

Evaluation of Palpable Breast Mass Using Sonography, Mammography and Combined Sonomammography

Dr. Mohammad Zainul Abedeen

MBBS MD Radiology Resident, Dr Ulhas Patil Medical Collage and Hospital, Jalgaon KH, Jalgaon 425309, India

1. Introduction

- The leading cause of non preventable cancer death among women is still considered to be Breast cancers.
- Therefore any palpable mass in Breast region should be thoroughly evaluated through, History Taking Physical Examination and Mammography to rule out the potentially leathel outcomes in the later stages
- Mammographic examination of Human breast is a widely accepted and a well defined technique employed for the imaging of the clinically suspected breast lesions also in the screening of the breast cancers.
- However in the patients with Dense breast, sonography has been proven to be beneficial in characterizing a Mammographically detected palpable abnormality.
- Sonography and mammography (sonomammography) when employed together for the evaluation of breast mass, it significantly improves the sensitivity and specificity.

2. Aims and Objectives

Aim

To evaluate the utility of sonomammography to detect breast lesion and better characterisation of lesions based on its imaging characteristics.

Objectives

- To study the sensitivity of mammography in imaging of breast lump
- To study the role of sonography as an adjunct to characterise
- The breast lesion detected on mammography.

- Compare mammography with ultrasonography in screening of breast
- Characterization of lesion to birads classification.

3. Materials and Methods

Study Design: Prospective Observational Study

Source of Data: The study was carried out on patients attending the department of Radiology.

Sample Size: 50patients

Sampling criteria

Inclusion Criterion:

- All the female patients >30 years of age presenting with a palpable breast lesion were included.

Exclusion Criterion:

- All the women below 30 years of age.
- Post-operative patients and Male patients with breast related complaints.

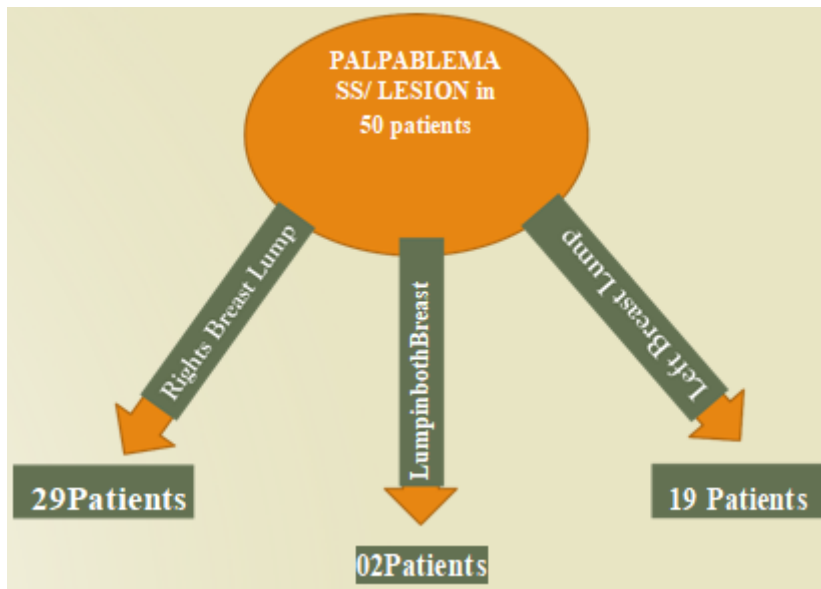
Equipments

Mammography was performed with SELENA DIMENTION–HOLOGIC MAMMOGRAPHY MACHINE.

Sonographic examination was performed with a 7-10mega hertz linear transducer of MINDRAY 75L38EA.

4. Results and Analysis

Nature & location of the lesion



5. Tabulating Results

- Table 1 Shows the age Distribution of patients included in study.
- Table 2 Shows the Descriptor of the palpable abnormalities in the patients.
- Table 3 Shows Tissue density on the mammograms in the patient studied.
- Table 4 Shows the Final assessment on sonomammography of palpable....abnormalities included in the study.
- Table 5 Shows Benign causes of palpable abnormalities, Cysts (N=12),
- Fibroadenoma (N=4), Fibrocystic disease (N=1), Duct Ectasia (N=2),
- Fatnecrosis (N=1)

Table 5: Benign causes of palpable abnormalities

Causes of Benign Lesions	Number of Patients
CYSTS	N=12
FIBROABENOMA	N=04
DUCTECTASIA	N=02
FATNECROSIS	N=01
FIBROCYCTIC DISEASE	N=01

Table 6: Test Characteristics of sonomammography

Characteristics	Value %
Sensitivity	100%
Specificity	84%
Positive Predictive value	28%
Negative Predictive value	100%

20 (40%) of the 50 palpable abnormalities had benign assessment,

Table 1: Distribution of patients

Age Group	Number of Patients
30-39yrs	N=25
30-39yrs	N=15
30-39yrs	N=06
>60yrs	N=04

Table 2: Descriptor of the palpable abnormalities

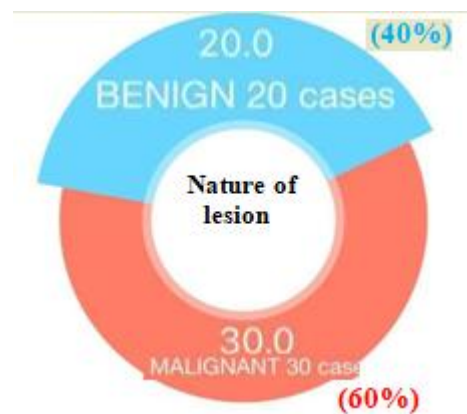
Descriptor	Number of Patients
PalpableLump	N=33
Palpable Thickening	N=06
No dularity	N=06
(Difficult to cateogrise	N=04

Table 3: Tissue density on the mammograms

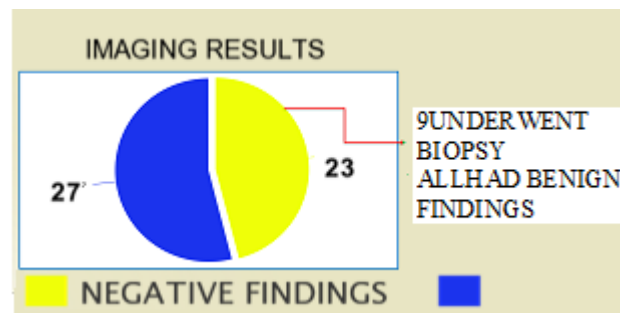
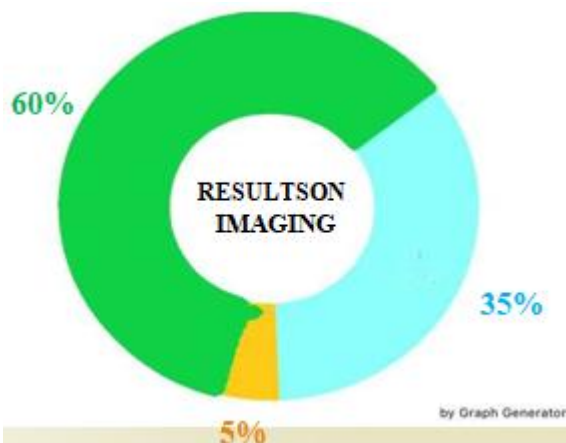
Parenchymal Density	Number of Patients
Scattered Fibrogranular density	N=25
Predominantly Fatty	N=15
Heterogenously Dense	N=03
Dense	N=02

Table 4: Final assessment on sonomammography

Imaging Findings	Number of Patients
Negative	N=23
Benign	N=20
Suspicious	N=07

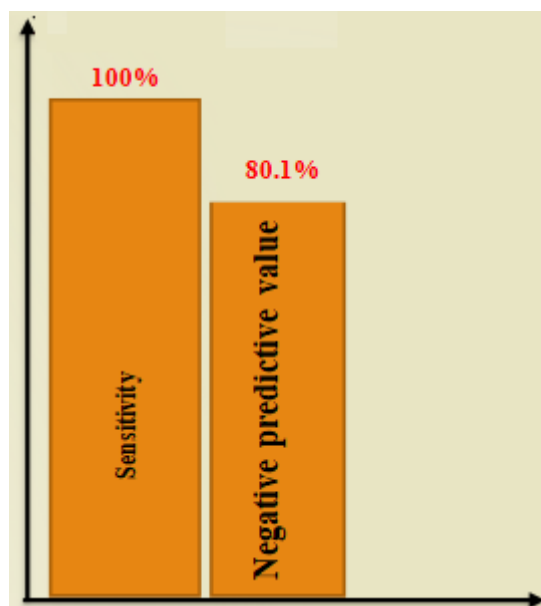


- Total number of cases: 50
- Benign outcomes: 20
- Malignant lesions: 30

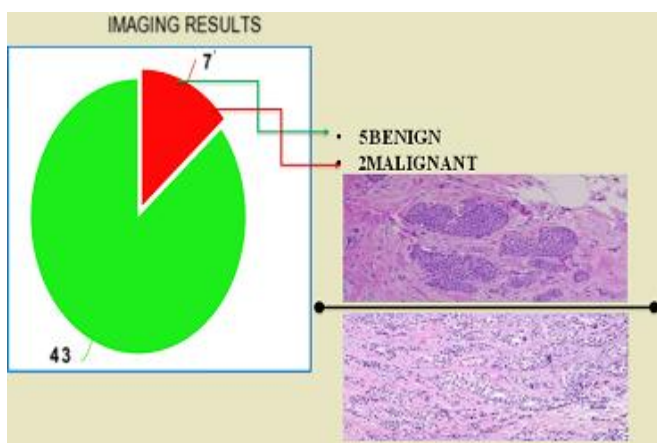


23(46%) of the 50 palpable abnormalities had negative imaging assessment finding: of these 9 patients underwent biopsy and all had benign findings

- 1 lesion (5%) was sonographically occult and visualized on mammography.
- 7(35%) of the 20 benign lesions were mammographically occult and identified at sonographic evaluation.
- 12 (60%) of the benign lesions were visible both on mammography and sonography;



The sensitivity and negative predictive value for combined mammographic and sonographic assessment were 100%; the specificity was 80.1%



In 7(14%) of the 50 cases, imaging evaluation resulted in a suspicious assessment and all these lesions underwent biopsy and 2 were diagnosed as having malignancy.



Figure 1 (a): Calcified Nodule—Fibro adenoma

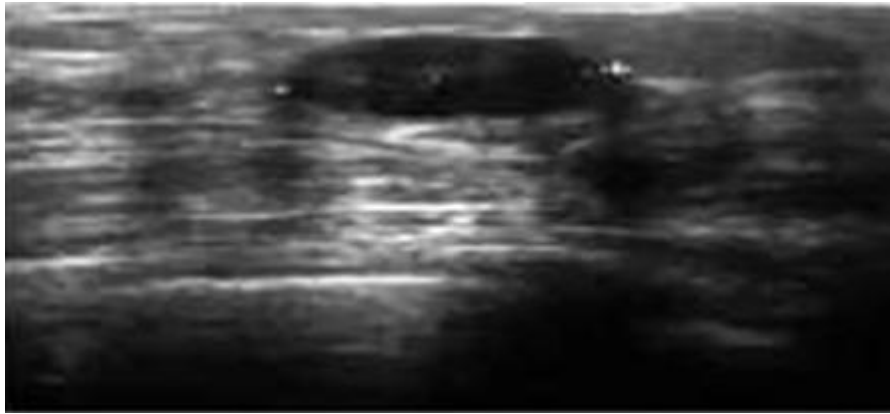


Figure 1 (b): Oval solid mass lesion with posterior acoustic enhancement---fibro adenoma



Figure 2: Well defined homogenous mass lesion on mammogram, Confirmed with ultrasound as benign cyst



Figure 3: Spiculated dense mass lesion in the retroareolar region- malignant mass.



Figure 4 (a): Multiple well defined mass lesion

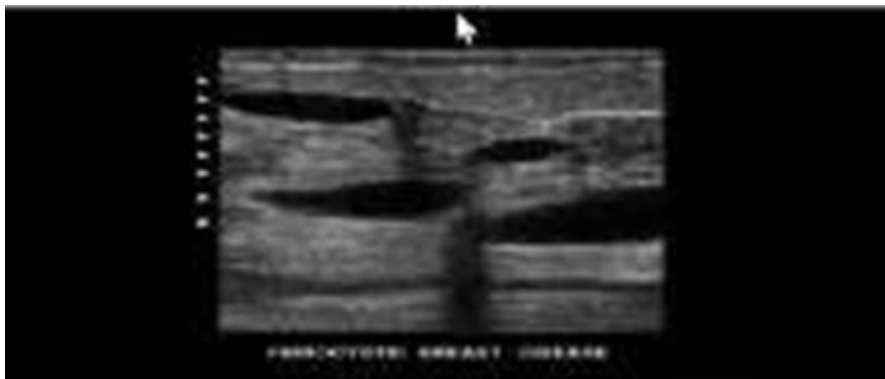


Figure 4 (b): Ultrasound of SME patient showing multiple cystic lesions, fibrocystic disease

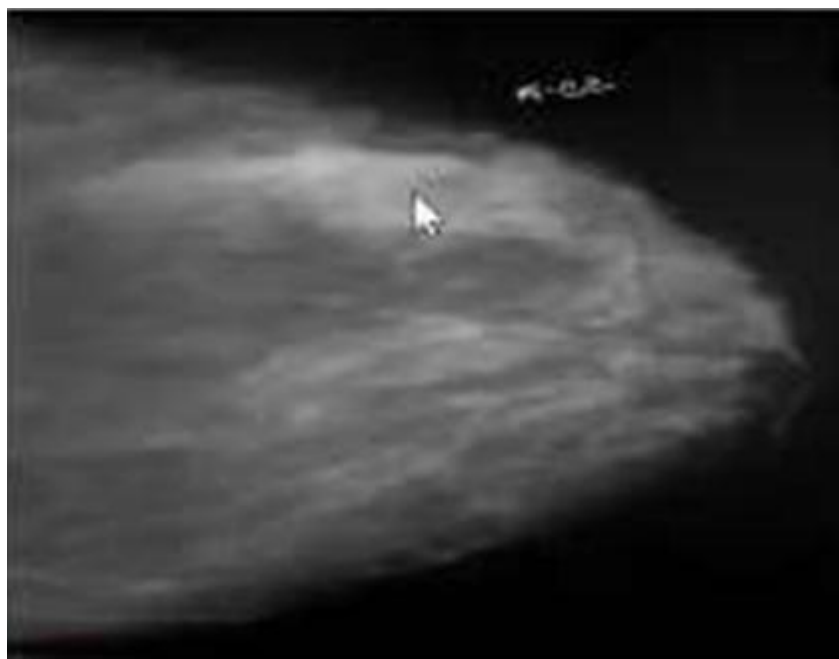


Figure 5: Spiculated mass lesions characterized as high probability of malignancy confirmed with biopsy as malignant mass.



Figure 6: Gaint Fibroagenoma

6. Discussion

- Among all patients presenting with the breast symptoms, only 4% have been reported as breast carcinoma, and an large number of the patients have rather benign findings on evaluation. The role of mammography in patients with palpable breast lump is to show benign cause for palpable abnormality and to

avoid further interventions, to support earlier intervention for a mass with malignant features, to screen the remainder of the ipsilateral and contralateral breast for additional lesions, and to access the extent of malignancy when cancer is diagnosed

- In this study, 20 (40%) of the 50 lesions were categorized as benign after a combined mammographic

and sonographic evaluation. Which clearly shows us the value of imaging in helping avoid unnecessary biopsies.

- Sonography therefore is complimentary to mammography in patients with palpable abnormalities; its superiority over mammography is in being able to show lesions obscured by dense breast tissue and in characterizing palpable lesions that are mammographically visible or occult.
- Mammography is complimentary to sonography because of its ability to screen the remainder of the ipsilateral and contra lateral breast for clinically occult lesions. It has been reported that the accuracy of sonography is comparable with that of mammography as a screening modality for breast cancer. However the role of sonographic screening for additional lesions in the symptomatic patients has not been reported

7. Conclusion

Combined use of mammography and sonography plays an important role in the management of palpable breast lesions. Its applications are:-

- Characterizes the palpable mass lesion.
- Avoids unnecessary interventions in which imaging findings are unequivocally benign.
- Negative findings on combined mammographic and sonographic imaging have very high specificity and are reassuring to the patient.

References

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