Breast Disease Pattern In Jos North Central Nigeria: A Review Of Mammography Reports.

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Abstract- **Objectives**: Mammography has remained the gold standard globally for breast cancer screening. Patients with breast lesions in our environment are generally anxious due to the fact that breast cancer is associated with high mortality. This study aims to review the pattern of breast lesions in our environment.

Method: This is a Retrospective study of Mammographic reports of women who had mammogram for screening and diagnostic purposes between March 2017 and November 2019.

Results: The commonest indication for mammography in the study was breast lump (38.6%). BIRADS II was the most prevalent category constituting 40.3% followed by BIRADS I accounting for 27.3% .Patients with Positive BIRADS (IV and V) for malignancy account for 19.1% while Negative BIRADS (I, II and III) accounted for 79.6%.

Conclusion: Majority of the breast lesions were benign and breast lump was the most prevalent complaint.

Index Terms- Breast cancer, Mammography, BIRADS, Breast Lump

I. INTRODUCTION

The American College of Radiology (ACR) developed Breast Imaging Reporting and Data System (BI-RADS), which was first published in 1993 and subsequently upgraded in 2003 to cover findings in Ultrasonography and Magnetic Resonance Imaging have so far achieved the goal of harmonizing and standardizing the system of reporting breast diseases. The BIRADS system of reporting uses specific terminology to describe lesions in the breast and which conclusions are derived and classified into groups ranging from 0 to 6[1].

Guidelines for imaging a palpable breast lump differ for different age groups. However, mammography remains the mainstay for patients above age forty and ultrasonography for patients who are thirty and below. Current ACR guidelines for evaluation of women age 30-39 years with palpable breast masses still stipulates mammography in addition to ultrasonography[2]. This is as a result of its high sensitivity to depict subtle breast lesions[3]. In Nigeria and most developing countries of the world, the increase availability of mammography and other imaging modalities has help in early detection of Breast cancer[4,5].

Breast lumps are generally a cause of anxiety and worry to patients, their relations and the care givers, especially knowing that the outcomes of such conditions like cancer comes with high rates of mortality and morbidity [5,6].

Breast lesions are generally grouped into benign or malignant breast lesions. The pattern of breast lesions on mammography differ worldwide with studies in sub-saharan Africa showing over 70% of breast lesions are benign with malignant lesions account for the balance.[6,8]

This study seek to evaluate the pattern of breast lesions as depicted by mammography in women presenting for routine screening and diagnostic purposes in Jos North Central Nigeria.

II. MATERIALS AND METHODS

This is a retrospective study conducted in a privately owned diagnostic center in Bukuru, Jos North Central Nigeria covering a period of two years (2017-2019). Mammography request forms were used to extract patient's data e.g. age, sex, clinical history/indications and provisional diagnosis. Information corresponding to mammographic reports and BIRADS classifications which were previously reviewed by two qualified radiologist were then recorded.

In this study BIRADS 1, 2 and 3 are classified as Negative result for cancer, BIRADS 4 and 5 are classified as Positive result for cancer while BIRADS 0 is classified as inconclusive result that required additional evaluation with other imaging modality [7,9,10,19]. The data collected was collated and analyzed using the IBM SPSS STATISTICS VERSION 22.0 and EXCEL OFFICE 2013 was used to plot the charts.

Statistical significance was tested using Chi-square distribution (for test of difference in proportions). A p-value less than or equal to 0.05 was considered statistically significance.

III. RESULTS

The mean age of participants in the study was 47.1 ± 11.2 years with age range of 30-83years. Participants aged 40 – 49 years (42.9%) dominated the study population. Only 2.3% were 80 years and above. (Table 1).

The commonest indication for mammography was breast lump which accounts for 38.6 % followed by pain in the breast which accounts for 24%.Others include Itching (1.0%), Nipple discharge (6.2%), Nipple retraction (3.2%), Routine check (23.7%) and Breast swelling (3.2%) (Table 2).

The study revealed BIRADS category 2 accounting for majority 124(40.3%) followed by BIRADS 1 which accounts for 84(27.3%). A total of 59(19.1%) had positive BIRADS for cancer while the majority 245(79.6%) had negative BIRADS for cancer. Only 4(1.3%) were inconclusive needing additional investigation. Mean BIRADS score was 3.3±1.3 with minimum score as 0 and the maximum score as 5. (Table 3).

The age group with the most participant with positive BIRADS score for cancer is 50-59 (22) followed by 40-49(14) and the least is age groups 70-79 and 80 and above with (4) each.

The study showed a significant statistical relationship between BIRADS Score and Age distribution of breast disease. (Chi-square 37.614, P-value = 0.023) (Table 4).

IV. DISCUSSION

Universally, mammography has remained the gold standard for breast cancer screening and diagnosis due to its ability to depict small tumors that are hitherto not clinically palpable[9,11]. Dense fibroglandular breast tissue and overlap of tissues which beforehand has remained a stumbling block in the evaluation of breast masses has been overcome by the introduction of Digital Breast Tomosynthesis (DBT) which allows for three dimensional images of the breast to be reviewed[12].

The indications for mammography are fluid globally and our study showed these accession, where majority of the participants indicated breast lump as the reason for undertaken the test, followed by breast pain and routine breast cancer screening. This is in agreement with previous findings by researchers on presenting complaints for mammography[4,5,9,15].Breast pain as a presenting complaint accounted for 56.3% of the participants in a similar study in south east Nigerian[14] and the most common complaint in another study done by Ehsanbakhsh MD et al in Iran[7]. The anxiety and worry that comes with the feeling of a lump in the breast most have been the reason for the percentage of women who presented at the center. However, a similar study in the same city under taken by Ozoilo KN et al on breast cancer screening indicated breast pain as the most common reason why women present for mammography[16.] The participants in our study were for both diagnosis and screening mammography and possibly the reason for the difference.

The BIRADS category 2 and 1 accounts for 40.3% and 27.3% respectively for the mammographic reports reviewed. Similar findings were documented in studies done by Obajimi MO et al, Akande HJ et al and Akinola RA et al in southwest Nigeria and Brakohiapa EK t al in Ghana. Positive BIRADS for Malignancy (category 4&5) accounted for 19.1% while a majority 79.6% are negative for malignancy (category 1,2 &3).Studies globally have shown that benign breast lesions account for majority of breast lesions [3,6,7,13,19].

In 1993, an international collation of randomized trials of breast cancer screening from various studies showed no significant benefit in outcomes for women aged 40-49 who have been enrolled into a screening program between 5-7years.It however, showed that screening reduces breast cancer deaths by about one third in women aged 50-59years[20].

The peak age for breast cancer in Asia and the Western nations differ considerably with a lower peak age range (45-50) recorded in Asia and higher range noted in the west[21].Our findings revealed age group 50-59 years have the highest number of women with BIRADS categories 4 and 5. Mawahib Rizig et al in Khatoum found a higher percentage of breast cancer in age group 41-55. Although our study encompasses both diagnostic and screening mammography and possibly the reason for this findings when compared with other studies in other parts of Nigeria and other developing Sub-Saharan countries where higher incidence of breast cancer were a decade earlier[14,17,22,23].

of breast lesions world-wide are non-cancerous in nature and our study showed that with over 79% of the mammograms reviewed fall within BIRADS categories 1-3 while 19.1% of the participants had positive result for malignancy[3,19,20,26,27] . Ehsanbakhsh et al showed 91.7% accounting for benign breast disease while 11.9% of participants (screening and diagnostics) had positive results for cancer. Obajimi MO et al in a screening mammographic study in the south west of Nigeria reported 1.7% of the participants within the BIRADS categories 4 and 5.The lower percentage is attributed to the screening for breast cancer as against ours that encompasses both screening and diagnostic.

The study showed a significant statistical relationship between BIRADS Score and Age distribution of breast disease.

According to the American Cancer Society all women are at risk for developing breast cancer and estimates that one woman in every eight will develop the disease during her life time. A majority of such women will not have previous family or exposure histories that would have placed them at higher risk.

Our finding showed majority of the breast lesions are benign and the age group 50-59 years accounting for the highest number of BIRADS category positive for cancer.

V. CONCLUSION

Breast lump and pain accounted for more than half of the reason for mammography in this study. The most prevalent BIRADS category was BIRADS II and majority of the findings were negative for cancer (BIRADS I, II and III). The need for regular awareness on breast cancer and screening among young women within the internationally recommended age should be encouraged.

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TABLES AND FIGURE OF LEGENDS

Table 1: Age distribution of participants

Age (Years)	F	%	Mean±Std.
30-39	33	10.7	47.1±11.2
40-49	132	42.9	
50-59	91	29.5	
60-69	36	11.7	
70-79	9	2.9	
80+	7	2.3	
Total	308	100.0	
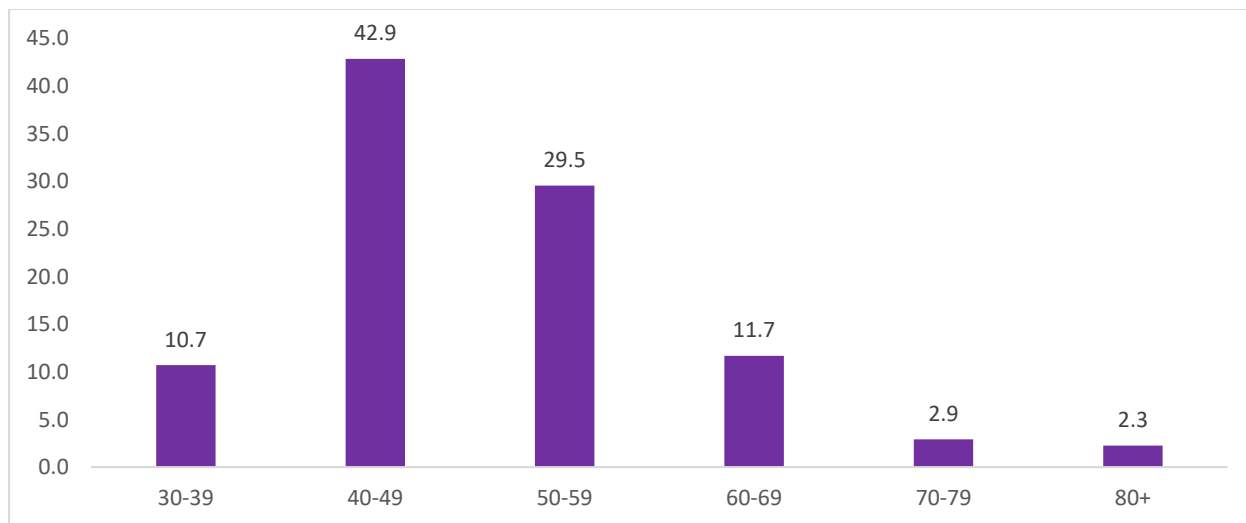
Figure 1: Age distribution of participants

Table 2: Frequency distribution of Indication

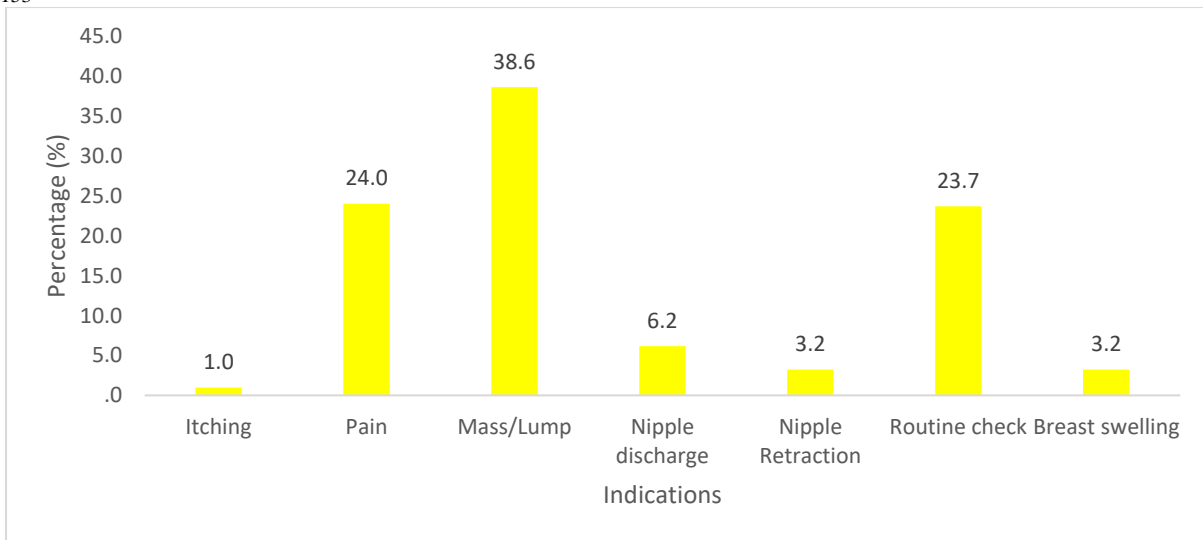| INDICATION	f	%
Itching	3	1.0
Pain	74	24.0
Lump	119	38.6
Nipple discharge	19	6.2
Nipple Retraction	10	3.2
Routine check	73	23.7
Breast swelling	10	3.2
Total	308	100.0

Figure 2: Frequency distribution of Indication

Table 3: Distribution of participants by BIRADS Scores

BIRADS	F	%	Mean± Std.	Min.	Max.
0	4	1.3	3.3±1.3	1	6
1	84	27.3			
2	124	40.3			
3	37	12.0			
4	29	9.4			
5	30	9.7			
Total	308	100.0			

Table 4: Distribution of Age and BIRADS Scores

Age (Years)	BIRADS SCORES							Chi-square	P-value
	0	1	2	3	4	5	Total		
30-39	0(0.0)	9(10.7)	14(11.3)	4(10.8)	4(13.8)	2(6.7)	33(10.7)	37.614	0.023*
40-49	1(25.0)	41(48.8)	61(49.2)	15(40.5)	9(31.0)	5(16.7)	132(42.9)		
50-59	1(25.0)	24(28.6)	34(27.4)	10(27.0)	10(34.5)	12(40.0)	91(29.5)		
60-69	2(50.0)	10(11.9)	10(8.1)	5(13.5)	4(13.8)	5(16.7)	36(11.7)		
70-79	0(0.0)	0(0.0)	2(1.6)	3(8.1)	1(3.4)	3(10.0)	9(2.9)		
80+	0(0.0)	0(0.0)	3(2.4)	0(0.0)	1(3.4)	3(10.0)	7(2.3)		

| Total | 4(100.0) | 84(100.0) | 124(100.0) | 37(100.0) | 29(100.0) | 30(100.0) | 308(100.0) |

* = Fisher's Exact Test