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Clinical study of breast lump-triple assessment does help in diagnosing it better

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ABSTRACT

Background: Breast cancer is most frequently diagnosed cancer among women and also most common cause of cancer death among women. Early stage detection is still low and is the major reason for poor treatment outcomes in our country. Most of the breast lumps are benign. However, it is important to rule out malignancy. This prospective clinical study is done to evaluate role of triple assessment (clinical examination, mammography and histopathology) in diagnosing breast lump.

Methods: All women admitted with the symptoms and signs of breast lump at our hospital were studied in the period of 2 years from July 2014 to June 2016. The findings of physical examination and mammographic examination with histopathological diagnosis were noted n compared.

Results: Physical examination of breast lumps is overall less accurate as compared to mammography. There is a tendency to over diagnose malignancy on physical examination. Mammography is more sensitive and specific in the diagnosis of palpable breast lumps as compared to physical examination. Histopathology confirms the diagnosis.

Conclusions: It is better to do all three that is clinical examination, mammography and histopathology for all breast lumps diagnosis.

Keywords: Breast lump, Clinical examination, Mammography and histopathology

INTRODUCTION

One in four women is referred to a breast clinic at some time in her life for breast related problem.1 Four percentage of patient with breast symptom or lump reported as breast cancer. Even in palpable lesions large numbers of lesions turn out to be benign.^{2,3}

Breast cancers represent one in four women of all cancer worldwide. It is most common cause of cancer death among women and most frequently diagnosed cancer worldwide.1 In India the age standard incidence rate of breast cancer varies 9-32 per one lakh women.⁴ More than 1 million new cases are diagnosed every year in India. Mortality due to cancer breast is also high as low rates of early stage detection and poor treatment outcome.

Physical examination of breast is important for primary diagnosis. The role of mammography with palpable breast lump is to show benign cause for palpable breast lump, to support earlier intervention for a mass with malignant features, to screen remainder of ipsilateral and contralateral additional lesions and to assess malignancy when cancer is diagnosed.⁵ American college of Radiology and other international organization with mutual consensus have adopted and recommended

universal implementation of Breast Imaging Reporting and Data System (BIRADS).^{6,7} BIRADS recommendation says Category 0- incomplete assessment, category 1-negative, category 2-benign finding, category 3-probably benign, short term follow up suggested, Category 4-suspicious abnormality, biopsy should be considered, category 5-highly suggestive of malignancy.

Nomenclature of benign breast disease is confusing and new system developed by Cardiff Breast Clinic is known by 'ANDI'- which stands for Aberration in Normal Development and Involution.⁸ They are essentially five features- Adenosis, fibrosis, cyst formation, epitheliosis and papillomatosis. The most common mammographic appearance of carcinoma is a stellate or speculated mass with irregular border.⁹

There is frequently no correlation between mammographic appearance of breast parenchyma and clinical assessment. Hard firm breast tissue detected on physical examination may merely represent tightly packed fat as shown on mammography. Conversely smooth soft tissue on clinical examination may appear dense on mammography. Physical examination and mammography are complementary and not competing procedures. Histopathology is gold standard to confirm the diagnosis.

This prospective clinical case study was carried out to study role of clinical examination, mammography and histopathology of breast lump. Histopathology of breast lump was taken for final diagnosis against which clinical examination and mammography diagnosis were compared.

METHODS

A prospective clinical case study of breast lump was carried out from July 2014 to September 2016. Fifty-six patients of more than 35 years presented to us as symptoms and signs of breast lump during that period were included in the study. Pregnant, lactating women, operated cancer breast with recurrence and breast abscess cases were excluded from the study. All patients underwent clinical examination, mammography and histopathological confirmation of breast lump. Informed and written consent was taken prior to study of all patients. Institutional ethical committee permission was taken before commencement of study. Detailed history was taken of all patients included in the study along with physical examination of both the breast. Clinical findings and diagnosis were recorded. The mammography was carried out at the institute on sonomammography machine (Wipro GE). Two standard views, craniocaudal and mediolateral oblique views of each were taken. An appropriate exposure factor of breast of different thickness was selected automatically by the set control panel of the machine. Based on mammographic features of the lesion, BIRADS score was assigned as BIRADS 0need further imaging evaluation, BIRADS 1-negative study, BIRADS 2-benign finding, BIRADS 3-probably benign finding, BIRADS 4-suspicious of malignancy, **BIRADS** 5-highly suggestive of malignancy. Histopathological diagnosis of all the patients included in the study was obtained after surgery/biopsy. The findings of physical examination and mammographic examination histopathological diagnosis with were noted. Observations noted and then results of triple assessment compared and analyzed.

RESULTS

Clinical diagnosis of the cases in the study group. Among 32 malignant cases on clinical diagnosis 16 carcinoma cases were in right and left side each respectively. Among 21 cases diagnosed as benign breast disease on clinical examination 16 were fibro adenoma, 2 ductal ectasia and 3 were diagnosed as fibroadenosis. Three cases were inconclusive and were considered as suspected malignancy (Table 1).

Table 1: Clinical diagnosis of the cases in the study.

Clinical diagnosis		No. of cases	Percentage
Malignant (n=32)	Ductal carcinoma	32	57.2
	Fibroadenoma	16	28.6
Benign (n=21)	Fibroadenosis	3	5.4
	Ductal ectasia	2	3.6
	Phylloides tumour	0	-
	Fat necrosis	0	-
	Chronic mastitis	0	-
Inconclusive (n=3)	Suspected malignancy	3	5.4
Total		56	100

Mammographic diagnosis of the cases in the study. Among 32 malignant cases on mammographic diagnosis, 9 cases had BIRADS 5 lesion diagnosed as malignant lesion and 23 cases had BIRADS 4 lesion diagnosed as highly suspected of malignancy. Among 22 cases diagnosed benign on mammography examination BIRADS 2, 13 were fibroadenoma, 3 bilateral fibroadenosis, 2 ductal ectasia, 3 involuting fibroadenoma and one granulomatous mastitis. Two cases had BIRADS score of 3 and were considered inconclusive (Table 2).

Histopathological diagnosis of the cases in the study. Of 56 cases, 31 cases were diagnosed as invasive ductal carcinoma on histopathological diagnosis. Among 25 cases diagnosed benign on histopathological examination, 16 were fibroadenoma, 3 cases fibroadenosis, 2 cases ductal ectasia, one case with benign sclerosis with adenosis, chronic mastitis respectively (Table 3).

Table 2: Mammographic diagnosis of the cases in the study.

Mammographic diagnosis		No of cases	%
Malignant	Malignant lesion	9	16.1
(n=32) BIRADS 4 and 5	Highly suspected malignant lesion	23	41.1
Benign (n=22) BIRADS 2	Fibroadenoma	13	23.2
	Fibroadenosis	3	5.4
	Ductal Ectasia	2	3.6
	Involuting Fibroadenoma	3	5.4
	Chronic Mastitis	1	1.8
	Fat necrosis	0	-
	Phylloides tumor	0	-
Inconclusive (n=2) BIRADS 3	Suspicious lesion	2	3.6
Total		56	100

Table 3: Histopathological diagnosis of the cases in the study.

HPE diagnos	sis	No. of cases	%
Malignant (n=31)	Ductal carcinoma	31	55.4
Benign (n=25)	Fibroadenoma	16	28.6
	Fibroadenosis	3	5.4
	Chronic granulomatous mastitis	1	1.8
	Ductal ectasia	2	3.6
	Fat necrosis	1	1.8
	Phylloides tumour	1	1.8
	Benign sclerosis with adenosis	1	1.8
Total		56	100

Table 4: Association between clinical and HPE diagnosis in study.

Clinical	HPE diagno	HPE diagnosis		
diagnosis	Malignant	Benign	Total	
Malignant	29	3	32	
Benign	0	21	21	
Total	29	24	53	

Chi-square = 42.30, P <0.0001 Sensitivity = 100% Specificity = 87.50%, PPV = 90.62% NPV = 100% Accuracy = 94.34%

Association between clinical and histopathological examination in the study group. Among 32 cases diagnosed malignant clinically, 29 were malignant on HPE and 3 were benign. Among 21 cases benign clinically, all were benign on HPE. To test association between clinical and HPE in study group Chi- square test was applied as test of significance. Chi-square value

worked out to be 42.30 which is statistically highly significant (p<0.0001). Sensitivity of clinically detecting malignant and benign lesion was 100%, specificity was 87.50%, positive predictive value 90.62%, negative predictive value is 100% and accuracy was 94.34% (Table 4).

Table 5: Association between mammographic and HPE diagnosis in study.

Mammographic	HPE diagnosis		Total
diagnosis	Malignant	Benign	Total
Malignant	31	1	32
Benign	0	22	22
Total	31	23	54

Chi-square = 52.04, P<0.0001 Sensitivity = 100% Specificity = 95.65%, PPV = 96.87% NPV = 100%, Accuracy = 98.15%

Association between mammographic and histopathological examination in the study group. Among 32 cases diagnosed malignant on mammography, 31 were malignant on HPE and 1 was benign. Among 22 cases benign on mammography, all were benign on HPE. To test association between mammography and HPE in study group Chi- square test was applied as test of significance. Chi-square value worked out to be 52.04 which is statistically highly significant (p<0.0001). Sensitivity of mammography detecting malignant and benign lesion was 100%, specificity was 95.65%, positive predictive value 96.87%, negative predictive value is 100% and accuracy was 98.15% (Table 5).

Table 6: Association between clinical and mammographic diagnosis in study.

Clinical	Mammographic diagnosis		■ Total
diagnosis	Malignant	Benign	Total
Malignant	30	1	31
Benign	0	21	21
Total	30	22	52

Chi-square = 48.04, P<0.0001 Sensitivity = 100% Specificity = 95.45%, PPV = 96.77% NPV = 100% Accuracy = 98.08%

Association between clinical and mammographic examination in the study group. Among 31 cases diagnosed malignant on clinical examination, 30 were malignant on mammography and 1 was benign. Among 21 cases benign on clinical examination, all were benign on mammography (Table 6).

To test association between mammography and clinical examination in study group Chi- square test was applied as test of significance. Chi-square value worked out to be 48.04 which is statistically highly significant (p<0.0001). Sensitivity of clinical examination over mammography in detecting malignant and benign lesion was 100%, specificity was 95.45%, positive predictive value 96.77%, negative predictive value is 100% and accuracy was 98.08%.

DISCUSSION

In this study we have enrolled 56 cases with breast lump. On clinical examination 32(57.2%) were diagnosed with malignancy, 21(37.6%) were benign and 3(5.4%) were inconclusive suspicious of malignancy. Among benign condition, 16 patients were diagnosed as fibroadenoma, 3 bilateral fibroadenosis and 2 ductal ectasia. Prajapati CL et al studied clinico-pathologic review of breast lump as a presenting complaint. In their retrospective analysis of 550 patients presenting with a complaint of breast lump was done. The clinical diagnosis was breast cancer in 260 patients (47.3%), fibroadenoma in 175 (31.8%), fibrocystic changes in 67 (12.2%) patients; the others were benign diseases. ¹⁰

Among mammographic diagnosis, 32 cases were diagnosed as malignant, 22 cases were benign, and 2 cases were inconclusive of malignancy. Among 32 cases diagnosed as malignant on mammography 8 cases were malignant (BIRADS 5), 23 were suspected malignancy (BIRADS 4). Among 22 cases diagnosed as benign on mammography (BIRADS 2), 13 were fibroadenoma, 3 cases fibroadenosis, 2 cases had ductal ectasia and 3 cases had involuting fibroadenoma. There was one case diagnosed as chronic mastitis and 2 cases had suspicious lesion (BIRADS 3). Lalchan S et al evaluated the role of mammography independently and mammography combined with Ultrasonography to diagnose breast lesions. Total 91 cases were examined with mammography with 53 cases detected as benign condition, 24 cases diagnosed as malignant condition and 14 cases were inconclusive. 11 Author observed clinical evaluation and mammography of breast lump have very similar diagnosis from the statistics.

On histopathology, 31 cases were diagnosed as malignant and 25 cases were diagnosed as benign condition with 16 cases had fibroadenoma, 3 fibroadenosis, 2 had ductal ectasia, and 1 case had benign sclerosis with adenosis, chronic mastitis, fat necrosis and phylloides tumour respectively. Prajapati CL et al in a clinicopathologic review of breast lump analysis of 550 patients histopathology, done in 294 patients and revealed 161(54.8%), 56(19.0%) and 46(15.6%) patients having invasive cancer, fibroadenoma, and fibrocystic changes respectively.¹⁰

In Lalchan S et al assessment of breast comprising of clinical examination, radiological imaging and tissue sample for cytological or histological examination should have a positive predictive value exceeding 99%. Widespread mammographic screening and effective systemic therapies have led to a stage shift at presentation and mortality reductions in the past two decades. ^{12,13}

Clinical diagnosis of breast lump in this study was significantly similar with histopathological diagnosis. Clinical diagnosis had sensitivity of 100% as author have included only those patients with palpable breast lump.

The specificity of clinical evaluation in this study came out to be 87.50%. Overall accuracy of clinical diagnosis was 94.34%. Three cases were misdiagnosed as malignant which turned out to be benign on histopathology. They were phylloides tumour, benign sclerosis and chronic mastitis. Three cases had inconclusive physical findings which on histopathology turned out as 1 case of fat necrosis and two had invasive ductal carcinoma. Hence accuracy of clinical diagnosis can be considered less than what we found in the study. Similar finding was observed in a study conducted by Chandni et al evaluated the accuracy of clinical examination and its contribution towards the diagnosis of a palpable breast lump. Total of 120 patients were with necessarv exclusion. obtained Sensitivity. specificity, positive and negative predictive values overall accuracy of clinical breast examination in comparison to histopathology was 90.8%, with sensitivity of 95% and specificity of 88%.14

CONCLUSION

Physical examination of breast lump is overall less accurate as compared to mammography. There is tendency to over diagnose malignancy on physical examination. Mammography is more sensitive and specific, but histopathology is must to confirm the diagnosis.

Triple assessment of breast lump that is clinical examination its correlation with mammography and histopathological confirmation is better to prove the diagnosis n plan the treatment. All patients presenting with breast lump we should offer them triple assessment for final diagnosis.

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Institutional Ethics Committee

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