduce anxiety in the majority of cases presenting to hospital and to avoid unnecessary outpatient follow-up and open biopsy, a policy of triple assessment with immediate reporting to provide a "one stop" diagnostic service. MTTS proved to be useful and comparable, with conventional TTS with out hazard of radiation, in diagnosing carcinoma of breast in relatively younger population in our setup.

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