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CASE REPORT

EVALUATION OF CLINICALLY PALPABLE BREAST LUMPS WITH DIGITAL MAMMOGRAPHY, SONOGRAPHY AND FNAC: CASE STUDY

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ABSTRACT: Breast cancer is the second leading cause of cancer deaths in women today (After lung cancer) and is the most common cancer among women, excluding non-invasive non-melanoma skin cancers. Worldwide, breast cancer comprises 22.9% of invasive cancers in women and 16% of all female cancers.[1] Mammography has been the basic imaging method in breast diagnostics, and the only tool suitable for screening.[2] breast cancer Mammography is still the first line of the imaging investigation. USG has emerge as the most important adjunct to mammography in patients with breast lumps and normal or inconclusive mammographic findings. This is the prospective study on 50 patients reporting with complaints of breast lump in surgical OPD at Mahatma Gandhi Hospital, Sitapura, Jaipur.

INTRODUTION: Worldwide, breast cancer comprises 22.9% of invasive cancers in women and 16% of all female cancers (WHO, 2008). According to an Indian health news report, one in 22 women's in India is likely to suffer from breast cancer during their life time. The figure is definitely more in America with one in eight being a victim of this deadly cancer.[3] However the incidence of breast cancer is rising in every country of the world especially in developing countries such as India, especially in metropolitan cities. This is because more and more women in India are beginning to work outside their homes which allow the various risk factors of breast cancer to come into play. Mammography & sonomammography are widely used for the radiological evaluation of breast lumps. Both these procedures can be used individually or in adjunction to each other for the detection of nature (benign or malignant) of breast lump. Mammography has been the basic imaging method in breast diagnostics, and the only tool suitable for screening breast cancer (Tabár et al. 2000). Mammography is still the first line of the imaging investigation.

The aim of interpreting mammograms is to find asymmetric densities, mostly circular or stellate lesions; parenchymal contour changes; architectural distortion and micro calcifications with or without associated tumor, which may indicate breast malignancy.[4] The sensitivity and specificity of mammography in detecting breast cancers are highly dependent on the composition of the breast parenchyma. Detection of cancer is difficult in patients with dense breast parenchyma (young, pregnant or lactating patients and patients on HRT) and mammographically non calcified tumours. A definite differentiation between cyst and tumours is also not possible in most of the cases. In response to these diagnostic deficiencies of mammography various modalities have been evaluated for the diagnosis of the breast cancer, including light-scanning, thermography, ultrasonography (US), isotope scanning, digital subtraction angiography, computed tomography and MR imaging, USG and MR being the most reliable of these.

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The greater availability, cheapness and low technical requirements have made USG to emerge as the most important adjunct to mammography in patients with breast lumps and normal or inconclusive mammographic findings.

AIM OF STUDY: to evaluate clinically palpable breast lumps with digital mammography, sonomammography and FNAC and to assess the sensitivity, specificity and positive predictive values of digital mammography, sonomammography in detecting carcinoma of breast. The specificity to diagnose malignant versus benign by various imaging modalities will be tested and confirmed based on histopathological reports.

EXLUSION CRITERIA: we have excluded pregnant women and Patients with bleeding diathesis.

OBSERVATION:

		No. of Cases	FNAC Diagnosis		
			Malignant	Benign	Normal/ Inconclusive
Mammographic diagnosis	Malignant	13	11	2	0
	Benign	21	0	21	0
	Normal/ Inconclusive	16	2	14	0
Sonographic Diagnosis	Malignant	13	12	1	0
	Benign	37	1	36	0
	Normal/ Inconclusive	0	0	0	0
Combined Diagnosis	Malignant	14	13	1	0
	Benign	36	0	36	0
	Normal/ Inconclusive	0	0	0	0

Table 1: Showing comparison of mammographic and sonographic diagnosis with cytological diagnosis

DISCUSSION: A total of 50 females having breast Lump of all ages were subjected to Mammography and Ultrasonography with the aim to detect characteristic benign or malignant pattern in breast lumps. The result of these examinations was compared with FNAC findings.

Breast is the organ most versatile in producing malignant as well as benign neoplasm with overlapping clinical and radiological manifestation.

X-ray mammography is the gold standard imaging techniques that can reliably detect clinically occult breast cancer before it grows large enough to be palpable. Detection of micro calcifications which represent the most sensitive mammographic sign of early breast cancer is the

most advantageous characteristic of mammography. One drawback is its limited role in dense breasts. It also can't reliably differentiate between cysts and solid masses.

Ultrasonography is the most useful supplement to mammography for examining palpable breast masses and is used to differentiate cystic from solid masses. It also yields the most accurate determination of breast cancer size and nodal status. It has the additional advantage of being simple time saving, safe, non-invasive, inexpensive & readily available.

Age and Sex Distribution: Highest Frequency of lump was in 31-40 years of age group because hormonal factors play dominant role in many benign pathologies which are much commoner pathology than the malignant ones. Maximum number of benign cases was in age group of 31-40 years while malignant cases were maximum in above 60 years age group. Similar results are seen in study done by Malik M.A.N. et al.[5] (2010).

Site and side of Involvement: 23 cases were on the left side while 21 on the right side. similar results are seen in study done by Sandy L. Kwong, 2003.[6]

Quadrant involvement is a specific feature of breast disease. In our study upper-outer quadrant was predominantly involved in 40% followed by diffuse/ multi quadrant involvement in 18% cases. Similar quadrant involvement is seen in the study done by Sandy L. Kwong, 2003 and Hermann et al., 1982.[7]

Benign Lesions: Total Number of Benign cases in our study were 30 (60%). Most common age group was 31-40 years. Fibroadenoma was most common accounting for 44% of all breast lumps. Our Results are similar to study done by Haagensen CD 1986.[8] Rarity of calcification has been documented by Witten DM 1964.[9] On USG we were able to detect all (100%) fibroadenomas 6 cases more than mammography. Most of these are young patients. So USG is definitively better for diagnosis of fibroadenomas, mainly in young patients with dense breast on mammography.

Other benign lesions we encountered i.e. cysts, fibrocystic disease and galactocele doesn't have characteristic mammographic features. Out of these, fibrocystic disease formed 8% (4 cases), cyst 6% (3 cases) and galactocele 2% (1 case) of all cases.

Cysts were characterised in mammography by round (66%) to oval (33%), smooth marginated (100%), hyperdense (100%) lesions. In USG, cysts were seen as round (66%) to oval (33%), smooth marginated (100%), anechoic (100%) lesions with posterior acoustic enhancement (100%).

Malignant Lesions: Most common mammographic presentation of infiltrating carcinoma was hyperdense (100%) mass with spiculated (46.15%) or irregular (46.15%) margins. Obscured margins seen in 7.69% cases. Micro calcification was seen in 53.84% of cases. Nipple retraction was seen in 53.84% and skin thickening in 30.76% of cases.

On sonography all infiltrating carcinomas were seen as hypoechoic, heterogeneous masses with irregular margins. 61.54% cases have L/AP ratio less than 1. Majority of masses were irregular in shape (53.84%) followed by oval (23%), round (15.38%) and lobulated (7.69%). Posterior acoustic attenuation was seen in 92.30% cases. Calcification detected in sonography is 23% cases which is significantly lower than mammography. 84.61% cases showed axillary lymphadenopathy

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indicating disease was in advance stage. Hilum of these lymph nodes was destroyed indicating these were metastatic nodes. These nodes were also firm on pressure as applied by probe indicating their malignant nature. Jokich et al 1992 described that breast carcinoma present as classically an ill-defined, hypoechoic mass with posterior acoustic shadowing.[10]

CONCLUSION: We studied 50 patients of breast lumps by mammography and USG and combination of both of them. After correlating finding of these cases with FNAC statically results were as follows.

1. Out of 22 cases of fibroadenoma mammography detected 68.18% cases while USG detected 100% cases and hence combined modality able to diagnose 100% cases. So in case of young female with palpable mobile breast lump USG is investigation of choice. Out of 4 cases of fibrocystic disease mammography was inconclusive in 2 cases (50%) due to dense breast while one is reported normal (25%). By ultrasound and hence by combined approach 100% cases are detected.
2. Mammography diagnosed only 33% cases of cystic disease but USG diagnosed all cases of cyst (100%). So we can say fluid filled pathology like cystic disease and fibrocystic disease USG is better than mammography.
3. Likewise 100% cases of abscess were diagnosed on USG but not on mammography.
4. In case of benign lesions sensitivity of mammography was 56.75% specificity was 100% and positive predictive value was 100%.
5. Sensitivity of USG was 97.30% and specificity was 92.3% positive predictive value was 97.29%.
6. Sensitivity for combination approach was 97.30% and specificity was 100% and positive predictive value was 100%.
7. 84.61% of malignancy cases were detected by mammography while with USG we diagnosed 92.30% cases and combination of both modalities diagnosed up to 100% cases.
8. In case of malignant lesions sensitivity of mammography was 84.61% specificity was 94.59% and positive predictive value was 84.61%.
9. Sensitivity of USG was 92.30% and specificity was 97.29% positive predictive value was 92.30%.
10. In case of malignancy although mammography was believed to be more sensitive screening method then USG but in context of palpable malignancies targeted USG is definitively better and combination gives further better results.

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FNAC- Ductal Carcinoma

Fig. 1: Mammographic Features: Lobulated mass in upper inner quadrant with microcalcifications.

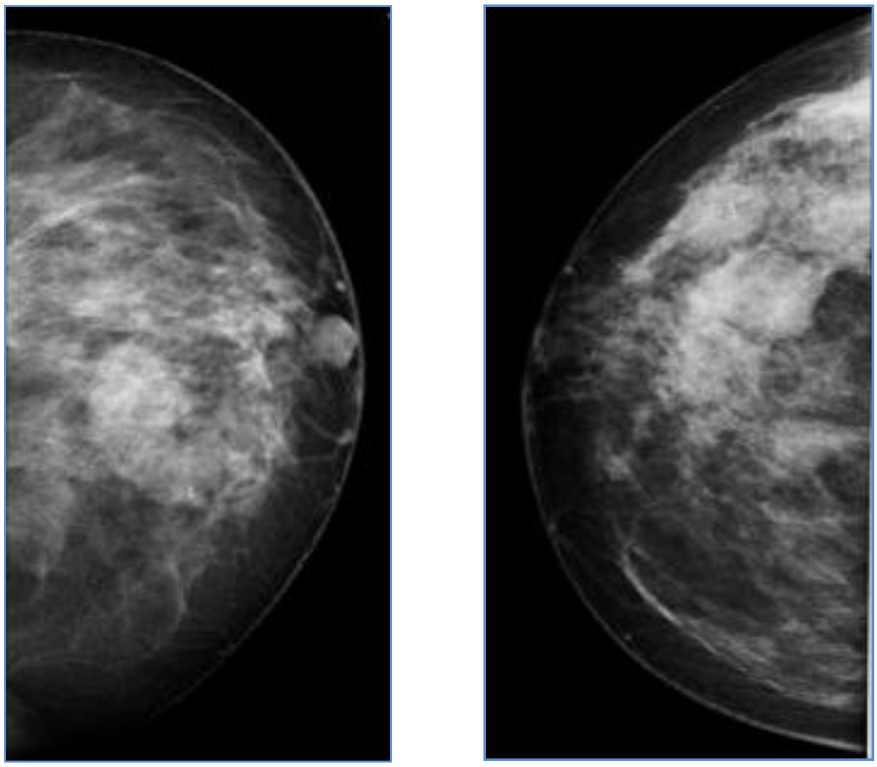

Fig. 1

Fig. 2: USG Features: Lobulated well defined mass with internal vascularity, satellite lesions and axillary lymph nodes.

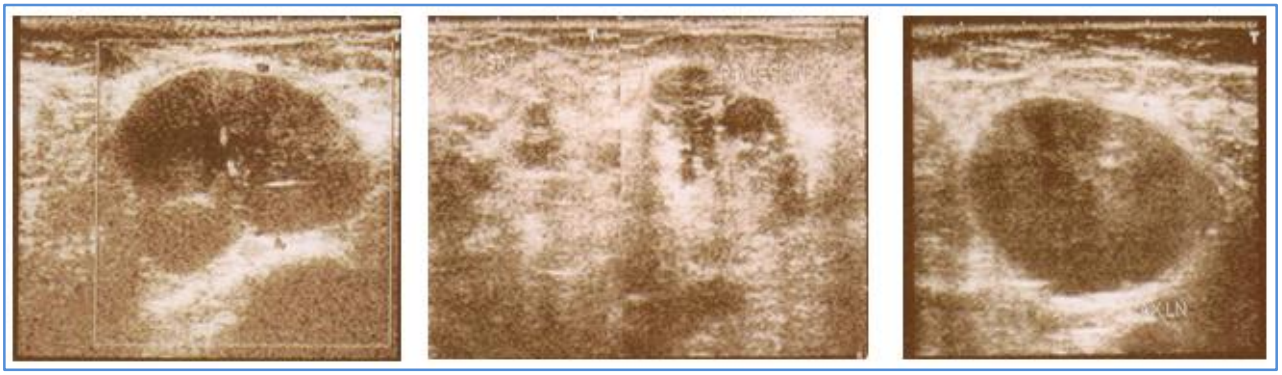

Fig. 2

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FNAC- Fibroadenoma

Fig. 3: Mammographic Features: large, oval, well defined mass in retroareolar region.

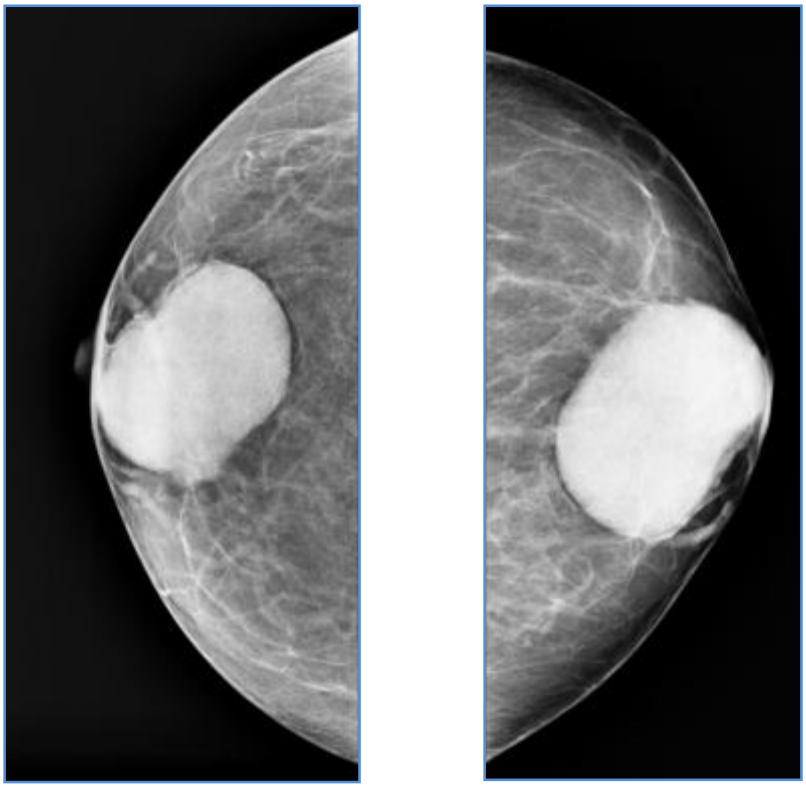

Fig. 3

Fig. 4: USG Features: Oval well defined hyperechoic, heterogeneous mass with posterior sound transmission.

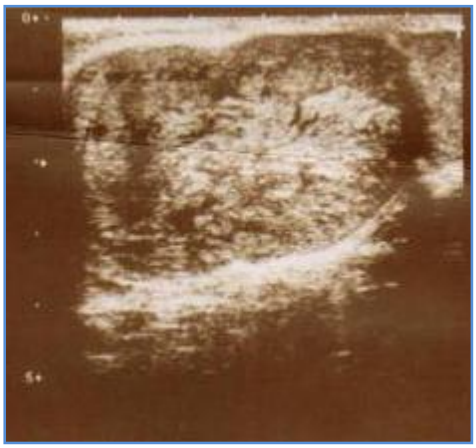

Fig. 4

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FNAC- Cyst

Fig. 5: Mammographic Features: round, well defined lesion in upper outer quadrant.

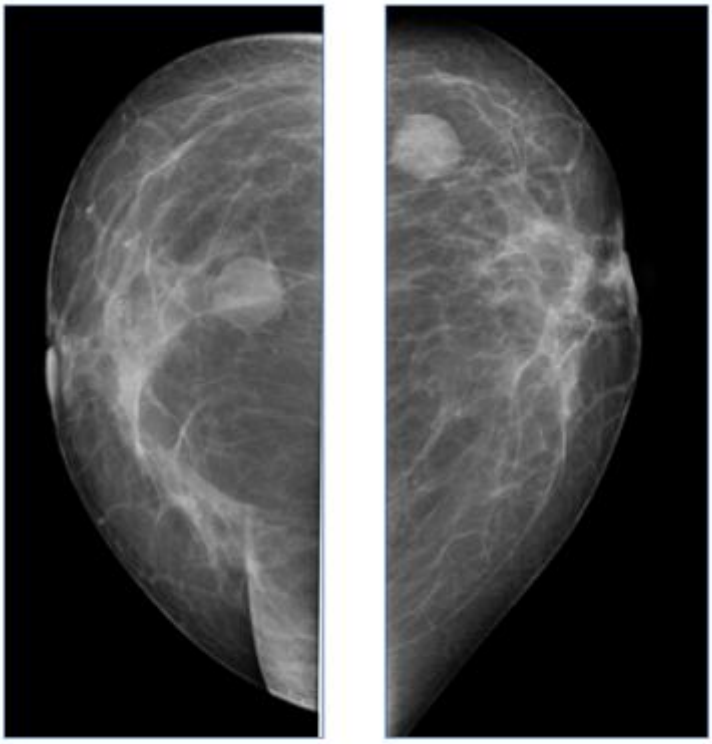

Fig. 5

Fig. 6: USG Features: round, well defined, anechoic lesion with strong posterior sound transmission. FNAC- Abscess.

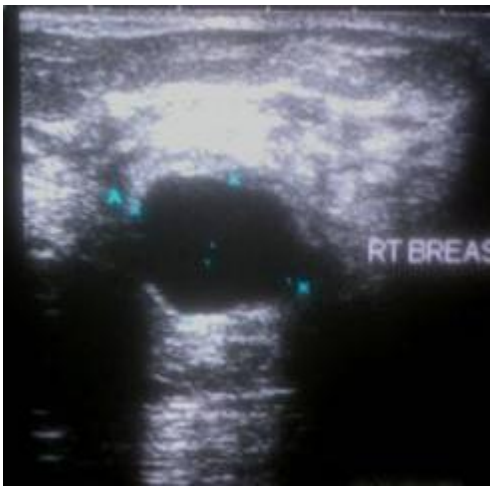

Fig. 6

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Fig. 7: Mammographic Features: Ill-defined hyperdensity seen in right breast.

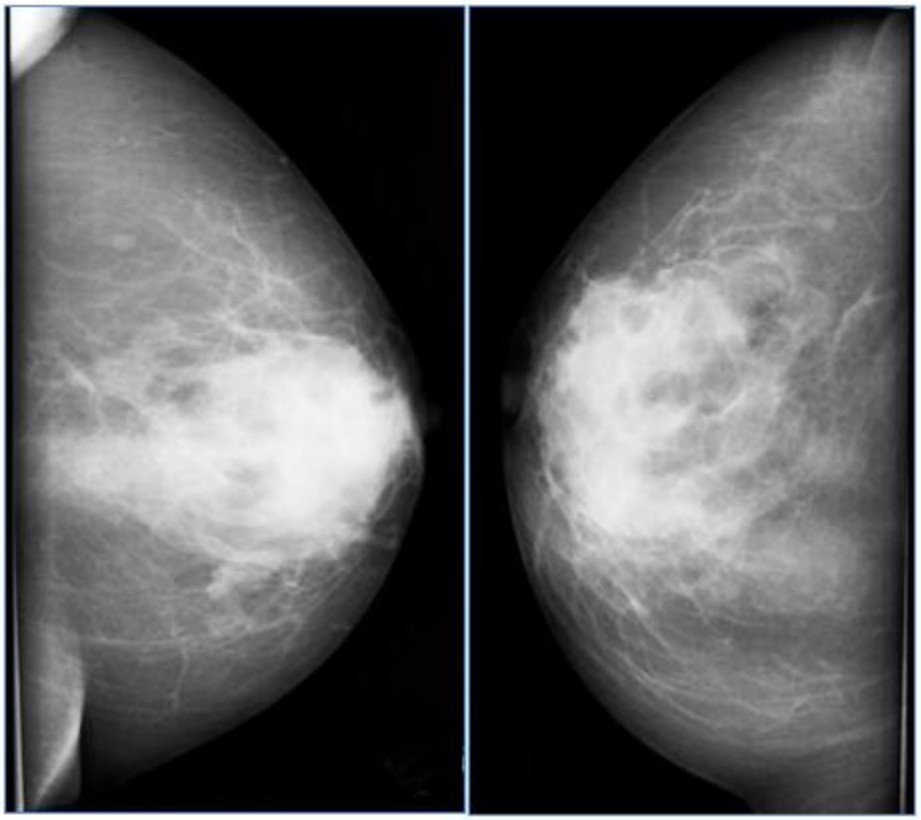

Fig. 7

Fig. 8: USG Features: Ill-defined heterogeneously hypoechoic mass seen with axillary lymph node enlargement with typical preserved hilum.

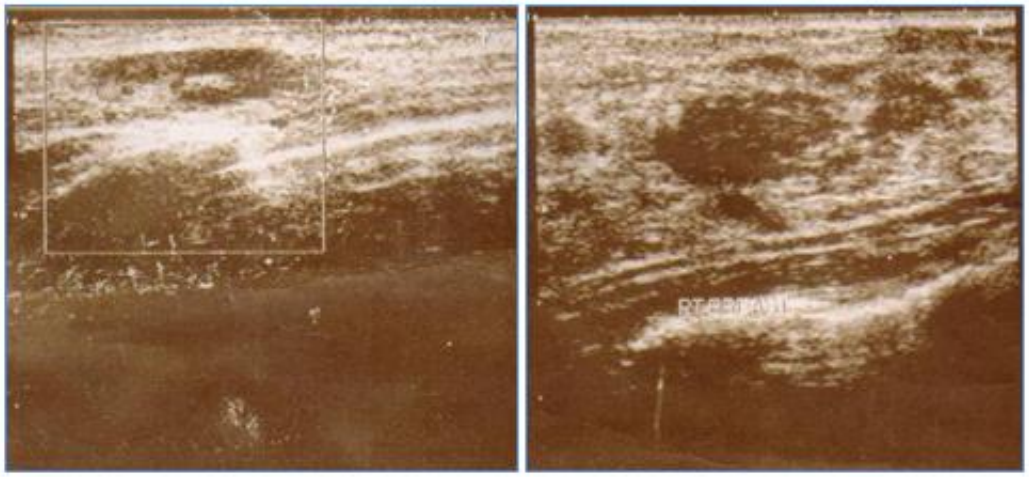

Fig. 8

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