USG evaluation of spectrum of breast lesions in Kosi region of India and their correlation with histopathology

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Abstract
Purpose: To evaluate the breast lesions encountered in Kosi region of Bihar with ultrasonography and correlate the findings with pathology so as to know about the situations where unnecessary invasive investigations can be avoided. **Materials And Methods:** Of all the patients coming to radiology department for breast USG in the period from September 2017 to August 2018 were included and a total of 119 patients were studied with the help of GE-P5 USG machine. FNAC findings of these patients were noted and correlated with USG findings with the help of statistical tests. **Results:** Out of the total 119 patients, 43 were fibroadenoma, 26 fibrocystic changes, 8 breast abcsess, 7 carcinoma breast, 1 male carcinoma breast, 3 phyllodes tumor, 6 simple cyst, 5 mastitis, 4 duct ectasia and 16 normal as per pathology. The sensitivity of USG in detecting these lesions was 87.38% and specificity was 75%. The positive predictive value is 95.74% and negative predictive value is 48%. **Conclusion:** USG is a safe, non-ionising, easily accessible, inexpensive, non-invasive and effective method for evaluation of breast lesions. A lesion predicted as benign by USG is likely to be proved as benign by pathology. So it can reliably be used for diagnosis in breast diseases and in cases rendered as benign by USG, unnecessary invasive pathological investigations can be avoided. Also a predominance of benign lesions is noted in this region which can be attributed to breast feeding practices.
Key Words: Breast USG, Breast lump, FNAC correlation.

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INTRODUCTION

Any breast lump is a cause of great concern in both young and old patients. Breast cancer is among the most common causes of cancer deaths today, coming fifth after lung, stomach, liver and colon cancers. It is the most common cause of cancer death in women. USG is used as a 1st line modality of imaging for breast lesions in patients <35years and as an adjunct to mammography in older patients [1]. It offers the advantages of

- No ionizing radiation
- No invasiveness
- No patient discomfort
- Can detect non-palpable masses
- Superficial position of breast tissue allows acquisition of high resolution images.

More recently, USG elastography seems to be quite promising and comparable to tissue level diagnosis. Other modalities include mammography which has the disadvantage of ionizing radiation and MRI which is limited due to high cost and availability. The purpose of this study was to evaluate the spectrum of breast lesions in this region by USG and to assess its reliability by correlating the findings with histopathology and also to know the situations where unnecessary invasive investigations can be avoided.

MATERIALS AND METHODS

The patients coming to radiology department for breast USG who also underwent histopathological examination in the period from Sept'2017 to August'2018 were included. A total of 119 patients were studied with the help of high frequency probe of GE-P5 USG machine and patient lying supine.

118 patients were female and 1 was male. Age of patients ranged between 17-68 years(mean age 42.5 years).

The lesion were studied according to following characteristics [2]:

- Shape (round/oval/irregular)
- Margin (circumscribed/not circumscribed)
- Orientation (wider than tall/taller than wide)
- Boundary (abrupt interface/halo)
- Echo pattern (hypo/iso/hyperechoic)
- PA-Shadow or Enhancement (seen/not seen)
- Calcifications (present/absent or macro/micro)
- Axillary lymph node status
- Skin/Nipple involvement and internal vascularity.

RESULTS AND ANALYSIS

Table 1:			
LESION	No. of FNAC +	No. of USG +	Remarks
Fibroadenoma	43	40	1given lipoma, 1 CA, 1 dilated Duct
FCC	26	25	1 given normal
Abscess	8	5	2 given malignant and 1 incunclusive
Cyst	6	6	All had PAE
Mastitis	5	3	2 given normal
Ectasia	4	4	
Phyllodes	3	1	1 given CA and 1 giant fibroadenoma
Carcinoma	8	6	2 given fibroadenoma
Normal	16	12	4 given FCC

Key: FCC- Fibrocystic change, CA- Carcinoma, PAE- Posterior Acoustic Enhancement

	FNAC +ve	FNAC -ve
USG +ve	90	4
USG −ve	13	12

- Most of the patients presented with chief complaint of lump, followed by pain and discharge.
- Sensitivity = 87.38%, this implies that USG is fair for ruling out a disease given negative by USG
- Specificity = 75%, this implies that no. of false positives will be significant [3].
- PPV = 95.74%   {They both correspond to
- NPV= 48%   {high prevalence (87%) in study population.
- Of 11 malignant lesions, 7 were detected as malignant by USG (Sn= 63.6%, Sp.= 75%) and of 92 benign, 83 were detected as benign (Sn= 90.2%, Sp.= 75%).
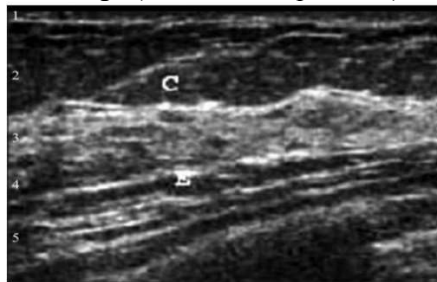

Figure 1: Normal layers of breast parenchyma

Figure 2: Fibrocystic changes

Figure 3: Breast Abscess with reactive axillary lymphadenopathy
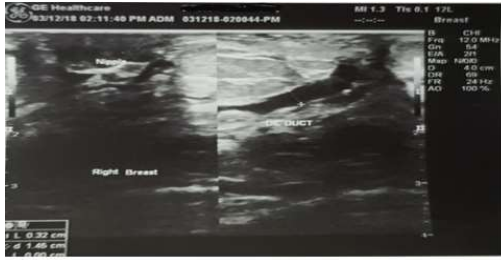

Figure 4: Fibroadenoma

Figure 5: Duct ectasia

Figure 6: Malignant Breast Mass

DISSCUSSION

- Features suggesting malignancy: hypoechogenecity, taller than wider, spiculated/irregular margins, absence of halo, microcalcification, increased central vascularity, axillary lymphadenopathy.
- The complex solid cystic mass with heterogeneous echotexture, abrupt interfaces, calcifications and/or presence of reversal/lack of diastolic flow may suggest high grade of tumors.[4]
- 10% of CA can have well circumscribed smooth margins, strong internal echoes and variable distal echoes [1].
- Features that lead to false negative: <1cm size, fatty breast, missed microcalcifications.

CONCLUSION

- USG is safe, non-invasive widely available and useful imaging modality for diagnostic evaluation of breast lesions. A lesion predicted as benign by USG is likely to be proved as benign by histopathology and unnecessary invasive pathological investigations can be avoided.

- As concluded by Gokhale S. we agree to the fact that it may be impossible to differentiate all benign from all malignant lesions, a reasonable goal for breast USG is to identify a subgroup of solid nodules that has such a low risk of being malignant that the option of short-interval F/U can be offered as an alternative to biopsy [6].
- Also a predominance of benign lesions is noted in this region which can be attributed to breast feeding practices.

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