

A Comparative Study of Physical Examination and Ultrasonography in Determining the Size of Primary Tumours of Breast Carcinomas

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ABSTRACT

Purpose: This study was conducted to know the role of physical examination and ultrasonography in determining the size of primary breast carcinomas in reference to the pathological size as the size of tumors is important for accurate staging, choosing appropriate treatment options and assessing prognosis. **Patients and methods:** This was a descriptive study carried out at Jinnah Hospital, Lahore from 01-07-2001 to 30-03-2002. A total number of 60 female patients suffering from breast cancer were included in this study. All patients were confirmed by FNAC or biopsy. **Results:** The mean tumor size (Pathological) was 4.29cm Ultrasonic size (4.13) was more close to the pathological size as compared to that of measured by physical examination. In the majority of cases ultrasonography under estimated the size while it as over estimated by physical examination (4.85). **Conclusion:** We may recommend to sub start some fraction (0.558cm) from the size, measured by physical examination for the better assessment of the original size. In the same way, we can add some fraction (0.17cm) to the ultrasonic size for the better anticipation of the original size.

Key words: Breast, carcinoma, ultrasonography, physical examination.

INTRODUCTION

Breast carcinoma is the most frequently diagnosed cancer. It is the leading cause of deaths among women's Management of breast has always been a challenging task for surgeons as well as oncologist. Surgical management has changed in the past hundred years due to the understanding of pathology and mode of spread of the tumours¹. Previously Halsted mastectomy was used routinely in the early twentieth century. Now it has been widely replaced by modified radical mastectomies (MRM) and breast conservation surgery (BSC)². It became possible due to early diagnosis of breast caners with relatively smaller size tumors. Decision making in the favour of breast conservative surgery is dependent upon the accuracy of preoperative evaluation of the tumor size. Various modalities used currently in determining the tumor size in breast carcinomas are physical examination,

ultrasonography, mammography, computerized tomography (CT) and magnetic resonance imaging (MRI). Physical examination is the cheapest and easiest method being used for centuries to determine the size of breast lumps, even before its full significance was established³.

Although the use of ultrasonography in breast conditions is relatively fresh yet it has gained wide popularity. It is noninvasive, universally available, cheaper and accurate tool in diagnosing breast cancers. Though it is an operator dependent investigation however it can well differentiate between solid and cystic breast lumps and is also helpful in pre-surgical assessment of tumor size⁴.

This study was conducted to know the role of physical examination and ultrasonography in determining the size of primary breast cancers so that we can plan proper treatment and assess the prognosis.

PATIENTS & METHODS

Female patients of all age and social groups with clinically palpable breast cancers and proved by FNAC / biopsy were included in this study. A detailed history of the duration and presentation of the symptoms was taken from every patient. Family history was also taken regarding breast cancers. A thorough physical examination of all the lumps was done. Size of tumors was assessed by using measuring tape and vernier caliper. All other aspects of breast lumps involving the shape, margins consistency and its fixity to surrounding tissues were recorded. Axillary lymph node status in respect to its size, location, consistency and fixity were also noted. Routine preoperative investigations like complete blood count, urine complete examination and X-ray chest were performed. Mammography was done in most of the cases to assess the multicentricity and assess the status of opposite breast. Liver function tests (LFTS), liver scan and bone scan were performed for selected patients.

Patients were sent to Radiology department to assess the tumor size sonographically. Ultrasonographies were done by using high resolution real time device (7.5 to 10.9 MHZ) Electronically focused, transducers provided the ability to select multiplanar focusing through the image or a single focal plan through a specific area.

Surgical procedures adopted was modified adical mastectomy or breast conservation surgery. Specimens were sent to the pathology department for both gross and microscopic examination. Data master sheets was developed in computer software SPSS and data entry was done.

Paired observations were made for both the physical examination and ultrasonography in reference to Pathological size of tumor for all the patients.

Total paired difference, mean paired difference, standard deviation, P Value, t value and 95% confidence interval were calculated for each group. Paired 't' test was applied as a test of significance for both the groups.

RESULTS

The largest tumor identified histopathologically was of 8 cm and the smallest was of 2 cm in the greatest dimension. The mean tumor size.

Comparison of tumor size by physical examination with the pathological size

It was found that physical examination was over-estimating the size in 55 patients while it was under-estimating the size in 3 cases (5%). In two patients, there was no difference in the size by physical examination and pathological size.

The total size paired difference was +34.7cm and mean paired difference was +0.557cm with standard deviation of 0.322cm 't' value was 13.42 ($P < 0.0001$). Hence the difference was statically significant.

Comparison of ultrasonic size with pathological size

Ultrasonography was under-estimating the size in 48 patients while it was over estimating the size in 6 patients. There was no difference between the size of tumors in 6 patients. The total paired difference was -10.2cm while the mean difference was -0.17cm. With standard deviation of 0.192 't' value was 6.8 ($P < 0.0001$). Hence ultrasonography under-estimated the size significantly 95% confidence interval for mean difference was 0.21 to -0.13cm which is also statistically significant.

DISCUSSION

In this part of world, most of the patients of breast carcinomas present late. Late presentation is associated with large size tumors⁵.

Patients present late due to multiple factors like ignorance, fear of disease, superstitions and other socio economic problems.

In contrast, patients in developed countries present earlier due to the factors like better medical facilities, health education screening. Therefore, diagnosis is made at an earlier stage and average size of tumors is found to be smaller as shown in the Table 1.

Table 1: The Comparison of Distribution of Tumour Size in different series

Tumour size	Tumour Frequency (Percentage)		
	Present study 2001-2002 Pakistan	Tobar 1992 Sweden	Fishers 1975 USA
< 1 cm	0%	10.0%	05.00%
1.1 to 2cm	0.166%	31.26%	50.00%
2.1 to 5cm	71.67%	49.38%	30.00%
> 5cm	26.66%	09.36%	15.00%

Preoperative size evaluation is important for better staging of the breast cancers. Due to better assessment of the size, we can offer the patients breast conservation surgery in relatively small size cancers and in this way we can save many patients from the psychological trauma caused by loss of breasts in modified radical mastectomies. Preoperative evaluation of tumor size is also important to assess the stage and complications of the disease.

Studies conducted in the world to know the relative accuracy of different evaluating strategies of tumor size determination are few:-⁶⁻⁷

Physical examination is the oldest, easiest and cheapest method used to assess the preoperative size of breast tumors traditionally. It has been proved that there is a good agreement between the clinical and pathological measurements of tumor size. It has also been documented to be the best noninvasive predictor of the real size of the locally advanced primary breast cancers.

In our study physical examination slightly over estimated the size in most of the cases. It is comparable study conducted by Meden et al who also have supported the issue of over estimation of tumor size by physical examination. Causes of over estimation of the tumor size by physical examination may be due to exposure of the patients, position of patients and inaccurate method of examination. It may also be due to the inclusion of skin and normal subcutaneous tissue during measurements and skin edema.

The preferred technique for measuring the size by physical examination includes proper positioning of patients thoroughness of search, proper placing and movements of fingers of

examiner⁸ Technique can also be improved by a trained person instead of junior inexperienced doctors. Use of vernier collaper in place of measuring tape is also recommended.

Ultrasonography is helpful in pre surgical assessment of tumor size for simple lesion of 20mm or even less. Although ultrasonography tends to under estimate the pathological tumor size yet 83% of the invasive ductal carcinomas of breast fall within 1cm and 100% within 2cm extension of sonographically measured size. Sonographic tumor size determination has proved valuable when mammography failed to delineate the tumor, particularly in patients with dense breasts⁹.

Table 2: The Comparison of Average size of tumors by Ultrasonography, physical examination and pathological examination in different series

Modality	Our (2001 - 02)	Medan (1995)
USG	4.13	2.61
Physical examination	4.85	3.06
Pathological	4.29	2.57

The issue of under estimation of tumor size by ultrasonography has also been supported by Yang et. al However Meden and his companions have documented that ultrasonography slightly over estimated the tumor size in their sutudy¹⁰ (Table 2).

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