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Original Research Article.

Study to Find Out Malignant Breast Masses Detected Only by Ultrasound: An Institutional Based Study

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ABSTRACT

Background: Breast cancer is the most frequently diagnosed cancer and the leading cause of cancer death among females worldwide. Ultrasound has been used to classify benign, solid lesions with a negative predictive value of 99.5%. Hence; under the light of above mentioned data, the present study was undertaken to find out malignant breast masses detected only by ultrasound.

Materials & Methods: A total of 540 women were analyzed. All the cases were broadly classified into two categories based on mammographic findings as follows: Visible and Non-visible. Based on clinical findings, all the cases were broadly categorized into two categories as follows: Palpable and Non-palpable. Using ultrasound guidance, percutaneous sampling of the solid masses was done by fine needle aspiration biopsy (FNAB) and either were excised surgically or followed by sequential imaging. All the results were recorded in Microsoft excel sheet and were analyzed by SPSS software.

Results: In 95 patients, solid masses were detected on ultrasonography. Out of these 95 patients, in 48 patients, the clinical and mammographic findings were non-palpable and non-visible. 27 out of these 48 patients gave consent for FNABs. Malignant masses were confirmed in 6 patients, while suspicion of malignancy was present in 4 patients. In rest of the 17 patients, benign masses were present.

Conclusion: Mammographic and clinical undetected cases of breast cancer can be diagnosed with ultrasound. Hence; it is out strong recommendation to carry out ultrasound should be done all suspected subjects.

Key words: Breast cancer, Ultrasound.

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INTRODUCTION

Breast cancer is the most frequently diagnosed cancer and the leading cause of cancer death among females worldwide. Breast masses are classified as either malignant tumors or benign growths and masses.[1] Assessment of pathology is the golden standard in diagnosing a breast mass; however, other less invasive evaluations are also available that save the time and resources for both the patient and the health systems.[2]

Ultrasound can assess the morphology, orientation, internal structure, and margins of lesions from multiple planes with high resolution both in predominantly fatty breasts and dense, glandular structures.[3,4] Among those characteristics, surrounding tissue, shape, margin contour, lesion boundary, and posterior acoustic features were significant factors to consider when classifying a lesion. Ultrasound has been used to classify benign, solid lesions with a negative predictive value of 99.5%.[5,6] Hence; under the light of above mentioned data, the present study was undertaken to find out malignant breast masses detected only by ultrasound.

MATERIALS & METHODS

The present study was planned in the Department of Radiodiagnosis, Saraswathi Institute of Medical Sciences, Hapur Road, Anwarpur, Uttar Pradesh (India) and it included assessment of efficacy of ultrasound in detection of malignant breast masses that are undetectable by mammography.

A total of 540 women were analyzed. All the cases were broadly classified into two categories based on mammographic findings as follows:

- Visible
- Non-visible

Based on clinical findings, all the cases were broadly categorized into two categories as follows:

- Palpable
- Non-palpable

Using ultrasound guidance, percutaneous sampling of the solid masses was done by fine needle aspiration biopsy (FNAB) and either were excised surgically or followed by sequential imaging.

Methodology

- Out of 540 patients, Segregation of patients with ultrasound positive findings (solid masses)
- Among these ultrasound positive patients, segregation of patient with mammographic and clinical negative findings
- Among the ultrasound positive and clinical & mammographic negative patients, segregation of patients who gave consent for undergoing FNABs
- Segregation of patients on the basis of FNABs findings

All the results were recorded in Microsoft excel sheet and were analyzed by SPSS software. Chi- square test was used for assessment of level of significance.

RESULTS

In the present study, a total of 540 subjects were analyzed. Mean age of the patients of the present study was 48.6 years. Majority of the patients belonged to the age group of more than 45 years. In the present study, in 95 patients, solid masses were detected on ultrasonography.

Out of these 95 patients, in 48 patients, the clinical and mammographic findings were non-palpable and non-visible. 27 out of these 48 patients gave consent for FNABs. Malignant masses were confirmed in 6 patients, while suspicion of malignancy was present in 4 patients. In rest of the 17 patients, benign masses were present.

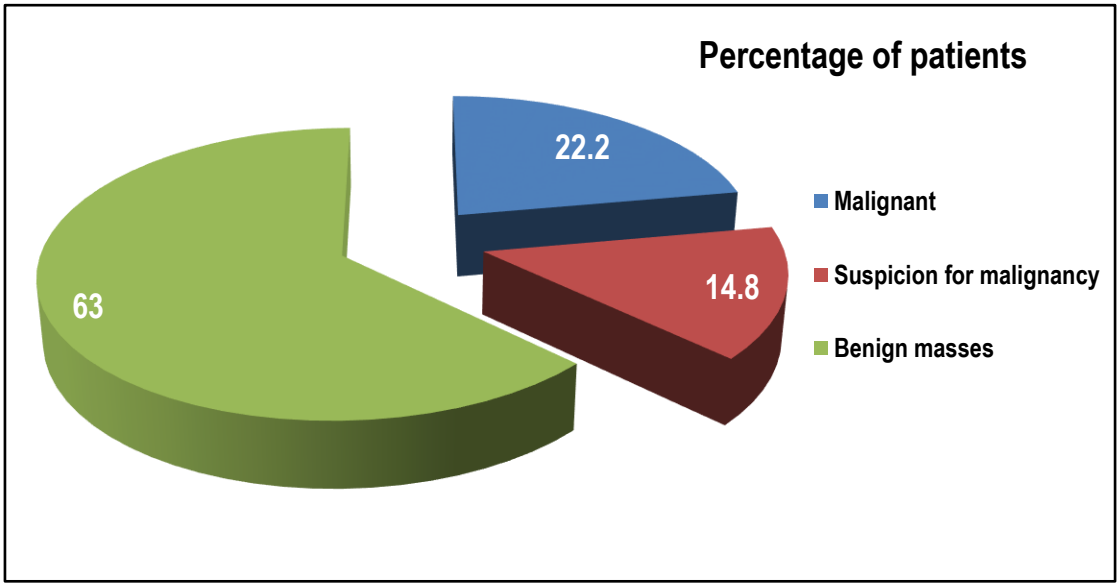
Table 1: Ultrasonography findings

Parameter	Number
Total patients	540
Mean age	48.6 years
Presence of solid masses on ultrasound	95
Presence of solid masses on ultrasound in clinical and mammographic negative cases	48

Table 2: FNABs results in ultrasound positive and clinical and mammographic negative cases

FNABs results	Number of patients	Percentage of patients
Malignant	6	22.2
Suspicion for malignancy	4	14.8
Benign masses	17	63
Total	27	100

Graph 1: FNABs results in ultrasound positive and clinical and mammographic negative cases



DISCUSSION

For breast cancer screening, ultrasound has been applied as an adjunct imaging tool for mammography. Handheld ultrasound for the whole breast is time-consuming. A large pendulous breast increases the difficulties of ultrasound exams. Although more breast lesions could be found, most of them are benign, which increases the false-positive rate of breast cancer screening and increases biopsy recommendations in screening.[7-9] Hence; under the light of above mentioned data, the present study was undertaken to find out malignant breast masses detected only by ultrasound.

In the present study, a total of 540 subjects were analyzed. Mean age of the patients of the present study was 48.6 years. Majority of the patients belonged to the age group of more than 45 years. In the present study, in 95 patients, solid masses were detected on ultrasonography. Out of these 95 patients, in 48 patients, the clinical and mammographic findings were non-palpable and non-visible. Buchberger W et al assessed clinically and mammographically occult breast lesions. Diagnoses were confirmed by ultrasound-guided fine-needle aspiration, core-needle biopsy, or surgical biopsy. In 8,103 women with normal

findings at mammography and physical examination, 32 cancers and 330 benign lesions were detected in 273 patients with sonography only. Eight additional cancers were found in 867 patients with a malignant (n = 5) or a benign (n = 3) palpable or mammographically detected index lesion. The overall prevalence of cancers detected with screening sonography was 0.41%, and the proportion of sonographically detected cancers to the total number of nonpalpable cancers was 22%. In conclusion, the use of high-resolution sonography as an adjunct to mammography in women with dense breasts may lead to detection of a significant number of otherwise occult cancers that are no different in size from nonpalpable mammographically detected cancers.[10]

In the present study, 27 out of 48 patients (ultrasound positive) gave consent for FNABs. Malignant masses were confirmed in 6 patients, while suspicion of malignancy was present in 4 patients. In rest of the 17 patients, benign masses were present. In another study conducted by Okamoto H et al, authors performed fine-needle aspiration biopsy (FNAB) under ultrasound (US) guidance to manage the nonpalpable or small breast masses detected by US examination and to distinguish between benign and malignant tumors. FNAB under US guidance is useful for the management of nonpalpable or small breast masses; it is sensitive for distinguishing between benign and malignant tumors and may reduce unnecessary surgical procedures and replace conventional manual aspiration biopsy.[11] Buchberger W et al determined how often physician-performed high-resolution sonography can detect nonpalpable breast lesions not revealed by mammography. Six thousand one hundred thirteen asymptomatic women with breast density grades 2-4 and 687 patients with palpable or mammographically detected breast masses underwent sonography as an adjunct to mammography. All sonographically detected, clinically and mammographically occult breast lesions that were not simple cysts were prospectively classified into benign, indeterminate, or malignant categories. The mean size of invasive malignancies detected only by sonography was 9.1 mm, which was not significantly different from the mean size of invasive cancers detected by mammography (p = .07). The sensitivity of the prospective sonographic classification for malignancy was 100%, and the specificity was 33.5%. The use of high-resolution sonography as an adjunct to mammography in women with dense breasts may lead to detection of a significant number of otherwise occult malignancies that are no different in size from nonpalpable mammographically detected lesions.[12]

CONCLUSIONS

Under the light of above mentioned results, it can be concluded that mammographic and clinical undetected cases of breast cancer can be diagnosed with ultrasound. Hence; it is out strong recommendation to carry out ultrasound should be done all suspected subjects.

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