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Original Research Article.

Assessment of Accuracy of Mammography and Ultrasound in Women with Breast Symptoms: An Institutional Based Study

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ABSTRACT

Background: Exclusive of skin cancers, breast tumors are the most frequent type of cancer amongst women today, making ever 1 of 3 females being diagnosed. The present study was conducted to assess the accuracy of mammography and ultrasound in women with breast symptoms.

Materials and Methods: The present study was conducted in the Department of Radiology, Viswabharathi Medical College, Kurnool, Andhra Pradesh, India. Amongst all subject's film screen mammography was performed. Subjects younger than 30 years were excluded from the study as mammography was contraindicated in them. Ultrasounds were taken in supine position. Management of the breast cancer was based on multimodal therapy that combined surgery, radiation and chemotherapy. All the data thus obtained was arranged in a tabulated form and sensitivity and specificity of both the techniques was obtained.

Results: The study enrolled 100 subjects with 50 subjects having benign lesions and 50 having malignant lesions. There was a significant different in the sensitivity between both the groups. Mammography was able to detect 49% of the lesions and ultrasound detected 75% of the lesions. Ultrasound are more specific compared to mammography.

Conclusion: Mammography play an important role in diagnostic screening of the lesions whereas confirmatory and for evaluation of breast density, ultrasound is crucial.

Keywords: Breast, Mammography, Ultrasound.

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INTRODUCTION

Exclusive of skin cancers, breast tumors are the most frequent type of cancer amongst women today, making ever 1 of 3 females being diagnosed. A female's risk of developing breast cancer at some point in her life is around 12%. It is one of the foremost reasons of mortality amongst women.[1] Researches have established that steady mammograms may reduce the chance of later-stage breast cancer amongst females of 80 years and older.[2,3] Diagnostic mammography is done amongst symptomatic females, when a breast lump is seen while self-examination or an irregularity is observed while screening mammography. There are chances of missing breast cancers like those with dense parenchyma disguising a lesion, lack of proper technique, insight error, incorrect clarification of a finding, subtle characteristics of malignancy, and slow growth of lesion.[4] Ultrasonography has been playing an important role in evaluating breast cancer. Breast ultrasound are preferred method of choice in cases of a symptomatic subjects, after clinical evaluation. In cases of subjects without symptoms, breast ultrasound carries a higher sensitivity for detection of breast cancer amongst females with dense breast tissue, females under 50 years of and high-risk females. Various specific indications for breast cancer ultrasound have been described, like evaluation of palpable masses that are masked are evaluated at mammography; differentiation of cystic from the solid nodules; evaluating palpable lesions with related mammographic asymmetry, etc. Mammographically occult tumors can be found by ultrasound in approximately 10% to 40% of the patients contingent on the breast density and age of patient.[5-7] The present study was conducted to assess the accuracy of mammography and ultrasound in women with breast symptoms.

MATERIALS AND METHODS

The present study was conducted in the Department of Radiology, Viswabharathi Medical College, Kurnool, Andhra Pradesh, India. The study was approved by the institutional ethical board and all the subjects were informed about the study and a written consent was obtained from them in their vernacular language. A total of 100 patients were studied. A detailed history from every subject was taken like the age of menarche, menopause, any history of

hormone therapy or chemical exposure etc. Complete examination of breast and radiological examinations were carried out. Amongst all subject's film screen mammography was performed. Subjects younger than 30 years were excluded from the study as mammography was contraindicated in them. Spot compression views were taken when required and indicated. The same radiologist performing the mammography then obtained the ultrasound of the patients using a high-resolution unit. Ultrasounds were taken in supine position. Management of the breast cancer was based on multimodal therapy that combined surgery, radiation and chemotherapy. All the data thus obtained was arranged in a tabulated form and sensitivity and specificity of both the techniques was obtained.

Table 1: No. of subjects as per age group

Age group	Benign	Malignant	Total
30-39	6	10	16
40-49	12	10	22
50-59	16	11	27
60-69	10	11	21
70-79	6	8	14
Total	50	50	100
P value			>0.05

Table 2: Comparative sensitivity of both the techniques

Age group	Total	Mammography	Ultrasound
30-39	16	7	9
40-49	22	12	18
50-59	27	12	19
60-69	21	11	20
70-79	14	7	9
Total	100	49	75
P value			<0.05

Table 3: Comparative Specificity of both the techniques

Age group	Total	Mammography	Ultrasound
30-39	7	4	5
40-49	12	9	10
50-59	16	13	15
60-69	10	5	6
70-79	6	5	4
Total	50	36 (72%)	40(80%)
P value			<0.05

RESULTS

The study enrolled 100 subjects with 50 subjects having benign lesions and 50 having malignant lesions. Table 1 shows the frequency of subjects as per the age group. There were 6 females with benign and 10 females with malignant lesions between 30-39 years of age. There were 12 females with benign and 10 females with malignant lesions between 40-49 years of age. There were 16 females with benign and 11 females with malignant lesions between 50-59 years of age. There were 10 females with benign and 11 females with malignant lesions between 60-69 years of age. There were 6 females with benign and 8 females with malignant lesions between 70-79 years of age. There was no significant difference between the number of females of different age group having benign or malignant lesions.

Table 2 shows the Comparative sensitivity of both the techniques. There was a significant different in the sensitivity between both the groups. Mammography was able to detect 49% of the lesions and ultrasound detected 75% of the lesions. 20 out of 20 cases were detected by ultrasound amongst 60-69 years.

Table 3 shows the comparative Specificity of both the techniques. Ultrasound are more specific compared to mammography. Specificity was 72% with mammography and 80% with ultrasound.

DISCUSSION

Screening mammography is advised every 1-2 years for females once they reach 40 years and every year once they reach 50 years. In few cases, physicians may also advise beginning screening mammography before 40 years of age if the females have a strong family predilection of cancer. Breast cancer is a heterogeneous condition without any single well defined cause. Epidemiological surveys have found various risk factors that elevate the chances of a female to develop cancer. Important risk reasons include early age of onset of menarche, late age of onset of menopause, first term pregnancy after 30 years of age, a family history, or a personal history of benign proliferative lesions. Obesity and urban residence or nulliparity have also been related with an elevated risk of cancer. Mammography plays an important role in quick and early detection of breast cancers, about 75% of breast cancers were detected at least a year before clinical symptoms. There are 2 forms of mammography: screening and diagnostic. Screening mammography is performed amongst asymptomatic females. Early uncovering of small breast lesions by screening mammography importantly improves a female's chance for successful operation. Diagnostic mammography is time-consuming compared to screening mammography and is used to evaluate the exact size and location of abnormalities. In our study, there was a significant different in the sensitivity between both the groups. Mammography was able to detect 49% of the lesions and ultrasonography detected 75% of the lesions. 20 out of 20 cases were detected by ultrasound amongst 60-69 years. Ultrasound are more specific compared to mammography. Specificity was 72% with mammography and 80% with ultrasound. In our study a progressive improvement in mammography sensitivity was observed amongst women 45 years or elder, that Was observed in other studies also.[8-10] However, amongst females 45 years or younger, ultrasound had a significantly more sensitivity than mammography. Our study also illustrated the difference in specificity of the two imaging modalities. Various studies showed a greater specificity for ultrasound compared to the mammography.[11,12] Ultrasound has long been used as an efficient diagnostic aid in evaluating the palpable and mammographic abnormalities.[13,14]

CONCLUSION

Ultrasound of breast is clearly more advantageous over mammography. Mammography play an important role in diagnostic screening of the lesions whereas confirmatory and for evaluation of breast density, ultrasound are crucial.

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