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Full Length Research paper

Radiological findings of breast cancer screening in a newly equipped centre

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This study is to appraise the imaging findings of all patients that came into the breast imaging unit for screening and perhaps buttress the importance of a government policy guideline on screening and treatment for breast cancer in Nigeria. This prospective study was carried out among all consecutive patients that came for screening in the breast imaging unit of the University of Ilorin Teaching Hospital (U.I.T.H), Ilorin, Kwara State, Nigeria, between April, 2009 and January, 2011. Aloka prosound SSD-350+ ultrasound machine equipped with linear and curvilinear 7.5- 10 MHz transducers was used for breast scan in longitudinal, transverse, radial and anti-radial planes. Mammograms were acquired with a GE Senographe DMR machine using two standard views (cranio-caudal and mediolateral oblique) and additional views where necessary. The biodata were retrieved from the request forms or directly from the patients and the imaging findings and prospective breast imaging reporting and data system (BIRADS) category assigned to each case were documented. These were analysed for this study. One hundred and two women presented for screening mammogram and eight for screening breast ultrasound scan. The age range was 31 to 75 years (49.7years +/- 7.65) and the modal age was 50 years (8.2%). With the modalities combined, majority of the patients (46.36%) had BIRADS 2, with 36.36, 15.45 and 0.9% having BIRADS 1, 3 and 0 respectively. A patient (0.9%) had BIRADS 5 assessment category. This study was able to detect positive and other negative lesions. The positive case was seen in a woman that presented voluntarily for screening. Mammography is becoming available in this part of the world and increased public awareness is necessary to optimise its use. However, the high cost of screening and treatment of cancer might be a limiting factor, thus a well planned government policy on screening and treatment of breast cancer will go a long way in reducing the morbidity and mortality from this dreaded disease.

Key words: Breast cancer screening

INTRODUCTION

Breast cancer is the leading female malignancy in Nigeria. Screening for early detection has led to reduction in mortality from the disease (Adebamowo et al., 2003; Roshan et al., 1994). Breast cancer screening can involve a number of different types of examinations, which include breast self examination, clinical breast examination, mammography, magnetic resonance imaging and ultrasound. There are well documented screening out-comes from various studies in the developed countries (Poplack et al., 2000; Nystrom et al., 1993; Roberts et al., 1990; Frisell et al., 1991) but scanty results from developing countries. This can be attributed to inappropriate funding of the health care system and lack of definite policy on cancer screening and treatment. Mammography is highly sensitive for early detection of cancer and thus remains the goal standard in breast cancer screening in women forty years and above.

However, its sensitivity in cancer detection is reduced in mammographically dense breast. Ultrasound is useful

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Table 1. Age distribution of women.

Age range (years)	Frequency	Percentage
31-40	11	10.1
41-50	52	47.7
51-60	40	36.3
61-70	5	4.6
71-80	2	1.8
Total	110	100

Table 2. BIRADS category frequency among patients.

BIRADS	Frequency	Percentage
0	1	0.9
1	40	36.36
2	51	46.36
3	17	15.45
5	1	0.9
Total	110	100%

in diagnosing breast lesions especially in women younger than 40 years due to the dense nature of the breast in this age group. Hence, some authors are propagating the use of breast ultrasound as a screening modality (ACR standards, 2000). There is a positive correlation between breast cancer awareness and screening practice (Stager, 1993). The need to increase awareness of screening and highlights its merits in order to institute early treatment in positive cases has prompted the documentation of our findings in our newly equipped centre.

METHODOLOGY

This prospective study was carried out among all consecutive patients that came for screening in the breast imaging unit of the University of Ilorin Teaching Hospital (U.I.T.H), Ilorin, Nigeria between April, 2009 and January, 2011. Criteria for mammographic breast screening includes women 40 years and above, and younger women with family history of breast cancer. Ultrasound screening was done in women less than 40 years and those with equivocal mammographic findings.

Aloka prosound SSD-350+ ultrasound machine equipped with linear and curvilinear 7.5- 10 MHz transducers was used for breast scan in longitudinal, transverse, radial and anti-radial planes. Mammograms were acquired with a GE Senographe DMR machine using two standard views (cranio-caudal & mediolateral oblique) and additional views such as spot compression magnification view, cleavage view and exaggerated cranio-caudal view where necessary. The biodata were retrieved from the request forms or directly from the patients and the imaging findings and prospective Breast imaging reporting and data system (BIRADS) category assigned to each case were documented. Data generated was analyzed using SPSS version 15.

RESULTS

A total of 110 women had screening; one hundred and two women (102) for screening mammogram and eight (8) for screening breast ultrasound scan. The age distribution is as shown in Table 1. The age range was 31 to 75 years (49.7years ± 7.65) and the modal age was 50 years (8.2%).

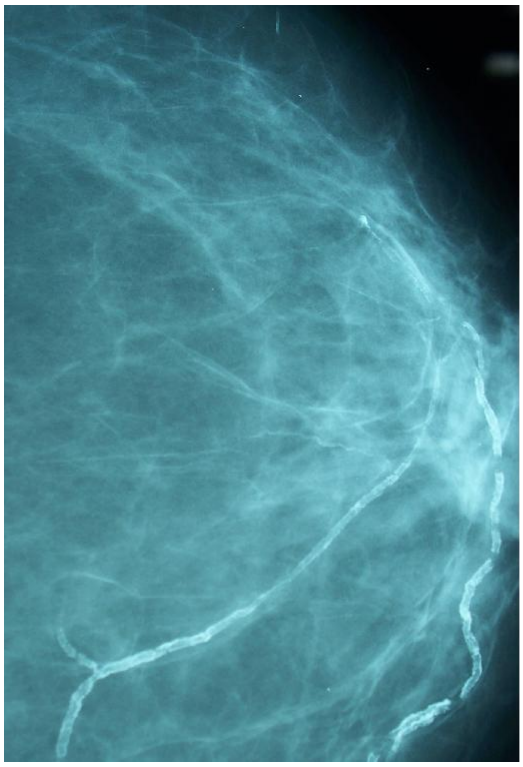
The distribution of breast lesions according to BIRADS classification is shown in Table 2. With the modalities combined, majority of the patients (46.36%) had BIRADS 2, 36.36% BIRADS 1, 15.45% BIRADS 3 and 0.9% BIRADS 0. A woman (0.9%) had BIRADS 5 assessment category. The mammographic findings of the 54 year old woman who had a BIRADS 5 category were that of a right breast irregular, ill-defined area of architectural distortion at about the 9 o'clock position with associated punctuate and linear calcifications. This was confirmed on ultrasound as an irregular, spiculated, hypoechoic lesion with associated weak posterior enhancement and it measured about 9.6 mm × 9.3 mm (height ×width).

The ipsilateral axilla showed an enlarged node with loss of its fatty hilum, this measured 21.8 mm × 10.9 mm. The ultrasound guided fine needle aspiration cytology (FNAC) result was positive for malignant cells and this was confirmed on histology.

The recall rate in this study was 22.54% (23 of 102) as one of the women did not show up for further imaging. Twenty of the recalled women retained their assessment status while the two inconclusive categories had a final BIRADS assessment category of 1.

DISCUSSION

Breast cancer is the foremost female malignancy worldwide including Nigeria and the second leading cause of cancer death (Adebamowo et al., 2003; Parkin et al., 2005). Studies have shown that more than 1.15 million women are diagnosed with breast cancer each year and 502,000 die from the disease (Montazeri et al., 2008). Local studies (Okobia and Osime, 2001; Anyanwu, 2000; Ihekwaba, 1992) have reported that late presentation is the usual trend in women with breast cancer in this environment and this can be directly related to the level of awareness, the risk factors and practice of screening methods. Screening mammography is widely practiced in the developed world and reports from Western Europe and North America revealed reduction in mortality from breast cancer due to adoption of screening methods for detection of early diseases (Parkin et al., 2005; Olsen et al., 2005). On the contrary however, screening mammography is relatively uncommon in developing countries



Figures 1 Right cranio-caudal views showing vascular calcifications.

Figures 2. Left cranio-caudal views showing vascular calcifications

like Nigeria due to the scarce availability of mammographic machines and shortages in personnel, ignorance and inappropriate funding in health care system (Anderson et al., 2006). The breast imaging reporting and data system (BI-RADS), developed by the American College of Radiology in 1993, provide a standardized classification for mammographic studies and demonstrate good correlation with the likelihood of breast malignancy and with some modifications have been applicable to breast ultrasound (ACR standards, 2003; Obajimi et al., 2005).

Large scale screening programmes in developed countries show that vast majority of screening mammograms are classified as BIRADS 1 and 2, about 7% as BIRADS 3 and 2% as BIRADS 4 or 5 (Varas et al., 1992; Monticciolo and Caplan, 2004; Fletcher et al., 1993). The BIRADS 1 and 2 categories constituted the majority in this study in concordance with previous studies. Of the BIRADS 2 categories, findings of benign axillary or intramammary lymph nodes were the most commonly documented and this was followed by benign calcifications of vascular (Figures 1 and 2) and parasitic nature. Few cases of prominent ducts were also seen which were confirmed on ultrasound with no sinister features. The BIRADS 3 lesions are however higher in this study compared to previous studies. This category was assigned to circumscribed, well defined, regular, parallel lesions which were confirmed with ultrasound as solid masses and fitted into the category of benign lesions. They were mostly assumed to be fibroadenomas. The only BIRADS 5 lesion (Figures 3 and 4), constituting 0.9% of the study population, is also lower compared to previous studies; this disparity can be explained by the lower population size compared to other published studies (Poplack et al., 2000; Nystrom et al., 1993; Roberts et al., 1990; Frisell et al., 1991). The highly suspicious mammographic and sonographic findings were confirmed by cytology and histology.

This positive finding is significant, considering the fact that awareness to cancer screening is generally low with late presentation being the pattern in this environment. A report of the international workshop on randomized controlled trials of breast cancer screening collated from various screening trials concluded that for women aged 40 to 49, there was no benefit after 5 to 7 years of entry into the screening but for women aged 50 to 69, screening reduces breast cancer mortality by about a third (Fletcher et al., 1993). This however contradicts findings from local studies that shows that breast cancer predominantly occur a decade earlier in Nigerians than in

Figure 3. Right breast mammogram (CC view) showing an area of architectural distortion with associated punctuate and linear calcifications at the 8 o'clock position.

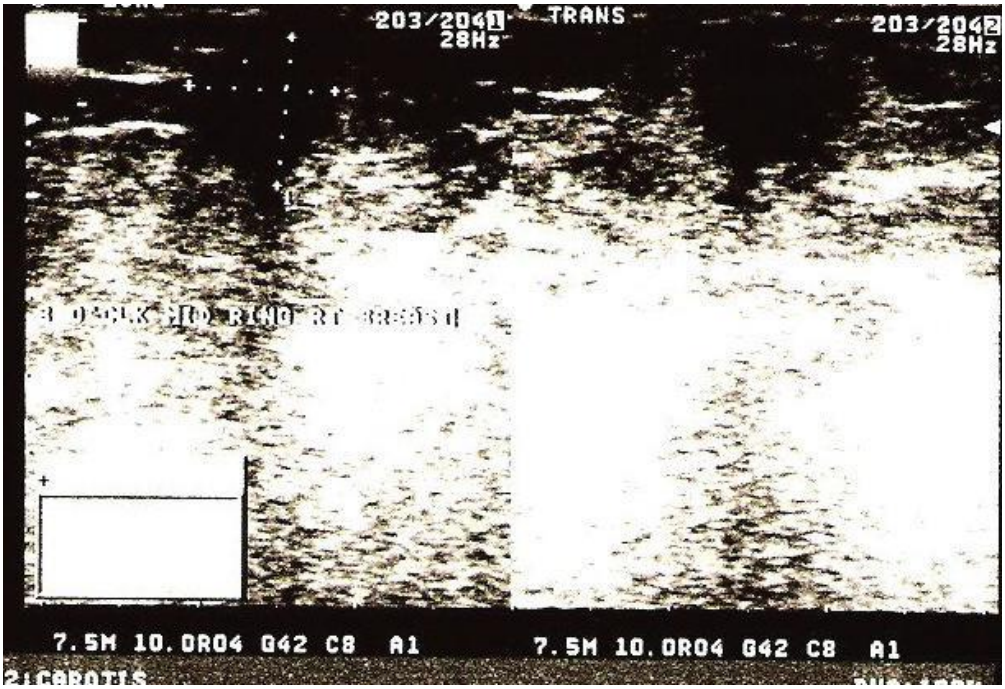


Figure 4. Longitudinal and transverse image of the breast showing an irregular, spiculated anti-parallel hypoechoic lesion which is highly suspicious.

Caucasians (Okobia and Osime, 2001; Anyawu, 2000; Ihekwaba, 1992; Otu et al., 1989, Chiedozi, 1985) and justify the need to start screening by age 40 years and possibly earlier in women with strong risk factors for breast cancer.The recall rate in this study was 22.54% (23 of 102) as one of the women did not show up for further imaging. This rate, which is a proportion of initial screening examinations assessed as incomplete with a need to use an additional imaging/modality to arrive at a final twentyof the recalled women retained their assessment status while the two inconclusive categories had a final BIRADS assessment category of 1.

In conclusion, this study, though of a small population size has been able to diagnose breast cancer and other benign findings in women who underwent breast cancer screening.

It is hoped that large scale screening programmes will be conducted in different parts of the country to facilitate early detection of breast cancer following sensitization programmes with government's adoption of recommendations from previous studies (Akinola et al., 2010).

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