(RESEARCH ARTICLE)

Pattern of breast cancer presentation in a tertiary hospital in Lagos, Nigeria

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Abstract

Breast cancer is a major public health issue all over the world. While morbidity and mortality are reducing in developed world, they are rather very high in developing countries. This study was designed to determine the pattern of breast cancer in our patients, including the associated risk factors, the commonest molecular types, commonest age and stage of presentation. Consecutive patients diagnosed with Breast Cancer following Tru-cut biopsy, at any stage were recruited. Immunohistochemistry was done using the biopsy specimen. A well-structured questionnaire was prepared and administered after taking oral consent. History was taken and physical examination done. Data was analyzed by IBM SSPS Statistics 24. We had 189 respondents, age range 25-77years, 187 females and 2 males. Commonest presenting complaint was breast lump only (54%), commonest age at presentation was 41-50years (29.6%). Stage at presentation was stage III (48.7%). The predominant histological type is Invasive Ductal Carcinoma (74.3%). standardized (regression) coefficients of history of breast cancer (1.267), presence of other cancers in the family (1.560) and smoking (1.206) suggests that they are associated risk factors for breast cancer. The predominant molecular subtype is Lumina A (29%) and 44.8% were triple negative.

Keywords: Breast cancer; Triple negative breast cancer (TNBC); Immunohistochemistry (IHC); Invasive Ductal Carcinoma; Estrogen Receptor (ER); Progesterone receptor (PR)

1. Introduction

Breast cancer has become a major public health issue worldwide leading to considerable morbidity and mortality. Mortality has however shown a gradual decline[1] in the United States as against Africa [2,3] and especially in Nigeria[4] where there has been a gradual rise in incidence, from 13.7 per 100000 (1960–1969), 24.7 per 100000(1998–1999) to 54.3 per 100000(2009–2010) with considerable mortality. Breast cancer in Nigeria has overtaken cervical cancer as the number one cause of cancer death in females [5].

Breast cancer occurs in both sexes but is much commoner in females and representing less than 1% of cancers in males worldwide [6,7].

There are several risk factors [6] that have been implicated over time in the causation of breast cancer. These include early menarche (age below 11 years), late menopause (age above 55), nulliparity, age at first full term pregnancy above 30 and positive family history of breast cancer all of which have been shown to increase the risk of developing breast cancer. Other factors include obesity, which studies suggest but not conclusively, protects against breast cancer in premenopausal women but increases risk in post-menopausal women [8]. Oral contraceptives, hormone replacement therapy, alcohol and smoking all increase breast cancer risk.

Protective factors include breastfeeding, age at first full-term pregnancy below 30 and parity.

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Breast cancer has been found not to be one disease, but a heterogeneous entity [9], with several subtypes having been detected following molecular studies. Using gene expression profiling studies, several sub-types have been identified and these have direct effect on outcome and prognosis [10, 11, 12, 13]. These subtypes include Lumina A, Lumina B, HER-2 over-expression and triple negative. This classification into molecular subtypes helps in determining optimal treatment options and eventual prognosis [14]. However, this profiling is not always done due to financial constraints [3] necessitating that patients sometimes are given blind treatment and poor documentation.

Breast cancer could be early or late, depending on the stage at presentation. This is a major determinant of prognosis and eventual outcome. Largely, in this environment, our patients present late for a variety of reasons which is partly responsible for the high mortality. This contrasts sharply with the situation in developed countries where overall survival has increased, even in the number of women living with metastatic breast cancer in the US [15].

This study was undertaken to see the pattern of presentation and receptor status of our patients.

2. Material and methods

Consecutive patients diagnosed with Breast Cancer at any stage were recruited into the study. A well-structured questionnaire was prepared, oral consent obtained after carefully explaining the purpose of the study. History was taken and physical examination done. The proformas were filled by directly questioning the patients. Samples were taken and sent for IHC.

Data was analyzed by IBM SSPS Statistics 24.

Patients who were too ill to answer questions, or died before treatment or before investigations were concluded were excluded from the study. Others who discontinued before conclusion of investigations were also excluded.

3. Results

There were a total of 189 respondents. The age range of the respondents is 25-77years with mean of 47.96. The weight range is from 46.5 -108, and a mean of 71.48. The mean BMI of the respondents is 27.7 and a range of 14.6-69.6. The duration in days of the presenting symptoms is 1.0-300 with a mean of 14.17(Table I).

The commonest presenting complaint (Table II) was breast lump only in 102(54.0%), while 58(30.7%) presented with axillary mass and breast lumps, 8(4.2%) presented with back and chest pain, 2(1.1%) presented with cough.0.6% of the respondent presented with back pain, cough and breathlessness, 0.6% presented with chest pain, breast lump and cough, 2(1.1%) of the respondent presented with axillary mass and back pain, 8(4.2%) presented with weight loss and breast lump, 4(2.1%) presented with nipple discharge and breast lump and 5(2.6%) presented with skin changes in the breast.

The commonest age at onset (Table III) was 41-50 years with 56 (29.6%) of the respondents while the least was the age range 21-30 with 7 (3.7%) of the respondents. Others include 26.5% (31-40), 24.3% (51-60) and 15.9% (61 years and above). The sex distributions in this study showed that 2(1.1%) of the respondent were males, while 187(98.9%) were females. (Table IV).

Table 1 Descriptive analysis

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Age	189	25.00	77.00	47.9628	11.30632
Height (m)	189	1.00	2.00	1.6168	0.12754
Weight (m)	189	46.50	108.00	71.4867	13.44719
BMI	189	14.6	69.6	27.715	6.4039
Duration in Days (Common Presenting symptoms)	189	1.00	300.00	14.1702	33.22783

Table 2 Presenting complaint

| Items	Frequency	Percentage
Lumps	102	54%
Axillary Mass and breast lump	58	30.7%
Back pain and Chest pain	8	4.2%
Cough	2	1.1%
Back pain, cough and breathlessness	1	0.6%
Chest pain, breast lump and cough	1	0.6%
Axillary Mass and Back pain	2	1.1%
Weight loss and breast lump	8	4.2
Nipple discharge and breast lump	4	2.1
Skin change	5	2.6
Total	**189**	

n-191
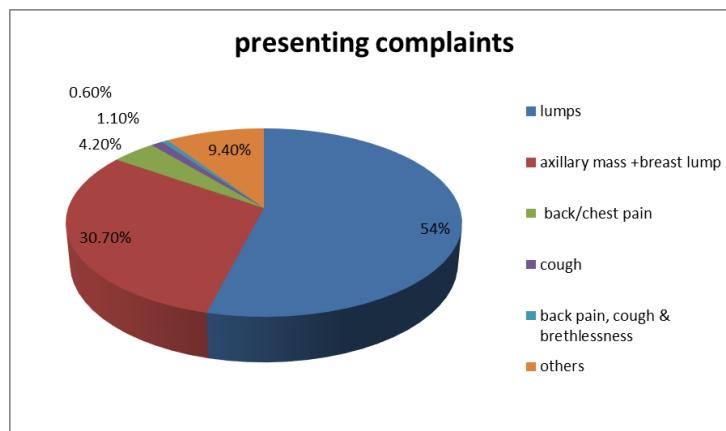
Figure 1 Pie chart showing distribution of presenting complaints
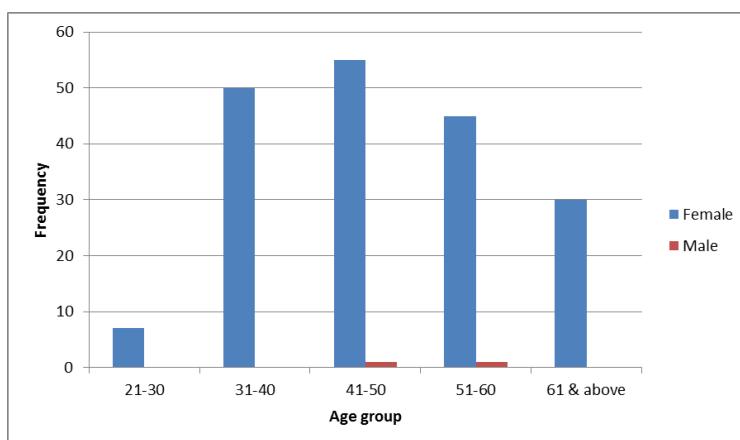
Figure 2 Age-sex distribution of breast cancer

Table 3 Age at onset

Items	Frequency		Total	Percentage
	M	F		
21-30 years	0	7	7	3.7%
31-40 years	0	50	50	26.5%
41-50 years	1	55	56	29.6%
51-60 years	1	45	46	24.3%
61years and above	0	30	30	15.9%
Total	2	187	189	100%

Figure 3A Advanced Left breast cancer

Figure 3B Advanced Right Breast Cancer

Figure 4 Bilateral Breast Cancer

Table 4 Sex predilection

Items	Frequency	Percentage	Mean	SD
Male	2	1.1%		
Female	187	98.9%		
Total	189	100%	1.99	0.103

The sex distributions in this study showed that 1.1% of the respondent were males, while 98.9% of the respondents were females. This implies that breast cancer has a predilection for females**.**

Table 5 Family history of breast cancer

Items	Frequency	Percentage	Mean	SD
No	173	91.5%		
Yes	16	8.5%		
Total	189	100%	1.08	0.279

One hundred and seventy three (91.5%) of the respondents had no family history of breast cancer while only 16 (8.5%) of the respondents had.

Table 6 Age at menarche

Items	Frequency	Percentage	Mean	SD
< 12 years	33	17.5%		
12 years and above	155	82.1%		
Unspecified	1	0.5%		
Total	189	100%	1.84	0.400

Age at menarche below 12 years in 33(17.5%) of the respondents while it was 12 years and above in 155 (82.1%). 1 respondent (0.5%) did not specify age at menarche.

Table 7 Age at Menopause

Items	Frequency	Percentage	Mean	SD
<55 years	53	28.0%		
55 years and above	19	10.1%		
Not applicable	117	61.9%		
Total	189	100%	2.34	0.889

Menopause occurred below 55years of age in 53(28.0%) of the respondents while 19(10.1%) attained menopause at the age of 55 years and above. The remaining 117(61.9%) of the respondents were not menopausal at the time of the study.

Table 8 Age at first full term pregnancy

Items	Frequency	Percentage	Mean	SD
<30 years	117	61.9%		
30 years and above	37	19.6%		
Nulliparous	35	18.5%		
Total	189	100%	1.54	0.772

The age of the respondents at first full-term pregnancy was below 30 in 117(61.9%), above 30 in thirty-seven (19.6%) while 35(18.5%) of the respondents were yet to achieve first full-term pregnancy.

Table 9 Family planning pills

Items	Frequency	Percentage	Mean	SD
No	163	85.2%		
Yes	26	13.8%		
Total	189	100%	1.19	0.608

One hundred and sixty-three (85.2%) of the respondents did not use family planning pills, while twenty-six (13.8%) did.

Table 10 Use of hormone replacement therapy (HRT)

Items	Frequency	Percentage	Mean	SD
No	186	98.4%		
Yes	3	1.6%		
Total	189	100%	1.02	0.125

Use of hormone replacement therapy (HRT) was seen in 3 (1.6%) of the respondents while 186(98.4%) never did.

Table 11 Smoke

Items	Frequency	Percentage	Mean	SD
No	187	98.9%		
Yes	2	1.1%		
Total	189	100%	1.01	0.103

One hundred and eighty-seven (98.9%) of the respondents did not smoke, while 2(1.1%) did.

Table 12 Alcohol

Items	Frequency	Percentage	Mean	SD
No	178	94.2%		
Yes	11	5.8%		
Total	189	100%	1.06	0.235

Alcohol intake was found in 11(5.8%) of the respondents, while 178(94.2%) did not take alcohol.

Table 13 Help sought before hospital presentation

Items	Frequency	Percentage	Mean	SD
Unorthodox	87	46.0%		
Health workers	69	36.5%		
Place of definitive treatment	33	17.5%		
Total	189	100%	1.44	0.498

Eighty-seven 46.0% (87/189) of the respondents initially sought for unorthodox help like, herbalists, witch doctors, juju priests, church for prayers, concoctions while 36.5% (69/189) sought some form of orthodox help. Only 17.5% (33/189) of the respondents came to place of definitive treatment.

Table 14 Commonest stage at presentation

Items	Frequency	Percentage	Mean	SD
Stage I	7	3.7%		
Stage II	55	29.1%		
Stage III	92	48.7%		
Stage IV	28	14.8%		
Unspecified	7	3.7%		
Total	189	100%	2.77	0.750

Seven 3.7% (7/189) of the respondents had stage I cancer, 29.1% (55/189) had stage II cancer, 48.7% (92/189) had stage III cancer, 14.8% (28/189) had stage IV cancer, while 3.7% (7/189)of the respondents did not indicate the stage of cancer at presentation. The commonest stage at presentation in this study is stage III cancer.

Table 15A Immunohistochemistry result

Items	Frequency	Percentage	Mean	SD
TNBC	65	44.8%		
ER/PR + Her 2 -	42	29%		
ER+ PR- Her 2-	27	18.6%		
ER – PR + Her 2 -	2	1.4%		
Triple +	1	0.69%		
Her 2+	8	5.51%		
Total	145	100%	1.52	0.501

Total of 145 respondents had IHC done. Of these, 44.8% were TNBC while 55.2 were Non-TNBC.

Table 15B Non-triple negative breast cancer

Items	Frequency	Percentage	Mean	SD
ER/PR + Her 2 -	42	52.5%		
ER+ PR- Her 2-	27	33.8%		
ER – PR + Her 2 -	2	2.5%		
Triple +	1	1.2%		
Her 2+	8	10%		
Total	80	100%	1.52	0.501

Of the non-TNBC respondents, ER/PR positive/Her 2 negative constitute 52.5% (42/80), ER+/PR negative/Her 2negative 33.8% (27/80), ER negative/PR+/ Her 2 negative 1.4%(2/80), triple + 1.2%(1/80), Her 2 + 10%(8/80).

Table 15C Hormone-receptor positive breast cancer

Item	Frequency	%
ER/PR + Her -	42	58.3%
ER+ PR- Her 2-	27	37.5%
ER – PR + Her 2 -	2	2.8%
Triple +	1	1.4%
Total	72	100

This shows the distribution of the Hormone receptor positive cases.

Table 16 Histological type

	Frequency	Percent	Valid Percent	Cumulative Percent
Invasive Ductal ca	84	44.4	74.3	74.3
Infiltrating ductal	7	3.7	6.2	80.5
Paget's diseases	2	.1.1	1.8	82.3
Others	20	10.6	17.7	100.0
Total	113	59.8	100.0	
N/A	76	40.2		
Total	**189**	**100.0**		

The commonest histological type is Invasive Ductal Carcinoma 74.3% (84/113), followed by Infiltrating Ductal Carcinoma 6.2% (7/113) and Paget's disease is least common 1.8% (2/113). Others, 10.6% (20/113) Invasive lobular cancer, Mucinous Carcinoma, Invasive papillary cancer, medullary carcinoma and mixed invasive papillary and invasive ductal carcinoma.

4. Discussion

In this study, we found that the commonest presentation was breast lump or mass or swelling. There were a total of 10 presenting symptoms. Of 189 patients, 53.4% presented with breast lump-only complaints. The non-lump only group consists of respondents who presented with breast lumps and other complaints. These other complaints include breast lump and axillary mass 58(30.7%), breast lump and cough and chest pain 1(0.6%), breast lump and weight loss 8(4.2%), breast lump and nipple discharge 4(2.1%). Non-breast complaints, including back pain and chest pain 8(4.2%), cough 2(1.1%), back pain, cough and breathlessness 1(0.6%), axillary mass and back pain 2(1.1%) and skin changes 5(2.6%) occurred in 1 in 10 of the respondents. Koo *et al* [16] found breast lump 83% to be the most frequent presentation, followed by nipple abnormalities 7%, breast pain 6%, back pain 1% and weight loss 0.3% and that 1 in 6 of the women had non-breast lump complaints.

The age range of onset in this study is 41-50 years with 56(29.6%). It is believed that breast cancer occurs more with increasing age. Howlaader *et al* found that the average age at diagnosis is 62 years and that it occurs at 59 years in blacks and 63 years in white women [17]. While incidence has remained relatively stable in women above 50 years, it has slowly increased (0.2% per year) among women below 50 [18]. In a study of young cancer patients in the developing world, it was found that the average age of diagnosis may be younger for women in developing world [19]. This may be due to increasing awareness and the availability of newer diagnostic equipment. Mean age was 45years in Uganda [3] while the highest incidence is in the age group 50-59 and 45-49 in Maiduguri Nigeria [14] and Iraq [20] respectively.

Breast cancer is commoner in females, occurring in only 1% [7,21] of males. It occurred in 1.1% (2/189) in this study. This generally tallies with data elsewhere, occurring in 2% (1/50) [14] in Maiduguri. It has a high predilection for females.

Several risk factors have been identified for breast cancer. They include family history of breast cancer, breast feeding, age at menarche, age at menopause, obesity, smoking and alcohol. In this study however, majority of the respondents responded negatively to the presence of these risk factors. Only 16(8.5%) had family history of breast cancer, 33(17.5%) had early menarche defined as onset of monthly period before 12years, 19(10.1%) gave history of late menopause (attainment of menopause after 55). First full term pregnancy below 30 is thought to be protective but 117(61.9%) of our respondents achieved that and still had breast cancer. Only 42(22.3%) were nulliparous. Those who breastfed were 145(76.7%) while 163(85.2%) never used family planning pills. Of the 189 respondents, 187(98.9%) never smoked and 178(94.2%) never drank alcohol.

The analysis of variance (ANOVA) showed that risk factors have no significant relationship with breast disease (F = 1.111, p > 0.05). However, the large standardized (regression) coefficients of history of breast cancer (1.267), presence

of other cancers in the family (1.560) and smoking (1.206) suggests that they are associated risk factors for breast cancer.

We also did not find association between obesity and breast cancer, p=0.814(>0.05).

We found that of a total of 145 respondents with IHC result, (Table XV), 44.8% (66/145) were TNBC while 55.2% (79/145) were non-TNBC. ER/PR positive, Her2 negative (Lumina A) 29% (42/145), ER positive 18.6% (27/145), PR positive 1.4% (2/145), Triple positive 0.69% (1/145), Her 2 positive (Her 2 enriched) 5.51% (8/145). The absence of Ki67 evaluation makes it difficult to effectively classify Lumina B cancers. Immunohistochemistry is necessary to know the subtypes of breast cancer which subdivides breast cancer into 5 subtypes [22]. These include Lumina A in which the tumour is ER/PR positive and Her 2 negative, same with Luminal B but with high Ki67 which is a marker for cell proliferation. The others are Her 2 enriched, Triple negative (basal –like) and the Normal-like subtype. Luminal A cancers tend to be low-grade and have best prognosis. Luminal B cancers have worse prognosis than Lumina A because they grow slightly faster. Her 2 enriched cancers grow faster than luminal type and with worse prognosis but are treated with therapy aimed at Her 2 protein. Triple negative is commoner in those with BRCA 1 mutation and for unknown reasons, is commoner in younger women and those with African-American heritage. Normal-like type [23] doesn't respond to neo-adjuvant chemotherapy, but has low index of proliferation and median overall survival [24]. In Macedonia, Kondov B *et* al [23] found Luminal A in 26.55%, B in 31.38%, Her 2 enriched in 24.14% and triple negative in 9.31%. Minoza KG *et* al found that 52.6% were triple negative, 26.3% had Luminal A, 13.2% Luminal B and 7.9% Her 2 enriched.

The commonest histological type (Table XVI) of breast cancer here is invasive ductal carcinoma, which accounts for 74.3% (84/113). This is similar to findings worldwide [25].

Most of our respondents presented first at unorthodox centres for help when they noticed a change in their breasts. Table XIII. This category constitutes 46% (7/189). These centres include herbal homes, churches, herbalists and several others were given anti-oxidant medications. This was because they were convinced by family members including spouses, siblings, friends and religious leaders not to go to the hospitals. They only came to the hospital when alternative treatment failed. Apart from this, 36.5% (69/189) sought some form of orthodox help but not in the hospital setting. They saw health practitioners like nurses, pharmacists, chemists who gave them medications and dressed their ulcerating lesions. This category reported in hospitals when these quasi-orthodox helps failed. Only 17.5% (33/189) reported in hospital immediately the problem was discovered. As a result, most of them presented in stages III 48.7% (92/189) and IV 14.8% (28/189) with only 3.7% (7/189) and 29.1% (28/189) presenting in stages I and II respectively (Table XIV). Similar findings were reported in other parts of Sub-Sahara Africa [3]. This could be due to the fact that the people believe so much in unothordox and miracle healers. Herbal and other alternative centres usually have a patronage, resorting to hospital care only when these options fail, hence the high incidence of late presentation and high mortality.

5. Conclusion

Breast Cancer is a major public health concern and all efforts must be geared towards improving and promoting early diagnosis and access to treatment centres. Public enlightenment will go a long way in increasing their confidence in western healthcare and lead to reduction in mortality.

Compliance with ethical standards

Disclosure of conflict of interest

There is no conflict of interest.

Statement of ethical approval

The present research work does not contain any studies performed on animal or human subjects by the author.

Statement of informed consent

Informed oral consent was obtained from all individual participants included in the study.

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