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Research Article

LIMITATIONS OF MAMMOGRAPHY IN THE DIAGNOSIS OF BREAST DISEASES COMPARED WITH ULTRASONOGRAPHY: A SINGLE-CENTER RETROSPECTIVE ANALYSIS OF 250 CASES

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ABSTRACT

Breast and connective tissues, in particular, are denser than fat, and MG can detect this difference. Mammograms are more difficult to interpret when breast density is high (that is, when there is more breast and connective tissues than fat), since a lesion may be shadowed by dense tissues. Furthermore, study has shown that women with dense breasts are more likely to develop breast cancer. Breast density varies by race, and many Indian women have dense- or mixed-type breast density. As a result, MG may be unable to correctly distinguish tumours in this population. Alternative treatments for women with dense breasts have started to be implemented in several countries.Two hundred and fifty female patients were diagnosed with breast cancer and had surgery at the same time. Medical University, India between March 2011 and November 2013 was taken into account in this research. Of the 250 cases, MG BI-RADS category was 0 in 66 (26.4 percent) cases, category 1 in 25 (10 percent), category 2 in 15 (6 percent), category 3 in 39 (15.6 percent), category 4 in 85 (34 percent),and category 5 in 20 (8 percent). US BI-RADS category was 1in 36 (14.4 percent) cases, category 2 in 68 (27.2 percent), category 3 in 38 (15.2 percent), category 4 in 28 (11.2 percent), and category 5 in 70 (28 percent). In the preoperative evaluation of breast diseases in Indian women, the US outperformed MG.These findings indicate that the US could be more useful in India for detecting breast lesions.

Key words:- Radiology, Diagnosis, Retrospective Study, Ultrasound.

INTRODUCTION

Breast disorders, both benign and malignant, affect a large number of women around the world. Women are advised to provide regular mammography (MG) screening to improve early detection [1]. The proportion of various tissue types within a woman's breast is referred to as breast density [2, 3].Breast and connective tissues, in particular, are denser than fat, and MG can detect this difference [4].

Mammograms are more difficult to interpret when breast density is high (that is, when there is more breast and connective tissues than fat), since a lesion may be shadowed by dense tissues.Furthermore, study has shown that women with dense breasts are more likely to develop breast cancer [5]. Breast density varies by race, and many Indian women have dense- or mixed-type breast density. As a result, MG may be unable to correctly distinguish tumours in this population. Alternative treatments for women with dense breasts have started to be implemented in several countries [6, 7]. Ultrasonography (US) and magnetic resonance imaging (MRI) are two examples of such measures. MRI has been shown to have a greater sensitivity than MG in terms of assessing breast diseases [8]. However, MRI is costly, and waiting lists are often long, restricting its use in India's underdeveloped areas. For the preoperative evaluation of breast diseases in women, India may be more accurate than MG and less expensive than MRI [9, 10].

Aim and objective:

As a result, the aim of this study was to compare the diagnostic value of MG and US in the diagnosis of breast diseases in Indian women, to compare the diagnosis value of MG and, and to determine an optimal modality of breast diseases in underdeveloped areas of India.The findings of this study may reveal the limitations of MG in the diagnosis of breast diseases in Indian women, especially those with dense breasts and small breasts [11, 12].

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Material and methods

Two hundred and fifty female patients were diagnosed with breast cancer and had surgery at the same time. Medical University Hospital, India between March 2011 and November 2013 was taken into account in this research. The conditions for inclusion were as follows: 1) the presence of a breast lesion on imaging; 2) the presence of a breast lesion on imaging Surgery was performed on the lesion; and 3) preoperative MG was performed.4) The lesion was confirmed by postoperative pathology after MRI and US. If a woman had a child, she was not allowed to participate. Just underwent MG or US. This was a retrospective analysis. The Institutional Review Board of the Indian University School of Medicine has given its approval to this report. Medical University's second affiliated hospital. Both the MG and the US were done two weeks prior to surgery. The Indian College of Radiology is the source for this information (ACR). Many of the patients in the study had surgery. BI-RADS type, microcalcifications, menstrual status, histopathology, lesion size, and other information were gathered. Breast density and volume are two factors to consider. For the purposes of this study, BI-RADS MG and US groups 1, 2, and 3 were used in this analysis were deemed negative, and categories 4 and 5 were deemed positive regarded as optimistic. For this study, SPSS 16.0 (SPSS Inc.) was used for statistical evaluation .The sensitivity and precision of breast cancer tests positive predictive, precision, false-positive, false-negative. The predictive value, as well as the negative predictive value, were determined. The gold standard was known to be histopathological testing. Negative benign was described as a true negative. Histopathology identifies the lesion. The definition of a true positive was as follows on histopathology, there is evidence of malignancy.BI-RADS groups of 0 were not included in the sensitivity analysis. Specificity, precision, false-positive, false-negative, positive predictive value, and negative predictive value are all terms used to describe how accurate a prediction. However, they were held for the purpose of location analysis.I concur. The size and location of the lesions were compared.Imaging modalities and surgery are inextricably linked [13-16].

Results and Discussion:

Of the 250 patients, 130 were with pathologically provenmalignancy and 120 were benign. Among these patients,100 (40 percent) were premenopausal and 150 (60 percent) were postmenopausal. Patients aged from 24 to 80 years, with 155(62 percent) being ≤45 years old and 95 (38 percent) being >45years old.

As shown in Table 1, 55 (22 percent) cases were classified asACR level 1; 25 (10 percent) were level 2; 89 (35.6 percent) werelevel 3; and 89 (32.4 percent) were level 4.

Of the 250 cases, MG BI-RADS category was 0 in 66(26.4 percent) cases, category 1 in 25 (10 percent), category 2 in 15(6 percent), category 3 in 39 (15.6 percent), category 4 in 85 (34 percent),and category 5 in 20 (8 percent). US BI-RADS category was 1in 36 (14.4 percent) cases, category 2 in 68 (27.2 percent), category 3 in38 (15.2 percent), category 4 in 28 (11.2 percent), and category 5 in 70(28 percent) (Table 2).

BI-RADS, Breast Imaging Reporting and Data System; MG, mammography; US, ultrasonography

The aim of this study was to compare X-ray MG with conventional MGand India in the detection of breast cancer in India womenfemales .The overall sensitivity, specificity, precision, false-positive, and false-negative results revealed. The positive and negative predictive values were found to be substantially different. Higher when dealing with the US than when dealing with the MG Analysis of subgroupssuggested that with age, sensitivity and accuracy were reduced.In women 45 years old, premenopausal, or with high breast density, MG performed better than US. Many of the patients in this sample were from the province, which is a developing province in the centre of the country like India, and the majority of these patients had dense breast tissueas well as a limited breast volume There were 66 cases out of 250BI-RADS group 0 was assigned to 26.4 percent of the populationthat a significant number of women undergoing MGcould not be evaluated satisfactorily, as shown byprevious research. In addition, 25 patients (10%) were found to be ineligible.

MG classified you as BI-RADS group 1 whether you have a palpable mass or an apparent mass on clinical inspection.by the India , necessitating surgery. As a consequence, these outcomes it's possible that even MG BI-RADS category 1 wasn't precise enough, and that certain malignant lesions were missed. The results of a stratified study revealed that young age. The diagnostic accuracy of MG was reduced when the patient was premenopausal and had a high breast density. Breast tissues that are dense are true and interfere with MG perception. In this review, the findings strongly indicate thatBreast cancer detection was slightly higher in the US than in the MG.There were no cases of BI-RADS category 0 recorded.Breast density is common in young women and women with dense breasts.As a diagnostic instrument, US tends to be superior to MG.The current research has some drawbacks in terms of evaluating breast diseases. Furthermore,The sample size was limited due to the retrospective nature of the studywas derived from a single source. Multicenter research should be carried out to test these findings.

The clinical data are shown in Table 1

Table 1: Patient Characteristics	
Characteristics	**N(%)**
Age	
<45	155 (62%)
>45	95 (38%)
Menstrual Status	
Pre menopausal	100 (40%)
Post Menopausal	150 (60%)
Pathology	
IDC	75 (30%)
DCIS	25 (10%)
Fibroadenoma	6 (2.4%)
Papilloma	5 (2%)
Adenosis	18 (7.2%)
Inflammation	20 (8%)
Lipomyma	30 (12%)
Cyst	12 (4.8%)
Others (malignant)	7 (2.8%)
Others (Benign)	2 (0.8%)
Lesion Size	
<2	89 (35.6%)
2.1 to 5	95 (38%)
>5	66 (26.4%)
Breast Density	
ACR1	55 (22%)
ACR2	25 (10%)
ACR3	89 (35.6%)
ACR4	81 (32.4%)

Table 2: BIRADS Categories in Mammography and Ultrasonography		
BIRADS	**MG**	**US**
0	66 (26.4%)	36 (14.4%)
1	25 (10%)	68 (27.2%)
2	15 (6%)	38 (15.2%)
3	39 (15.6%)	10 (4%)
4	85 (34%)	28 (11.2%)
5	20 (8%)	70 (28%)
TOTAL	250	250

Conclusion:

In the preoperative evaluation of breast diseases in Indian women, the US outperformed MG.These findings indicate that the US could be more useful in India for detecting breast lesions.

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