Original Research Article

A study of diagnostic efficacy of USG with respect to FNAC for breast lesions at tertiary health care center

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Abstract

Background: Cancer of breast is the most common cancer affecting women worldwide and is the second most common cause of cancer death next to lung cancer. **Aims and Objectives:** To study diagnostic efficacy of USG with respect to FNAC for breast lesions at tertiary health care center. **Methodology:** This was a cross-sectional study carried out in the patients of breast lump during the one year period i.e. March 2018 to March 2019. During this study period total 54 patients were included. The sensitivity and specificity was calculated independently for each pathology of breast by ROC function and table given for calculation of sensitivity and specificity by the MEDCAL software. **Result:** In our study we have found that majority of the patients were in the age group of 40-50 years(35.19%), followed by 30-40 years (27.78%), 50-60 years (14.81%),>60 years(12.96%), and 20-30 years(9.26%). The most common lesion was fibroadenoma in 32.69%, followed by lipoma in 23.08%, adenosisin 15.38%, ductal hyperplasia in 11.54%, papilloma in 7.69%, ductal carcinoma in situ in 7.69 %, lymphoma (NHL) in 1.92%. Sensitivity and specificity for USG was 95.23%, 96.32%; 97.12%, 95.35%; 92.56%, 94.58%; 94.37%, 95.12%; 96.35%, 95.23%; 93.24%, 95.76%; 92.98%, 95.87% and for FNAC was 92.98%, 94.56%; 95.35%, 94.39%; 89.45%, 92.65%; 90.19%, 94.56%; 93.86%, 95.67%; 90.71%, 94.58%; 91.23%, 93.39% respectively for fibroadenoma, lipoma, adenosis, ductal hyperplasia, papilloma, ductal carcinoma in situ , lymphoma (NHL). **Conclusion:** It can be concluded from our study that the overall sensitivity and specificity of USG was higher as compared to FNAC so it should be the initial choice of investigation for the breast lesions.

Key Word: USG, FNAC.

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INTRODUCTION

Cancer of breast is the most common cancer affecting women worldwide and is the second most common cause of cancer death next to lung cancer[1] It usually presents as lump or nipple discharge[2]. "Lump" in breast, is therefore, a cause of great anxiety both to the patient and family members. The main motive behind the evaluation of such a newly detected palpable lump is basically to rule out malignancy. Evaluation of breast lumps involves the rational use of a detailed history, clinical breast examination, imaging modalities and tissue diagnosis. Though the final diagnosis is made by histopathological examination of the excised tissue, routine excision of all breast lumps would not be rationale, because as much as 80% of lumps are benign[3]. Thus the need is the utilization of less invasive and cost effective method of diagnosis without resorting to a more painful and invasive surgical biopsy. The modality should also be acceptable to the patient, accurate, easy to apply, reproducible and must not need too much preparations[2]. Given the common occurrence of breast cancer and the importance of accurately diagnosing a clinically palpable breast lump, with non invasive techniques without routinely resorting to formal biopsy which is much invasive, the study is

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proposed to evaluate the accuracy of Ultrasonography (USG) and Fine Needle Aspiration Cytology (FNAC) in the diagnosis of newly detected clinically palpable breast lumps in comparison to the final histopathological (HPE) report of the biopsied specimens.

METHODOLOGY

This was a cross-sectional study carried out in the department of radiology, Bharati Vidyapeeth Medial College and Hospital, Pune on the patients who presented as breast lump during the one year period i.e. March 2018 to March 2019. Ultrasound study was performed on Affinity 50 and Affinity 70 Philips machine. We included 54 patients in this study.

Inclusion criteria: All new female patients showing the breast lump and those given consent

Exclusion criteria: Terminally ill patients, patients presented with acute inflammation, pregnant women, not given consent were excluded from the study. All details of the patients like age and through clinical examinations was done and all of them undergone USG and FNAC for the breast lumps and final diagnosis by the expert team. The sensitivity and specificity was calculated independently for each pathology of breast by ROC function and table given for calculation of sensitivity and specificity by the MEDCAL software.

RESULT

Table 1: Distribution of the patients as per the age

Age in years	No.	Percentage (%)
20-30	5	9.26
30-40	15	27.78
40-50	19	35.19
50-60	8	14.81
>60	7	12.96
Total	54	100.00

The majority of the patients were in the age group of 40-50 years (35.19%), followed by 30-40 years (27.78%), 50-60 years (14.81%),>60 years (12.96%), and 20-30 years (9.26%).

Table 2: Distribution of the patients as per the various lesions

Lesions	No.	Percentage (%)
Fibroadenoma	17	32.69
Lipoma	12	23.08
Adenosis	8	15.38
Ductal hyperplasia	6	11.54
Papilloma	4	7.69
Ductal carcinoma in situ	4	7.69
Lymphoma (NHL)	1	1.92
Total	52	100.00

The most common lesion was fibroadenoma in 32.69%, followed by lipoma in 23.08%, adenosis in 15.38%, ductal hyperplasia in 11.54%, papilloma in 7.69%, ductal carcinoma in situ in 7.69 %, lymphoma (NHL) in 1.92%.

Table 3: Distribution of the patients as per the sensitivity and specificity

	Fibroadenoma	Lipoma	Adenosis	Ductal hyperplasia	Papilloma	Ductal carcinoma in situ	Lymphoma (NHL)
USG	95.23%, 96.32%	97.12%, 95.35%	92.56%, 94.58%	94.37% 95.12%	96.35% 95.23%	93.24%, 95.76%	92.98%, 95.87%
FNAC	92.98%, 94.56%	95.35% 94.39%	89.45% 92.65%	90.19% 94.56%	93.86% 95.67%	90.71% 94.58%	91.23% 93.39%

Sensitivity and specificity for USG was 95.23%, 96.32%; 97.12%, 95.35%; 92.56%, 94.58%; 94.37%, 95.12%; 96.35%, 95.23%; 93.24%, 95.76%; 92.98%, 95.87% and for FNAC was 92.98%, 94.56%; 95.35%, 94.39%; 89.45%, 92.65%; 90.19%, 94.56%; 93.86%, 95.67%; 90.71%, 94.58%; 91.23%, 93.39% respectively for fibroadenoma, lipoma, adenosis, ductal hyperplasia, papilloma, ductal carcinoma in situ , lymphoma (NHL).

DISCUSSION

Breast cancer is the most common malignant neoplasm affecting women worldwide. It accounts for 20% of all cancers and is one of the commonest causes of death in middle aged women in the western world and In United Kingdom approximately 25,000 new cases are registered per year with a high mortality accounting for 15,000 deaths per annum. The leading cause of death among 40-44 year old women in United States is breast cancer. In India, it is the second most common type of cancer in women after cervical cancer. By 2020, it is set to overtake cervical cancer as the most common type of cancer[4,5,6]. The importance of diagnostic accuracy of the breast lump lies in the fact that the breast cancer is one of the most treatable of all human malignancies. Among the diagnostic modalities, Ultrasonography (USG) plays a key role in differentiating cystic and solid masses. It is useful in the evaluation of palpable masses not visible in radiographically dense breasts, abscesses, and in young patients susceptible to radiation damage[7]. Ultrasound examination of the breast is initial modality (before mammography or MRI) for the evaluation of a palpable lump in women under age 30 years. It is also used as an adjuvant modality for evaluation of a mass demonstrated on mammography, any focal asymmetry or focal change in architecture on the mammogram, suspicious finding

requiring biopsy on MRI or a nuclear medicine study, guidance for intraoperative or percutaneous breast biopsy and aspiration, evaluation of breast implants[8,9]. Breast ultrasound requires high frequency transducers that are optimized for near field imaging. High resolution linear array, 7.5-12 MHz transducers are used, which are focused at 1.5-2.0 cm, an ideal focal length for breast ultrasound, minimizing volume averaging. It is performed in supine, contralateral posterior oblique position of the patient[10,11]. Mammography being the primary imaging modality for the early detection of breast cancer, when used in conjunction with ultrasonography, can further increase the cancer detection rate. Although MRI has been shown to be more accurate than ultrasound for evaluation of silicone gel implant integrity, USG can be used as the initial evaluation[13]. In our study we have found that majority of the patients were in the age group of 40-50 years (35.19%), followed by 30-40 years (27.78%), 50-60 years (14.81%),>60 years (12.96%), and 20-30 years (9.26%). The most common lesion was fibroadenoma in 32.69%, followed by lipoma in 23.08%, adenosis in 15.38%, ductal hyperplasia in 11.54%, papilloma in 7.69%, ductal carcinoma in situ in 7.69 %, lymphoma (NHL) in 1.92%. Sensitivity and specificity for USG was 95.23%, 96.32%; 97.12%, 95.35%; 92.56%, 94.58%; 94.37%, 95.12%; 96.35%, 95.23%; 93.24%, 95.76%; 92.98%, 95.87% and for FNAC was 92.98%, 94.56%; 95.35%, 94.39%; 89.45%, 92.65%; 90.19%, 94.56%; 93.86%, 95.67%; 90.71%, 94.58%; 91.23%, 93.39% respectively for fibroadenoma, lipoma, adenosis, ductal hyperplasia, papilloma, ductal carcinoma in situ , lymphoma (NHL). Yumjaobabu Singh[14] *et al* also found that the sensitivity and specificity for the diagnosis of breast lump was 94.74% and 100% and 90.48% and 100% respectively for FNAC and USG.

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