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Corelation of Mammography with Histopathology in Breast Lump

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Abstract

Introduction: In females breast cancer is the second most common cancer in India with an incidence of 25.8 per 1,00,000 individuals. Most of the patients present with breast lump. Many due to lack of awareness present very late with advanced stage. Hence it is very important to diagnose the condition early with a proper screening modality.

Materials and Methods: A prospective study was conducted on 100 women presenting with breast lump. All patients underwent mammography followed by histopathological assessment of the lump.

Results: Irregular shape with ill defined borders on mammography was found to be significant marker of malignancy. Calcification in malignancy was 55.22 times more common than benign. The sensitivity of mammography was 84.62% and specificity of 80% with diagnostic accuracy of 83%.

Conclusion: Mammography was found to be a reliable modality in diagnosing breast malignancy and hence concluding that it can be used as a diagnostic tool in breast lumps.

Keywords: Breast Cancer; Mammography; Benign lesion of breast; Diagnostic accuracy of mammography.

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Introduction

In females breast cancer is the second most common cancer in India with an incidence of 25.8 per 1,00,000 individuals.[1] Most of the patients present with breast lump. Many due to lack of awareness present very late with advanced stage. Hence it is very important to diagnose the condition early with a proper screening modality. Triple assessment with clinical examination, radiological examination and tissue diagnosis it is able to diagnose the condition accurately. Various radiological tests such as ultrasonography, mammography, magnetic resonance imaging, nuclear scans are available. Among this mammography is considered as gold standard modality in screening the patients.[2] Whereas, USG, MRI are not considered as primary screening modality but used as an adjunct modality to assess the abnormalities in mammography.[3]

American college of radiography developed the breast-imaging reporting and data system (BI-RADS) lexicon, a standard terminology used to summarize the findings of various breast-imaging techniques such as MMG, USG and MRI.[2] In our study we aim to assess the accuracy of mammography and corelate the findings with histopathological examination.

Materials and Methods

A prospective study was conducted in tertiary care hospital of Bengaluru. Study was conducted after

obtaining ethical committee clearance and informed consent from patients. 100 female patients were included in the study.

Inclusion Criteria

- Age above 30years.
- Women presenting with palpable breast lump.

Exclusion Criteria

- Age <30years
- Women without palpable breast lump
- Recurrent breast lump which was operated earlier
- Pregnancy and lactating women

Mammography

Lilyum, BET Medical Ltd [India] MMG unit was used for breast MMG using standard views i.e., medio-lateral, oblique and cranio-caudal views. The various features on mammography were studied to diagnose the lump as benign or malignant.

Histopathological Examination

Trucut biopsy and excision biopsy were used as a part of histopathological examination. The findings of mammography were compared with final histopathological results.

Statistical Analysis

The data were analysed using SPSS software. Version 21. Level of significance is set at 5%.

Results

Of 100 patients presenting with breast lump after histopathological examination 35 patients were confirmed as benign and remaining 65 as malignant.

Majority of malignant lesions were irregular in shape with ill-defined margins calcification. Where as benign lesions were irregular in shape with well defined margins without calcifications (Table 1).

Calcification on mammography was a significant feature in identifying malignant lesion with p value <0.0001 and it was shown as calcification was 55.22 times more common in malignant lesion compared to benign lesion (Table 2). The relation between BIRADS score on mammography and histopathological examination was confirmed and was statistically significant with p value < 0.0001 (Table 3).

Out of 100 patients 55 were true positive and 28 were true negative. Further sensitivity of mammography in our study was found to be 84.62% and specificity was 80%. The diagnostic accuracy of the test was 83% (Table 4).

Table 1: Mammography findings of patients in relation to histopathology.

Mammography	Histopathology		Total - 100	P value
	Benign - 35	Malignant - 65		
Shape				
Not commented	15	22	37	
Irregular	7	20	27	
Oval	5	14	19	
Lobulated	5	6	9	0.5489
Round	2	1	3	
Ill defined	2	1	3	
Well defined	1	1	2	
Margin				
Not commented	5	12	17	
Well defined	18	10	28	0.0014
Ill defined	9	27	36	
Spiculated	3	16	19	
Architectural distortion				
Absent	29	41	70	
Present	6	24	30	0.0395
Calcification				
Absent	31	8	39	
Present	4	57	61	<0.0001

Table 2: Efficacy of calcification in differentiating malignant and benign lesions.

	Calcification		Total	P value	Odds Ratio
	Present	Absent			
Benign	4	31	35	<0.0001	55.22
Malignant	57	8	65		

Table 3: BIRADS score of patients in relation to histopathological findings.

BIRADS	Histopathology		Total	P value
	Benign	Malignant		
1	2	1	3	
2	15	0	15	
3	11	9	20	<0.0001
4	6	18	24	
5	1	33	34	
6	0	4	4	

Table 4: Correlation of BIRADS score with histopathology findings of patients.

	TP	FP	TN	FN	Sn	Sp	PPV	NPV	Accuracy
Birads Score	55	7	28	10	84.62	80	88.71%	73.68%	83%

Discussion

Patient presenting with lump in breast should be thoroughly evaluated to rule out malignancy. Patients attending tertiary care hospital with breast lump is quite high.[4] Breast lump is a common complaint among patients attending to breast clinics.[5,6] Family history of breast cancer helps in identifying the breast lesion.[7]

Infiltrating breast cancer is the most common histopathological finding reported[8,9] and similar finding was seen in our study. Mammography features of shape, margin, architectural distortion, calcification helps us to differentiate between benign and malignant lesions. In our study malignant lesions were irregular in shape, ill defined margins, with calcification.

Our study also reported that calcification in malignant lesion is 55.22 times commoner than benign. Grimm et al. have reported that calcifications observed in malignancy were significantly larger than in benign tumour.[10]

In our study BIRADS score on mammography were corelated with histopathological finding and was significant statistically. Our test concluded that diagnostic accuracy of mammography is 83% with sensitivity of 84.62% and specificity of 80%.

Conclusion

Mammography was found to be a reliable modality in diagnosing breast malignancy and hence concluding that it can be used as a diagnostic tool in breast lumps.

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