ORIGINAL ARTICLE

HISTOLOGICAL OUTCOME OF BIRADS 5 BREAST LESIONS IN MAIDUGURI, NORTH EASTERN NIGERIA

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ABSTRACT

Background: BIRADS 5 breast lesions are greater than 95% suggestive of malignancy according to the ACR-BIRADS lexicon. **Objectives:** To review histological outcome, positive predictive values, and specificity of BIRADS category 5 breast lesions. **Methods:** This retrospective study reviewed all the demographic and histopathologic results of patients with BIRADS 5 breast lesions diagnosed in university of Maiduguri teaching hospital, North Eastern Nigeria over a period of one year with their 2 year follow-up mammogram. **Results:** Twenty three patients, aged 17 – 60 years, with mean age of 40±10.1 years were diagnosed with BIRADS 5 breast lesion during the study period. The lesions were bilateral in one (4.3 %), on the right side in 9 (39.1 %) and on the left side in 13 (56.5%) patients. Nineteen (82.6%) had malignant lesions, with invasive ductal carcinoma being the commonest malignancy (69.6%) and fibroadenosis was the commonest benign lesion 2 (8.7 %). The specificity and *Positive Predictive Value* were 50% and *82.6% respectively.* **Conclusion:** The cancer rate in our study is about 82.6 % which is lower than the BIRADS lexicon of 95%, therefore we recommend a detailed verification of the BIRADs categorisation in our environment.

KEYWORDS : Mammography, Histology, Breast cancer, BIRAD category 5, Ultrasound Guided Biopsy

INTRODUCTION

Mammography is known to be the best and most effective tool for detecting early breast cancer in women.[1] It has a high specificity and sensitivity in the diagnosis of breast cancer at its earliest stage.[2] Screening mammography in women above 40 years of age detects about 150 new cases of suspected lesions in every 20,000 mammograms of women presenting with non-palpable lesions and requiring histological diagnosis to support the mammographic findings.[3] Despite the good performance of mammography in the identification of early stages of breast cancer, only 15% to 30% of non-palpable lesions submitted to surgical biopsy are malignant.[4]

The American College of Radiology developed the Breast Imaging Reporting and Data System (BIRADS) to standardize the terminology employed for mammographic reports. The fourth ACR-BIRADS edition, of November 2003, proposed seven categories for mammographic findings: negative for malignancy (1), benign (2), probably benign (3), suspicious for malignancy (4), highly suspicious for malignancy (5), with proven malignancy (6) and requiring additional evaluation (0). Category 4 is sub-divided into A, B and C.[5,6]

Based on Bayes Theorem, True positive (TP) is regarded as cancer diagnosed within 60 days of the mammographic examination, while True negative (TN) was regarded as no cancer diagnosed within 60 days of the mammographic examination.[7] False positive (FP) was no proven cancer diagnosis within 2

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years of the positive mammographic examination study (BIRADS category 5) or benign biopsy findings within 60 days after the mammographic examination with BIRADS category 5. Positive predictive value is given by the mathematic expression; TP/ (TP + FP) X 100%. Specificity is the number of mammographically normal cases in a population divided by all normal cases in the population (TN/TN + FP).

Between 5% and 9% of screening mammograms will require additional imaging and biopsy including up to 7% of mammograms classified as BI-RADS category 3 as well as 2% of BI-RADS 4 or 5 mammograms.[8,9] The positive predictive value of a biopsy positive for malignancy increases from 2% for BI-RADS category 3 mammograms to 23% to 30% for category 4 mammograms and to 95% for category 5 mammograms.[10,11] In the United states, the positive predictive value (PPV) for biopsy performed because of mammographic findings ranged from 15%-40%.[12,13] The mammographic features associated with the highest positive predictive value of malignancy include masses with spiculated margins and/or irregular shape, as well as microcalcifications with linear morphology and/or segmental distribution.[14] The purpose of this study is to determine the histologic outcome, positive predictive values, and specificity of BIRADS category 5 breast lesions.

MATERIALS AND METHODS

This is a retrospective study of all patients with BI-RADS category 5 lesions on mammography, who underwent biopsies in University of Maiduguri Teaching Hospital in year 2010. Data were collected from the mammography data capture sheet as well as from mammograms, ultrasound, histology reports and 2 year follow up mammogram and clinical information. Patients with incomplete data and those who failed to respond to recalls were excluded from the study. We reviewed all the mammographic and histopathological results and correlated them with the patients age, mammographic findings and the affected side etc. we calculated the positive predictive value (PPV), negative predictive value (NPV); sensitivity as well as specificity of mammography using Bayes' theorem. Also, a correlation was made between the most relevant radiological findings and malignant neoplasm for BIRADS category 5. Informed written or sometimes verbal consent was obtained before any biopsies were performed at the University of Maiduguri Teaching Hospital.

RESULTS

The records of 23 patients' aged 17 to 60 years were studied (Table 1). Nineteen (82.6%) had histologically proven malignancy, and invasive ductal carcinoma was the commonest malignancy (69.6%) while fibrocystic change was the commonest benign lesion as depicted in Table 2. The lesions are bilateral in 1(4.3%) case, on the right side in 9(39.1%) and on the left side in 13 cases (56.5%).The positive predictive value is about 82.6 %, while the specificity is about 50% (Table 3).

Table 1: Age distribution of the women

Age (years)	Frequency	Percentage (%)
16-25	2	8.7
26-35	7	30.4
36-45	8	34.8
46-55	4	17.4
56-65	2	8.7
TOTAL	23	100

Table 2: Distribution of histological findings in BIRADS category 5 among the study subjects

Histological Diagnosis			
Benign		Malignant	
Finding	Frequency (%)	Finding	Frequency (%)
Fibrocystic Change	2 (8.7)	Invasive ductal carcinoma	16(69.6)
Abscess	1(4.3)	Sclerosing Adenosis	1(4.3)
Tuberculous Adenitis	1(4.3)	Mucinous Adenocarcinoma	2(8.7)

Table 3: Specificity, positive predictive Value and other epidemiology parameters of BIRAD category 5 lesions studied

Epidemiological parameters	Value
True Positive	19
False Positive	4
True Negative	4
Positive Predictive Value	82.6%
Specificity	50%

DISCUSSION

Mammography has been widely used as the most effective screening and diagnostic tool for breast cancer. BIRADS categorization is useful to standardize mammographic reports and has been widely accepted as an effective and practical reporting system both for radiologists and clinicians. The final assessment category gets rid of confusion regarding further management of the patients. Mammographic reports with BIRADS categories 1, 2 and 3 were classified as negative. Mammographic reports with BIRADS categories 4 and 5 were classified as positive.

In this study, we recorded a specificity of 50%, which is lower than 80.7 – 98.1% documented by other researchers.[15,16,17,18] This can be explained by methodological differences and the disparity of facilities in the study area. A high positive predictive value of 82.6% was noted, which is similar to findings of Siriport et al[16] of 80%. A sensitivity of 82.6% noted from this study is higher than 68% recorded by José et al[19]

Similar to other reports, the most common histologic diagnoses of benign lesions biopsied in our centre was fibrocystic changes (50%), and the histologic diagnoses of malignant lesions in the present study group were invasive ductal carcinoma (84%). No case of carcinoma in situ was reported in our study.[14]

In conclusion, our study has shown that BIRADS allow a safe prediction of high suspicion of malignancy in lesions of category 5 though it is lower than that of BIRADS lexicon which 95% prevalence. ▬

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