

Immunochemical Profile Of Breast Cancer In Ijaw Women Of Bayelsa State – A 2-Year Retrospective Multicentre Study

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Abstract:

Background: Breast cancer (BC) is the leading cause of cancer in women worldwide. It is also a leading cause of mortality in women. The current management of BC is individualized and is based among others on immunohistochemistry (IHC) of the tumour. Presently, it is very expensive and largely unavailable to a large number of our patients. It is therefore essential to have a knowledge of the IHC profile in Ijaw women.

Materials and Methods: This is a retrospective Multicentre study of all cases of BC diagnosed in women at the main tertiary hospitals in Bayelsa State viz: Niger Delta University Hospital, Okolobiri and the Federal Medical Centre, Yenagoa in Bayelsa State between January, 2020 and December, 2021. All tissue blocks reported as BC were retrieved and stained for ER, PR, and HER-2neu expressivity. Results were analyzed using the Statistical Package for Social Sciences (SPSS) version 20.

Results: The mean age of patients with BC was 53.4± 10.6 years. Invasive ductal cancer was the commonest histologic type (80%). Left sided BC was more common accounting for 76.2% of all cases. Most patients were ER negative (57.1%), except in those below 50 years of age in whom 55.6% were ER positive. Most of our patients were PR negative (76.2%). Also, 85.7% of our patients were non-expressive for HER 2-neu.

Conclusions:

Breast cancer occurs at a relatively young age in our study population. They are mostly of the invasive ductal type. Most cases are ER, PR and HER 2-neu negative.

Key Word: Breast cancer (BC); Immunohistochemistry; Ijaw women.

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I. Introduction

Breast cancer (BC) is the leading cause of cancer in women around the world¹. In 2020 alone, the International Agency Research on Cancer (IARC) reported a total of 28,300 new cases of BC in Nigeria. This actually accounts for almost one-fourth (22.7%) of all new cancers reported². It is also the leading cause of cancer death in women in most parts of the world including Bayelsa State^{3,4}. The current standard in the management of breast cancer is individualized treatment based on the immunohistochemical status of the BC. It is therefore standard practice to know the Estrogen receptor (ER), Progesterone receptor (PR) and the Human epidermal receptor growth factor (HER2/neu)⁵.

Presently, immunochemistry is not routinely done for our patients because of the high cost of the investigation since patients are not able to afford the cost. Also, the investigation is not immediately available in the state and specimens are taken for analysis outside the state for those who can afford the high cost. Using IHC, the patient receives only the treatment best suited to her. IHC is largely unavailable and expensive. Patients with BC in this part of the country are therefore treated empirically using results from the few and conflicting studies obtained from other parts of the country. There is therefore the urgent need for a study to be done on the indigenous population of Bayelsa to achieve a better outcome in the management patients with BC.

A knowledge of the general pattern of the ER, PR and HER-2-neu may therefore be useful in the management of women with breast cancer in this part of the country.

II. Material And Methods

This is a retrospective Multicentre study of all cases of BC diagnosed in women at the main tertiary hospitals in Bayelsa State viz: Niger Delta University Hospital, Okolobiri and the Federal Medical Centre, Yenagoa in Bayelsa State between January, 2020 and December, 2021.

All tissue blocks reported as BC during the period of study were retrieved. The demographic data accompanying each block was recorded. Immunohistochemical staining for Estrogen receptor (ER), Progesterone receptor (PR) and HER-2/neu was performed on formaline-fixed, paraffin-embedded primary carcinomas of the female breast for all the specimen using anti-HER-2/neu polyclonal antibody (Dakocytomatin, CA, USA) and reactivity detected by an avidin- biotin immunoperoxidase method.

Data was recorded and analyzed by using the Statistical Package for Social Sciences (SPSS version 20). Results obtained are presented in charts and tables.

III. Result

A total of 42 patients were studied. All were females with a histopathological diagnosis of breast cancer.

The mean age of the patients was 53.4 ± 10.6 years. The youngest patient was 37 years old while the oldest was 73 years.

Table 1, shows the age distribution of the patients. Patients between 41-50 years accounted for the highest number of patients 14 (33.3%).

Table 1: Age Distribution of patients with Breast cancer

Age group	Number of Patients	Percent
< 30	0	0
31 - 40	4	9.5
41 - 50	14	33.3
51 – 60	12	28.6
61 – 70	10	23.8
> 71	2	4.8
TOTAL	42	100.0

Invasive ductal carcinoma was the commonest histologic type accounting for 34 (80.9%), this was followed by Invasive lobular carcinoma 6 (14.3%) (Table 2).

Table 2: Distribution of breast cancer patients according to histopathologic types

Diagnosis	Frequency	Percent
Invasive ductal carcinoma	34	80.9
Invasive lobular carcinoma	6	14.3
Ductal carcinoma in situ	2	4.8
TOTAL	42	100.0

Breast cancer affected the left breast more than the right. Thirty-two (76.2%) patients had their left breast affected while 10 (23.8%) had the disease on their right breast. None had bilateral breast cancer. (Figure 1).

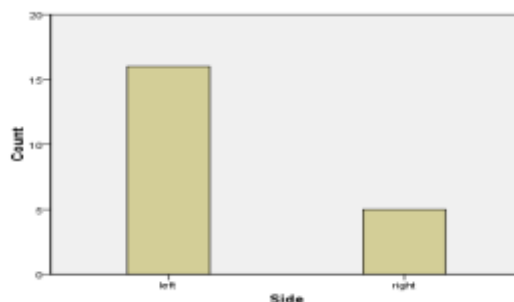


Figure 1: Affected Breast

Table 3: Pattern of Expression of Estrogen Receptor (ER)

Most of our patients were Estrogen receptor negative (57.1%). However, in those below the age of 50 years, only 44.4% were ER negative. Estrogen receptor negativity was more in those over 50 years of age accounting for 66.7% of those patients. (Table 3).

Age (Years)	Estrogen receptor positive	Estrogen receptor negative	Total
<50	10 (55.6%)	8 (44.4%)	18 (100%)
>50	8 (33.3%)	16 (66.7%)	24 (100%)
	18 (42.9%)	24 (57.1%)	42 (100%)

Table 4: Pattern of Expression of Progesterone Receptors (PR)

Most of our patients had tumours that were PR negative (76.2%). This pattern was the same both for those below 50 years of age and those below 50 years. (Table 4).

Age (Years)	Progesterone receptor positive	Progesterone receptor negative	Total
<50	6 (33.3%)	12 (66.7%)	18 (100%)
>50	4 (16.7%)	20 (83.3%)	24 (100%)
	10 (23.8%)	32 (76.2%)	42 (100%)

Table 5: Pattern of HER 2-Neu Expressivity

The pattern of HER 2-neu expressivity also showed that most of our patients did not express HER 2-neu (85.7%). (Table 5).

Age (Years)	HER 2-Neu positive	HER 2-Neu Negative	Total
<50	4 (22.2%)	14 (77.8%)	18 (100%)
>50	2 (8.3%)	22 (91.7%)	24 (100%)
	6 (14.3%)	36 (85.7%)	42 (100%)

IV. Discussion

In this study, the mean age of patients with BC was 53.4 years. This is not different from other studies done in this part of the world. Aliyu and Musa working in Sokoto report a mean age of 48 years in their study⁶. Our two previous studies done in Bayelsa State give similar rates of 44.2 years and 49.4 years respectively^{7,8}.

The age distribution of our patients showed that the peak incidence of our patients studied was between 41-50 years at 28.6%. Our previous studies also give the same age group of between 30 -40 years as having the highest incidence of breast cancer with 37.5%[7,8]. These are both in alignment with most studies in sub-Saharan Africa which show peak incidence between the 3rd and 5th decades^{10,11}.

The most common histologic type was Invasive ductal carcinoma which accounted for 80% of all cases. This was followed by Invasive lobular carcinoma with 14.3% and then ductal carcinoma in situ with 4.8%. This is similar to results of other studies^{6,9,10}. Forae, Nwachokor and Igbe, working in a neighboring state also reported a similar pattern¹¹. They observed a preponderance of invasive ductal carcinoma, accounting for 70% while invasive ductal carcinoma was a distant second, constituting only 7.2%. Indeed, invasive ductal carcinoma is considered the leading histopathological pattern as widely reported^{12,13}.

ER positivity accounted for 42.9% in our study. While only 23.8% were PR+. ER+ was found in 55.6% of those below 50 years of age while it was expressive in 33.3% in those over 50 years of age. While PR+ was found in 33.3% of our patients who were below 50 years of age. While no previous study was found to have been done in Ijaw women, this result is similar to others published in literature. Ukah CO et al at Nnewi, in South-eastern Nigeria reported a total ER positivity to be 42.3% and PR positivity of 37.4%, which is almost the same figures we reported⁵. Aliyu and Musa in Sokoto, Northeastern Nigeria had an overall ER positivity rate of 42% and PR positivity rate of 23.6%. These findings are similar to others published in other centres in Nigeria^{14,15}. This is at variance with those of Adebamowo et al who observed an ER+ rate as high as 65.1%, a PR+ rate of 54.7% and a negative HER2 in 79.7%¹⁵. It must also be highlighted that in a study by Gukas et al in which they compared samples from Nigerians and those from the United Kingdom, there was a clear difference in both ER and PR expressivity with those from Nigeria showing a much lower rate of ER+ and PR+ of 26.5% and 29.4% as against ER+ and PR+ rates of 58.8% and 52.9% in samples from the United Kingdom¹⁴.

We recorded HER-2/neu negative status in 85.7% of our study patients. Our results appear to be closer to studies done by other workers^{10,14}.

V. Conclusion

Breast cancer (BC) occurs at a relatively younger age in Ijaw women. Invasive ductal carcinoma was the commonest histological type. Most BC were Progesterone receptor, Estrogen receptor and HER 2-neu negative.

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