ORIGINAL ARTICLE

Role of Mammography in Breast Cancers Diagnosis

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ABSTRACT

Background: Breast cancer is the most common carcinoma among females globally. It affects approximately one in every nine Pakistani women. It is one of the biggest cause for death among 40-50 years age group women.
Purpose: To determine the accuracy of mammography in` diagnosing histo-pathological types of breast cancer taking histopathology as gold standard.
Methodology: Newly diagnosed (70) breast cancer patients were enrolled to conduct the present study at Jinnah Hospital, Lahore-Pakistan for 6 months. Patients had mammography and both craniocaudal and mediolateral oblique views were obtained. Shape (rounded, oval) of mass and its location was noted. These mammographic findings helped to diagnose the histological types of breast cancer. Written and informed consent was taken from patients at the time of enrollment.
Statistical analysis: Collected data was analyzed by Statistical Package for Social Sciences (SPSS software, version 11). Mean ±SD was given for age whereas percentages were given for mammographic findings of mass.
Results: The mean age of patients was 44.9±5.2 years. Majority of cases (53) were true positive for breast cancer on the histo-pathological basis. Patients with positive family history were 26.
Conclusion: Mammography can be an important diagnostic tool for palpable breast carcinoma.
Keywords: Mammography, Breast cancer, Histo-pathology.

INTRODUCTION

Breast cancer affects approximately one in every nine Pakistani women. It is one of the biggest cause for death among 40-50 years age group women. Effective screening with the help of breast self examination, mammography and clinical examination, can be beneficial in early diagnosis and treatment thereby decreasing mortality and morbidity for this disease[1].

Wide variety of invasive and non invasive radiological procedures are in practice for evaluation of breast tumour like mammography, breast ultrasound, Doppler studies, CT, MRI, nuclear medicine studies, needle localization of suspicious lesions and image guided breast core biopsies. Mammography is routinely done for both screening and diagnostic purposes and is still considered the "Gold standard" in detection of early stage breast cancer[2].

Pathologically, it is either invasive or non-invasive. Non-invasive means growth within the ducts without penetration into the basement membrane. Invasive carcinoma penetrates into the basement membranes of ducts making mammary glands. Invasive lobular carcinoma (75%) of all breast cancer types. The sensitivity of mammography in diagnosed ductal carcinoma is 85.8% and specificity is 87.7%. Other rare types of breast cancer are inflammatory, pagets disease of nipple, phyllodes tumours and angiosarcoma[3].

Breast cancer is extremely diverse in terms of its clinical presentation, Histopathology and imaging characteristics. Correlation of mammography and histopathology findings however, has shown that certain histological types of breast cancer have the propensity to manifest in characteristic mammographic pattern[4].

Although the role mammography in early diagnosis of breast cancer is well established, the aim of this study is to read mammograms a step ahead to find any association between mammographic appearance and histopathological type of breast cancer as mammography is relatively cheap, safe and non-invasive as compared to histopathology which is reliable but invasive.

The objective of the study was to define the correctness of mammography in` diagnosing histopathological types of breast cancer taking histopathology as gold standard.

METHODS

The sample size of 70 was estimated by 95% confidence level with 5% margin of error and 75% prevalence of invasive ductal carcinoma in breast cancer patients[5]. This study was conducted in Department of Radiology, Jinnah Hospital, Lahore for 6 months (04-08-2008 to 03-02-2009). Approval from ethical committee of hospital was taken. Patients were enrolled by non-probability consecutive sampling. 70 cases fulfilling the inclusion criteria were enrolled throughout project. Demographic history was taken and only females (35-55 years) were included. Written informed consent was taken from the patient. They had mammography and both craniocaudal and mediolateral oblique views were obtained. Shape (rounded, oval) of mass and its location was noted. These mammographic findings helped to diagnose the histological types of breast cancer. Histopathological findings were noted by excisional biopsy of tissues. They were taken as gold standard[5].

Data analysis: The collected information was entered into SPSS 11.0 version and analyzed through its statistical programme. The age was presented as mean ± S.D. The family history and mammographic findings of mass/calcification, were presented as percentages. The comparison of mammographic findings of invasive ductal

carcinoma and histopathological report was made.

RESULTS

The age of patients was presented as mean (44.9±5.2 years). The number of patients in different age ranges are summarized in Table-1.

Frequency of family history among patients with breast cancer enrolled is summarized below in Table-2. Patients with positive family history turned out to be 26 in number (Table 2).

The patients showed variation in the distribution of mass/calcification by location. The results of masses with their location are given in table-3.

Carcinogenic lumps in breast cancer patients showed mainly two shapes (round and oval). The percentages of shapes among enrolled patients are given in table-4.

Results of true positive and true negative patients on histo-pathological basis are summarized in table-5. Majority of cases (53) were true positive (Table 5)

Table 1: Age Parameter among enrolled patients as Mean±SD (n=70)

Age (Year)	Frequency	Percentage
35-40	22	31.4
41-45	31	44.3
46-50	12	17.2
51-55	05	07.1
Total	70	100
Mean±SD	44.9±5.2	

Table-2: Frequency of patients by family history of breast cancer (n=70)

History	Frequency	Percentage
Yes	26	37.1
No	44	62.9
Total	**70**	**100**

Table-3: Distribution of patients by mass/calcification location (n=70)

Location	Frequency	Percentage
Upper outer quadrant	22	31.4
Upper inner quadrant	12	17.2
Lower inner quadrant	08	11.4
Lower outer quadrant	14	20
Retro-areolar	14	20
Total	70	100

Table-4: Frequency of enrolled patients by shape of mass (n=60)

Shape	Number	Percentage
Round	16	26.7
Oval	44	73.3
Total	60	100.0

**As rest of 10 cases presented as calcification not as mass*

Table 5: Comparison of mammographic findings vs histopathology (n=70)

Histo-pathological Findings		Total
True Positive	True Negative	
53	17	70

DISCUSSION

Mammography is a technique that uses x-ray imaging to develop systematic images of soft tissues like breast. It uses low dose x-rays beams. Filters made of aluminum, molybdenum, beryllium, rhodium, or palladium are used. It has high resolution film to demonstrate microcalcifications (<100 µm)[6].

Its role in early breast carcinoma is signified by the fact that it senses roughly (75%) of breast cancer cases before they can be palpated. Its radiations may be harmful to the patient. Nevertheless, its beneficiary effects outweigh the risks and inconvenience. Radiological techniques on various tissues and bones like spine, hip joints may be done to see evidence of metastasis of carcinoma[7].

It's a preferred examination for breast cancer in females over 40 years. As this age group has the highest prevalence of breast cancer due to hormonal fluctuations. Various previous studies suggested that it's helpful even for older women[8]. Our work in line with previous researches suggesting start screening for breast carcinoma by mammography above 35 years old female.

Birdwell et al found that missed cancers constituted 30% calcified lesions showing pleomorphism. Approximately 70% were mass lesions. The most likely reasons for missed diagnosis of carcinoma were dense breasts and distracting lesions[9]. Our work was also in line with previous researches as 85.7% cases in present study presented as mass in breast.

In a study by Iglehart and Kaelin, the results of mammography revealed that the incidence of breast malignancy occurs early and increases with age. Eight out of the total 24 proven cases of carcinoma breast in Yazd city were in the thirties. Literature suggests performing mammography screening from the age of 40 years[10]. Frequency of family history among patients enrolled with breast cancer turned out to be 26 in number. Arsalan et al also reported similar finding[11]

Mammography can diagnose even impalpable tumors of the breast[12]. Another study from France also corroborated this finding and concluded that mammography is effective in the diagnosis of early breast cancer[13]. Our findings were also in line with the above mentioned research work.

CONCLUSION

Mammography can be an important diagnostic tool for palpable breast carcinoma in older age group females.

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