Co-relation of X-ray Mammography and Sonography with Histopathological Findings of Breast Masses

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A B S T R A C T

Introduction: Breast lumps are most common problem in women age group between 18 to 50 years. Breast masses are lactational and non-lactational type of infection. The aim of this study was to determine the correlation between X-ray mammography and sonography imaging with histopathological findings of all breast lesions.
Material and Methods: This was a prospective study carried out in MNR Medical College and Hospital from June 2015 to August 2017. A total of 40 female patients were included in this study. BIRADS lexicon proposed by the American college of radiology (ACR) was used to assess the risk of malignancy and prognosis.
Results: out of 40 patients, 22 had benign lesions, 16 had malignant lesions and 1 had tubercular abscess.
Conclusion: Ultrasound imaging features are helpful to determine the benign and malignant lesions and BI-RADS classification are useful for the management of breast masses.

Keywords: Breast lumps, Ultrasonography, X-ray mammography.

INTRODUCTION

Breast diseases are common health problem in women age group between 18-50 years.[1-4] Common female breast lesions include benign lesions like simple cysts, fibrocystic diseases, fibroadenomas, galactocele, ductectasia, breast abscess, enlarged lymph nodes.[5] Malignant breast lesion encompasses infiltrating ductal or lobular carcinoma and in-situ ductal or lobular carcinoma. Several standard technique of breast imaging include X-Ray mammography and Sonography, MRI, Colour Doppler, contrast enhanced ultrasound, scinti mammography and digital mammography.[6] Every technique has some advantages and disadvantages. So in this present study we evaluated various breast lesions using X-ray mammography, Sonography and Histopathology in combination or single to understand the merits and demerits of each technique, also to know the difference between benign and malignant breast lesions.

MATERIAL AND METHODS

This was a prospective study conducted in MNR Medical College and Hospital during the period of 2 years from June 2015 to August 2017. All the patients with palpable breast lump and discharge were included in this study. Patients with excessive breast mass and fungatic mass were excluded from this study. BIRADS lexicon proposed by the American college of radiology (ACR) was used to assess the various breast lesions. Institutional ethical committee was approved this study.

STATISTICAL ANALYSIS

Microsoft office 2007 was used for the analysis. Descriptive statistics like mean and percentages were used for the interpretation.

RESULTS

Among 40 female patients, 22 had benign lesions with fibro adenoma (55%), 1 had tubercular abscess (2.5%), 17 had ductal malignancy (42.5%) [Table 1]. Patient's age group ranges between 20-60 years. Benign lesions were mostly presented on younger age group 20-40 years and malignant cases were in older age group 41-60 years [Table 2]. Diagnostic sensitivity of X-ray mammography was 84.6% and specificity was 100% in case of benign lesion. Sonography sensitivity and specificity was 96.4% and 92.6% respectively. In case of malignant lesion

Nature of Lesion	No. of Cases (%)
Fibro adenoma	55
Tubercular abscess	2.5
ductal malignancy	42.5

Table-1: Radiological characterization of breast lesions.

	Benign lesions		Malignant lesions	
	Mammography	Sonography	Mammography	Sonography
Sensitivity	84.6%	96.4%	99.8%	94.6%
Specificity	100%	92.6%	92.7%	96.76%
Table-2: Difference between X-ray mammography and Sonography in diagnosing breast lesions.				

Type of lesion	Total No. of patients (%)
Benign	50
Malignant	42.5
Indeterminate	7.5
Table-3: Histopathological findings of breast lesions.	

Age group in years	Total No. of cases (%)	
	Benign	Malignant
20-30	14 (35%)	00
31-40	09 (22.5%)	01 (2.5%)
41-60	00	16(40%)
Table-4: Age group distribution among female breast lesion.		

mammography showed sensitivity 99.8% and specificity 92.7%. Sonography had sensitivity around 94.6% and specificity was 96.76% [Table 3]. Histopathological findings showed 50% benign, 42.5% malignant and 7.5% indeterminate lesions [Table4].

DISCUSSION

This is a prospective study conducted in MNR Medical College and Hospital with 40 female breast disease patients. Purpose of our study was to correlate mammography, sonography and histopathology in palpable breast lump. In the present study, all patients were belongs to the age group of 20-60 years. Benign cases mostly presented in younger age group. Malignant cases presented in older age group between 41-60 years. Almost similar findings were reported by Prasad S et al. and Disha ED et al.[7,8] Most of firm lesions were benign (19/23). Majority of hard lesions were malignant (14/17). Other researchers also recorded similar results.[9,10] Upper outer quadrant was most commonly involved (72.5%) which is co-relate with other studies reflecting greater amount of breast tissues in this quadrant as compared to other quadrant.[11,12] Out of 40 patients, 22 had fibroadenomas, 1 had tubercular abscess and 17 patients had ductal malignancy. This was consistent with other studies.[7] On mammography features of benign lesions included smooth margins, oval or round shape and normal breast architecture. On the other hand speculated lesions taller than wider lesions, architectural distortion, skin retraction, micro calcifications are the features suggestive of malignancy.[9,13] On mammography, it was not possible to determine whether the lesion was solid or cystic in nature. Cases of fibrocystic disease of breast were wrongly diagnosed as malignant. Also we were unable to diagnose cases of lactational mastitis as it was uncomfortable for such patients to undergo mammography.[11,13] Primary advantage of ultrasound is to

distinguish between solid and cystic lesions. In our study it was possible to diagnose such cases with 100% accuracy with ultra sound. This was co-related with other studies in which accuracy of ultrasound to diagnose cystic lesions varied from 96-100%.[14]

CONCLUSION

Ultrasound is giving better result in younger age-group, but mammography is better in older patients. As per our study ultrasound is providing better result in all age group patients than mammography. But combination of X-ray mammography, sonography and histopathological findings will increase diagnostic accuracy.

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