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Review Article

Combined Approach of Mammography and Sonomammogram in the Evaluation of Breast Lesion and Correlation with Histopathology

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ABSTRACT

Introduction: Breast carcinoma is the second leading cause of Mortality in India. Incidence of Breast Carcinoma is 1 in 22 in India and in USA 1 in 8. [(1)] The increased incidence of Breast Malignancy parallels an increase in the use of screening Mammography and Sonomammogram.
Methodology: Screening Mammography results in decreased Mortality due to early detection and effective therapy. Screening Mammography is indicated in women aged 40 years and older. In less than 40 years Mammography indicated in patients with Lumps, followed by Sonomammogram and correlated with Histopathology.
Conclusion: In 100% of the cases combined approach of Mammography and Sonomammogram was able to distinguish Benign and Malignant when correlated with Histopathology.

Key words: Breast, Mammography, Sonomammogram.

INTRODUCTION

Incidence of Breast cancer is increasing in most of the countries especially Developing countries like India.

Multiple risk factors are identified as Late age at first pregnancy(>30 years),single child, Late age at menopause, high fat diet, nulliparous, obesity in menopause, reduced physical activity, Family history. [(2)]

Physical activity, awareness about beneficial effects of consuming fresh vegetables and fruits are protective factor for Breast malignancy. [(2)]

METHODOLOGY

Mammography and sonomammography will be performed as an initial imaging examination using

- Siemens Mammomat 3000 Nova equipment in two views(i.e., cranio-caudal & medio-lateral oblique views)
- High resolution, 7.5-12 MHz, linear array transducer of esoate MyLab 40.

BIRADS Classification by ACR, last updated in November 2015.Widely accepted risk assessment and quality assurance tool in mammography, sonomammogram, MRI. [(3)]

BIRADS 0: further imaging is required. Special mammographic views (compression, magnification), ultrasound.
BIRADS 1: negative,
BIRADS 11: benign findings (cyst, fibroadenoma, lipoma, secretory calcifications)
BIRADS111: probably benign, short interval follow-up suggested (6 months)
BIRADS1V: suspicious abnormality.
BIRADS 1Va: low level of suspicion for malignancy
BIRADS 1Vb: intermediate suspicion for malignancy
BIRADS1Vc: moderate suspicion for malignancy

BIRADS V: mammographic appearance highly suggestive of malignancy (speculated margin, pleomorphic calcification)
BIRADS V1: known biopsy proven malignancy
Risk of cancer:
BIRADS 111:~2%
BIRADS 1V:~30%
BIRADS V: 95%
Mammography
Mass shape: round, oval, lobular in benign
Lobular in suspicious
Irregular in malignancy
Mass Density: fatty, low, iso in benign
Iso in suspicious
High density in malignancy
Calcification: diffuse, scattered, coarse, pop corn, egg shell calcification, tea cup in benign Fine, linear, branching, pleomorphic, segmental in malignancy architectural distortion, nipple retraction in malignancy [(4)]
Sonomammogram: Well defined, anechoic, ellipsoid, thin echogenic wall, posterior enhancement, smooth margin in benign lesion.

Hypoechoic, angular margin, spiculation, microlobulation, internal calcification, posterior acoustic shadowing in malignant lesion. [(5)]

RESULTS

Out of 55 cases, 35 cases were diagnosed as benign, 20 were diagnosed as malignancy. Fibroadenomas were most common (16) among benign lesions followed by fibrocystic disease (10 cases) and cyst (6 cases). One case each of benign intraductal pappilloma and Seroma, one case of Granulomatous mastitis and pathologically malignant lesions included Ductal carcinoma insitu, Atypical Ductal hyperplasia, infiltrating ductal carcinoma, Lobular carcinoma.

Combining the mammography and sonomammogram, sensitivity, specificity were 92.2%, 98.02% respectively.

DISCUSSION

Sensitivity of Mammography is low for benign lesions especially in dense braests and very small lesions.sensitivity and specificity for malignant lesions are high because microcalcifications are better detected. Similar observations were seen by study by Prasad et al [(6)] and Sabine M et al. [(7)]

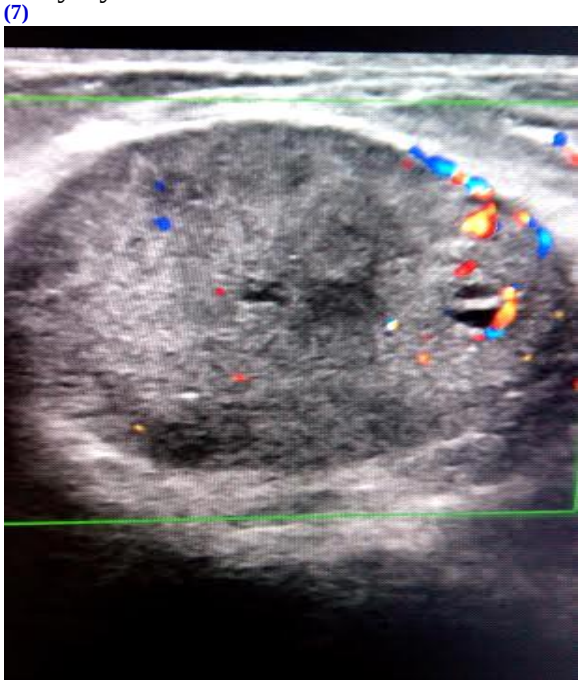

Figure 1:Sonomammogram: Well defined, round to ovoid homogenous lesion in Left Breast at 4-5 Clock position measuring 4.31x3.8cms with distal enhancement and mildly increased diffuse vascularity possibly Fibroadenoma- Lesion is not ellipsoid, so BIRADS I V A. Histopathology report-Fibroadenoma with Benign cystosarcoma phylloides.

A

Figure2 (A-B): Mammography RIGHT BREAST (MLO, CC View) Well defined Lobulated retroareolar mass anteriorly measuring ~3.9x2.2cms indenting the nipple with tubular denisty posteriorly (dilated duct). Intra ductal malignancy-BIRADS-IVC. Histopatho report- high grade Intra ductal malgnancy. Vascular calcification noted in CC View of Left Breast.

B

sonomammogram of the above Lobulated heterogenous retroareolar mass predominantly cystic at 10-12 clock position of Right Breast with diffusse vascularity. Intra ductal malignancy-BIRADS IVC. Histopatho report- high grade Intra ductal malgnancy.

Figure 4: MLO VIEW (B) well defined irregularly marginated mass in upper outer quadrant with pleomorphic calcification (~7x3.5cms) with adjacent tiny nodule (0.5x0.5cms) and (0.6x0.5cms)~2.5cms from nipple -BIRADS IVC. Histopatho report-Infiltrating intraductal carcinoma.

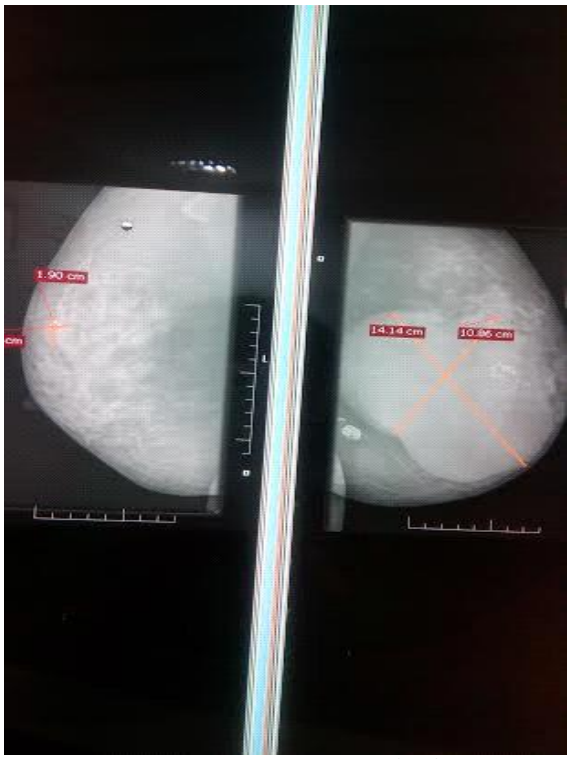

Figure 3: Mammography MLO VIEW (A)of Left breast reveals Large Lobulated retroareolar mass measuring ~14.14x10.86cms ~0.5cms from nipple, posteriorly indenting the muscle plane with intralesional macrocalcifications ?Giant Fibroadenoma? cystosarcoma phylloides-BIRADS IVA. Histopatho report: Fibroadenoma.

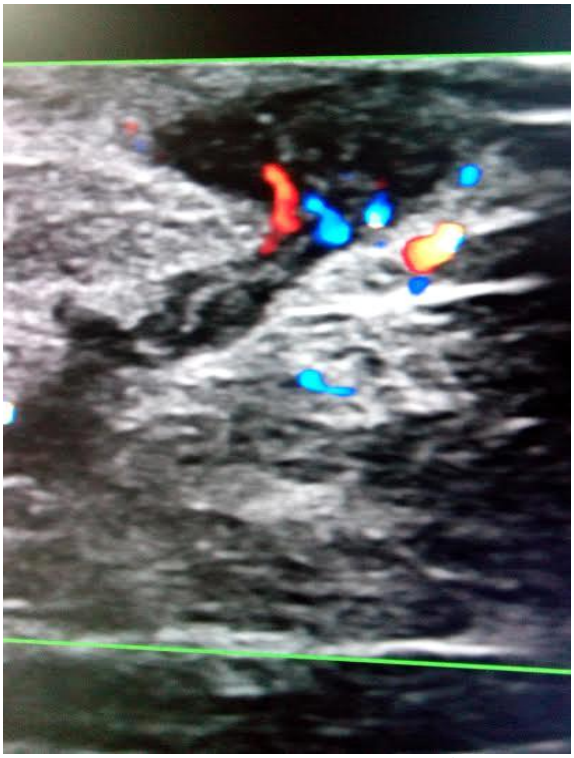

Figure 5: Lactating Right Breast reveal well defined, tubular, hypoechoic, Vascular lesion in retroareolar region at 3 clock position measuring ~1.8 x0.76cms with a sinus measuring ~0.58x0.48cms s/o Breast abscess with a sinus tract.

Figure 6: Right Breast reveals abscess in retroareolar region at 3 clock position with a sinus opening (~0.58x0.48cms)

CONCLUSION

Mammography is widely accepted screening tool in 40 years and older and to evaluate clinically suspected breast lesions.

Sonomammogram is a dynamic, painless and a very useful tool for evaluation of breast lesions. Advantages of USG include wide availability, cheap, fast, no ionising radiation and can assess the vascularity of the lesion. Sonomammography has added advantage in guiding FNAC and Biopsies [(8)]

Mammography is better in detecting Microcalicifications and early detection of occult malignancies. [(9)]

Self Breast examination and Breast screening must be advised for the early detection of Breast lesions and for further management. [(10)]

Combined approach of mammography and sonomammogram was more accurate and able to distinguish benign from malignant lesion when correlated with histopathology.

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