ULTRASOUND EVALUATION OF PALPABLE BREAST MASS WITH FNAC CORRELATION

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ABSTRACT

Introduction: Breast cancer is the most frequently diagnosed cancer as well as the leading cause of cancer death in women worldwide. As it is progressively affecting more women in productive age group, it is of utmost importance to help diagnose the disease at the earliest.

Aims: To find the accuracy of ultrasound in diagnosis of benign and malignant breast masses and to correlate the benign and malignant ultrasound features with tissue diagnosis.

Materials and Methods: The present study was a hospital based descriptive epidemiological study with cross sectional design. This Study was conducted from October 2021 - September 2022 at Department of Radiology, Murshidabad Medical College & Hospital. Total 94 patients were included in this study.

Result: Right breast was slightly more involved (44.7%) than left breast (40.4%) among the study participants. Upper outer quadrant of breast was commonest location for involvement (59.6%). FNAC suggests proportion of malignant breast lesion among 26.6% of the study participants.

Conclusion: Ultrasound was able to diagnose all the malignant cases missed by FNAC and in case of indeterminate reports by ultrasound FNAC was able to diagnose benign and malignant lesions accurately.

Keywords: Breast lumps, Ultrasonography, biopsy and FNAC.

INTRODUCTION

Breast cancer is the most frequently diagnosed cancer as well as the leading cause of cancer death in women worldwide. As it is progressively affecting more women in productive age group, it is of utmost importance to help diagnose the disease at the earliest. [1]

Breast cancer is found to be the leading cancer in woman in both developed and developing countries across the world. Cancer incidence in developing countries has been increased due to lack of awareness and detection in late stages. Detection of cancer in the early stage can improve the survival of patients and cancer control can be achieved. [2]

Breast cancer has evolved as a multifactorial disease with varied factors like genetic, environmental, demographic, lifestyle, hormonal, reproductive, race, ethnicity among few that contribute towards its occurrence. [3]

Palpable breast mass is a common clinical complaint for breast diseases that can be innocuous benign cysts to malignant tumours. The distinction of benign from malignant is of utmost importance for patient care and appropriate management. [4] Evaluation of breast lumps begins with a detailed history, clinical examination of both breasts, various imaging

modalities and tissue diagnosis. Although the final diagnosis is based upon histopathological examination of the excised tissue, it would be irrational to excise all breast lesions due to the fact that almost 80 % of lumps are benign. [5]

Delayed diagnosis of breast cancer leading to late implementation of treatment strategies (surgery, chemotherapy, radiation) increases the risk of patient mortality and lowers the survival rate. Currently imaging techniques; like mammography, ultrasound or MRI, physical examination, biopsy techniques like fine needle aspiration cytology, core needle biopsy, surgical biopsy, image-guided biopsy or sentinel lymph node biopsy are commonly used techniques for diagnosing breast cancer. [6]

Breast Ultrasonography has evolved as an important complementary modality to mammography, and it is performed along with the mammography for diagnosis of lesions. Sono-mammography can differentiate solid and cystic masses. [7,8] The image quality has improved the confidence in correct identification of benign lesions and malignant lesions. [9] [10]

USG seems more suited as a screening method owing to advantages like simplicity, real time dynamic imaging and non-invasive nature of the procedure; but the specificity is poor as most solid tumours are benign. To obtain acceptable specificity, various characteristics of the tumours must be evaluated according to the Breast Imaging Reporting and Data System (BIRADS) criteria defined by the American College of Radiology (ACR). [11]

Routine breast imaging by mammography is recommended in women age 40 upwards at regular intervals. In women under the age of 40 year, breast imaging is done to assess focal areas of clinical concern, such as palpable lumps or sites of pain. Only clinical breast examination alone is unreliable and insufficient to differentiate between benign and malignant lesions and hence, imaging is used for evaluation to better delineate the lesions. [12] [13]

With this background knowledge the present study was conducted to find the accuracy of ultrasound in diagnosis of benign and malignant breast masses and to correlate the benign and malignant ultrasound features with tissue diagnosis.

MATERIALS AND METHODS

Study Type and Design:

It was a hospital based descriptive epidemiological study with cross sectional design.

Study Area:

Department of Radiology, Murshidabad Medical College & Hospital

Study Period:

One year: October 2021 - September 2022

Study Population:

The study group consisted of female subjects having palpable breast lump who were sent to Radiology dept for sonological investigation.

Inclusion Criteria:

- Female patients with palpable Breast lump willing to undergo USG, FNAC and further biopsy were included.

Exclusion Criteria:

- Cystic breast lesions diagnosed by USG.
- Breast abscess presenting as lump and yielding pus on aspiration
- Patients with known history of breast malignancy (BI-RADS 6).
- Breast lump with ulcer.

Statistical Analysis:

For statistical analysis data were entered into a Microsoft excel spreadsheet and then analyzed by SPSS 27.0. and GraphPad Prism version 5. Data had been summarized as mean and standard deviation for numerical variables and count and percentages for categorical variables. Z-test (Standard Normal Deviate) was used to test the significant difference of proportions. p-value ≤ 0.05 was considered for statistically significant.

RESULT AND DISCUSSION

The present study was a hospital based descriptive epidemiological study with cross sectional design. This Study was conducted from October 2021 - September 2022 at Department of Radiology, Murshidabad Medical College & Hospital. Total 94 patients were included in this study.

Findings of the study shows that, Majority of the study participants were in between the age group of 20 to 35 years (44.7%), followed by 36 to 50 years. Proportion of Muslims were higher in the present study (68.1%). Majority of the study subjects were multiparous (48.9%), followed by primipara. Most of the study participants had completed their primary (36.2%) and middle schooling (30.9%). **Chhadi et al** [14] in their study found that majority (32.8%) of the patients with breast lump belonged to age group in between 31 to 40 years. Stephen B et al [14] noted 43.7% of the cases belonged to 30-39 years age group.

Breast lump was the commonest presenting symptom for doing USG (56.4%), followed by multiple symptoms (41.5%) in the present study. For 21.3% study subjects there was family history of breast cancer.

Right breast was slightly more involved (44.7%) than left breast (40.4%) among the study participants. Upper outer quadrant of breast was commonest location for involvement (59.6%). **Stephen et al** [15] in their study also noted that upper outer quadrant of breast was the commonest location of involvement. Majority of the lesions were oval in shape (62.8%).

Almost in half of the cases (48.9%) margin of the lesions were circumscribed, followed by micro lobated among 25.5% cases. Hypoechoic lesion in USG was the commonest finding (83%).

In 56.4% cases there was posterior acoustic enhancement, followed by shadowing in 29.8% cases. Almost in two third of the cases there was increased longitudinal vs ant-post ratio (71.3%).

Overlying skin was normal among 85.1% study participants. There was retraction of skin among 11.7% subjects and only in 3.2% subjects there was skin thickening. Among 19.1% study participants there was infiltration of muscle. In 59.6% cases there was no involvement of axillary lymph node.

More than half of the study participants had benign breast lesions (52.1%) and there was suspicion or confirm malignancy among 31.9% of the study subjects. Though proportion of malignant lesion was 31.9% on USG findings, FNAC suggests proportion of malignant breast lesion among 26.6% of the study participants. The percent agreement of these 2 modalities was 83.4%. The reason behind less number of malignant cases diagnosed by FNAC might be due improper sampling of the study participants.

CONCLUSION

Based on the findings and interpretation of the present study as presented and discussed in the previous sections the following conclusions can be drawn:

➤ Ultrasonography helps in early detection of breast malignancy in young and pregnant women. Importance of breast imaging is not to miss malignant lesion in early stage. In the present study the agreement between ultrasound and FNAC is found to be 83.4%. Ultrasound was able to diagnose all the malignant cases missed by FNAC and in case of indeterminate reports by ultrasound FNAC was able to diagnose benign and malignant lesions accurately. Thus, both the modalities are considered complementary to each other. When Ultrasound and FNAC are used together in the diagnosis of benign and malignant breast lesions the need of surgical biopsy for benign lesions can be reduced.

➤ Factors which were more predictive of benign and malignant features were identified with ultrasound. These features have the potential to help decrease the number of biopsies performed for benign solid masses. This study results were encouraging in that we were able to identify the important ultrasound features for differentiating malignant and benign masses.

➤ These features have the potential to help us to decrease the need for radiation exposure on mammography & the number of biopsies performed for benign solid masses. Thus, ultrasound is a useful supplement to FNAC/ Biopsy in diagnosis of benign and malignant lesions.

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Table 1: Distribution of study participants according to location of lesion in breast(n=94)

Location of lesion	Frequency	Percent
Upper outer	56	59.6
Upper inner	20	21.3
Lower outer	12	12.8
Lower inner	6	6.4
Total	**94**	**100.0**

Table 2: Distribution of study participants according to echogenicity (n=94)

Echogenicity	Frequency	Percent
Anechoic	1	1.1
Hypoechoic	78	83.0
Isoechoic	8	8.5
Hyperechoic	4	4.3
Complex cystic & solid	3	3.2
Total	**94**	**100.0**

Table 3: distribution of FNAC

FNAC	Frequency	Percent
Benign	69	73.4
Malignant	25	26.6
Total	**94**	**100.0**

Table 4: distribution of USG grades (BIRADS)

USG grades (BIRADS)	Frequency	Percent
Negative	1	1.1
Benign	49	52.1
Probable benign	14	14.9
Suspicious for malignancy	21	22.3
Malignancy	9	9.6
Total	**94**	**100.0**