Original Article

One year of breast cancer in Ibadan, Southwestern Nigeria: a histopathological review

ABSTRACT

Background: Breast cancer is a major public health problem in most low- to medium-income countries of the world because of its high morbidity and mortality rate. Histopathological features are vital in risk assessment, selection of treatment and prognostication in breast cancer patients. This study aimed to assess the histopathological features of all breast cancer cases seen in a tertiary hospital in the year 2018. **Methods:** This is a retrospective review of all breast cancer cases histologically diagnosed and confirmed by three Pathologists at the University College Hospital (UCH), Ibadan over a one-year period from 1st January 2018 to 31st December, 2018. **Results:** A total of 236 breast cancer cases were seen during this period, 234 (99.2%) were females while only 2 (0.8%) were male. 163 (69.7%) patients were between the fourth and sixth decades of life, 65 (27.8%) patients were above sixth decade while 6 (2.5%) patients were below fourth decade. Invasive ductal carcinoma of No Special Type (NST) was the commonest histological subtype 212 (89.8%). Grade 1 cases were 25 (10.6%), Grade 2 129 (54.7%) and Grade 3 cases were 40 (16.9%) while 42 (17.8%) were not graded. Lymphovascular invasion observed in 98 (41.5%) of the cases. 54 (22.9%) had immunohistochemistry out of which 23 (43.4%) were triple negative while 8 (3.4%) were triple positive. **Conclusion:** Histopathological features suggesting aggressive disease was predominantly observed. Efforts should be made towards early diagnosis, adequate evaluation and prompt treatment. Cancer care should be fully incorporated in the National Health Insurance Scheme (NHIS).

Keywords: breast cancer, histopathology, immunohistochemistry, triple negative, Ibadan

INTRODUCTION

Breast cancer is recognised as a major public health problem in most low- to medium-income countries of the world because of its high morbidity and mortality rate. It has been predicted that by 2020, breast cancer will be diagnosed in more than 1.97 million women worldwide, and 622,000 will die from the disease.[1] Although breast cancer cases still remain high in resource rich countries, there is a shift in the global cancer burden to low- and middle-income countries, indicating that breast cancer continues to be a major health problem for women in Asia, Africa and South America.[2] This has been related to the growth and aging of the global population as well as continuing prevalence of risk factors such as smoking, obesity, alcohol consumption and use of oral contraceptive pills.[3]

There is marked variation in the reported incidence of breast cancer worldwide – from 95 to 100 cases per 100,000 persons in North America, Northern Europe, and Australia to 13.5–30 per 100,000 women in sub- Saharan Africa (SSA).[4] A review of 2 population-based cancer registries in Nigeria (the Ibadan and Abuja Cancer Registries) covering a 2-year

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period, 2009–2010 showed that breast cancer is the commonest cancer with incidence rate of 52.0 per 100,000 and 64.6 per 100,000 respectively.[5] This is higher than the average for SSA.

Histopathological features are vital in risk assessment, selection of treatment and prognostication in breast cancer patients.[6] The peculiar characteristics of breast cancer among blacks are increasingly being appreciated by researchers worldwide. Blacks often have aggressive, unpredictable disease while some early stage diseases progressed rapidly and resulting in deaths within few months of diagnosis, some advanced diseases progress slowly and survive for longer period.[7,8]

Recognized features that predict worse prognosis include late stages at presentation, numbers of involved lymph nodes, high grade tumours, absence of treatable hormone-receptors, HER2/neu expression and lymphovascular invasion. Because these features vary with race, it will be inappropriate to generalize the findings among white and blacks.[6,9]

As in many African countries, Nigeria does not have a National Cancer Institute to collate vital data on cancer. This is further complicated by poor budgetary allocation to health. It has therefore been difficult to carry out Population-Based Cancer Study, especially common cancers in our environment like breast cancers, gastrointestinal cancers and prostate cancers, making hospital-based studies and data very critical for building cancer statistics, prognostication and selection of appropriate treatment modalities. This study aimed to assess the histopathological features of all breast cancer cases seen in a tertiary hospital in the year 2018 with the view to adding to the existing body of knowledge on the pattern of breast cancer cases seen in Nigeria.

METHODS

This is a retrospective study of all breast cancer cases histologically diagnosed and confirmed by pathologists at the Department of Pathology, University College Hospital (UCH), Ibadan over a period of one year from 1st January 2018 to 31st December 2018. UCH is a tertiary hospital that serves southwestern Nigeria. Data were extracted from laboratory request forms, surgical day book register and duplicate copies of histology reports. Information extracted included age, sex, mode of diagnosis, histological type, grade, presence of lymphovascular invasion, lymph node involvement (in mastectomy specimen) and immunohistochemical profile. These parameters were analyzed using the Statistical Package for Social Sciences version 20 (SPSS Version 20) and presented in frequency distribution tables and charts. Distribution was reported as frequencies. The results obtained formed the basis of the discussion.

RESULTS

A total of 236 breast cancer cases were diagnosed during the study period. Most of the diagnosis was made using trucut/incisional biopsy. These trucut biopsies accounted for 115 (48.7%) of all the cases, followed by wedge biopsies with 61cases (25.8%), mastectomies with 49 cases (19.9%) and the remaining 11 cases 4.7%) had a combination of trucut or wedge biopsies and mastectomies. Patients' ages ranged from 18 to 88 years with mean age of 51 years [Figure 1]. Most of these breast cancer patients [163 (69.7%)] were between the fourth and sixth decades of life. While about a quarter of the patient [65 (27.8%)] were above six, only six (2.5%) of them were below 30 years

Two hundred and thirty-four, 234 (99.2%) were females while only 2 (0.8%) were male giving a female-male ratio of approximately 99: 1. 50% of total breast cancer cases occurred on the right breast while the remaining 50% involved the left breast. There were no bilateral breast cancer cases during the period of the study.

Invasive ductal carcinoma of No Special Type (NST) [Figure 2] was the commonest histological type with 212 (89.8%) followed by mucinous carcinoma, 7 (3%) and invasive lobular carcinoma 3 (1.3%). More than half 129 (54.7%) of cases were grade 2; 25 (10.6%) were grade 1; 40 (16.9%) were grade 3 while 42 (17.8%) were not graded [Figure 3]. Lymphovascular invasion was reported in 98 (41.5%) of the cases. Out of the 236 cases studied, 54 (22.9%) had immunohistochemical profile documented, 40 (74.1%) out of which were from trucut or wedge biopsies while the remaining 25.9% were from mastectomies. In this subset 23 (43.4%) were triple negative while 8 (3.4%) were triple positive. About half (47%) of the cases were HER-2 positive, 12% were progesterone positive while another 12% were also Estrogen positive. The tumours exhibited multiple receptors with only 17 (32%) exhibiting only one receptor positivity [Figure 4].

DISCUSSION

The study demonstrated that breast cancer is diagnosed at a relatively younger age when compared with what obtains in the developed world. The mean age is 51 years with 175 (69.1%) of the cases being between ages 30 and 60 years.

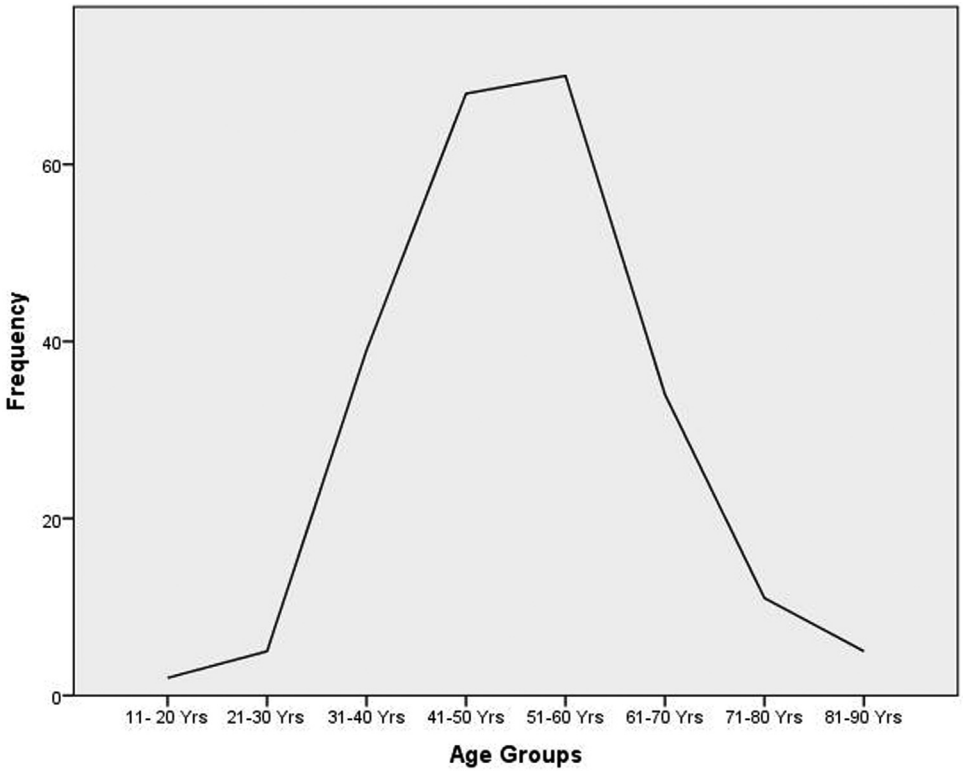

Figure 1: Histogram of age distribution of the patients showing peak incidence

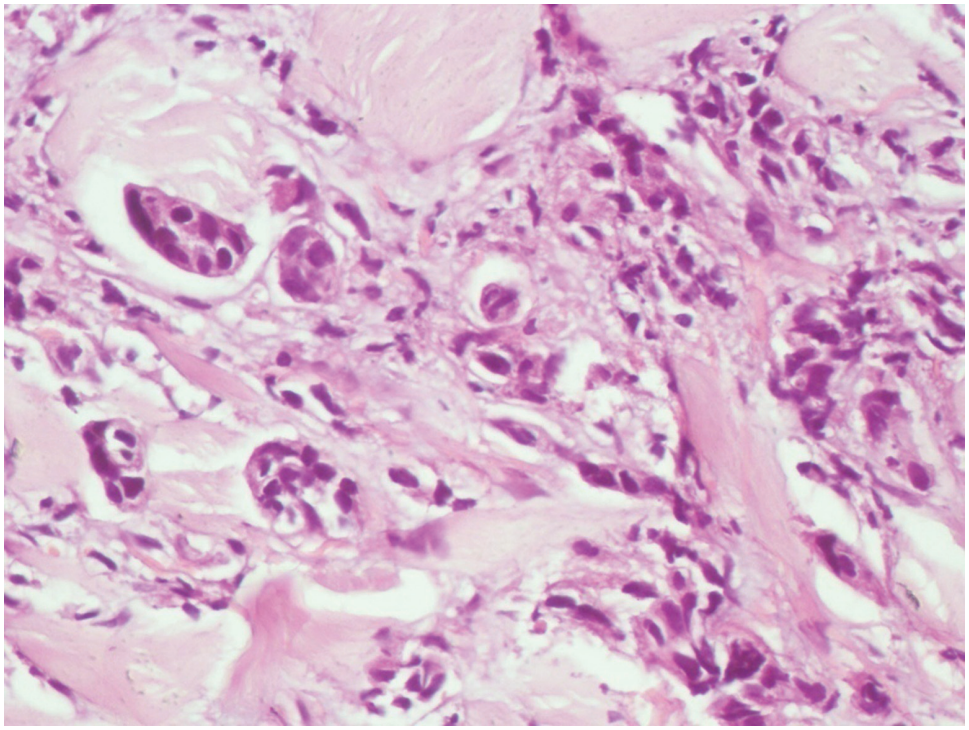

Figure 2: Photomicrograph showing nests of malignant epithelial cells invading the desmoplastic stroma consistent with invasive carcinoma of no special type (NST). (Haematoxylin and eosin stains, X400)

This shows that breast cancer occurs predominantly in young and middle age group in this environment and is in keeping with similar studies in Nigeria which demonstrated that breast cancer patients present at younger ages when compared with Caucasians.[10,11]. It has been proposed that the earlier age of occurrence in

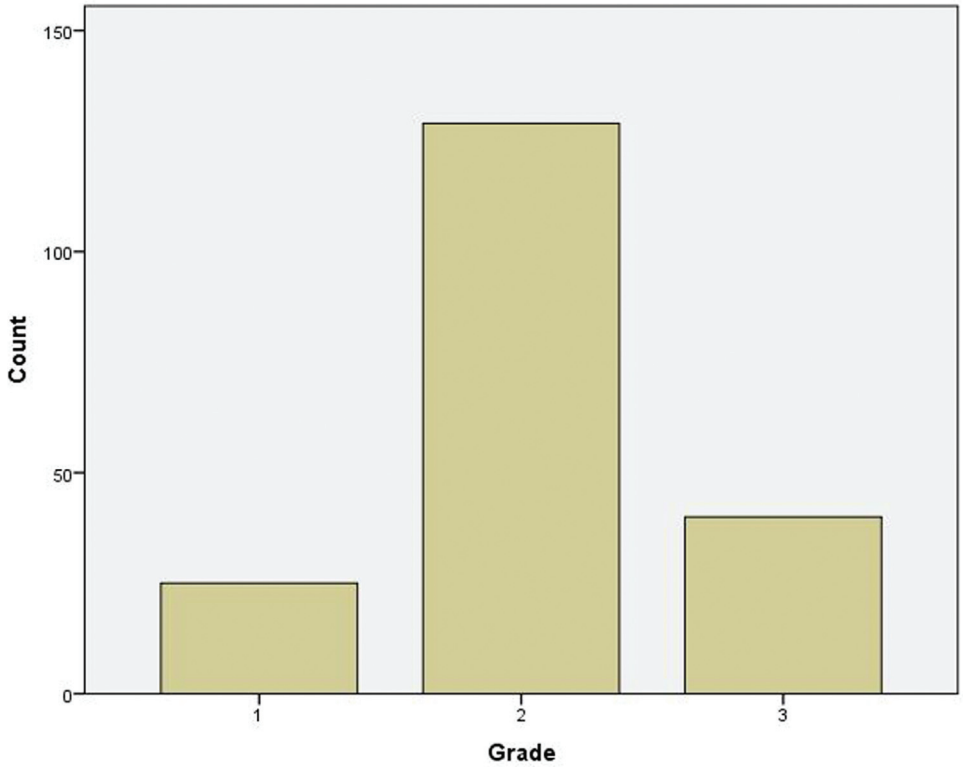

Figure 3: Histological grading of the tumours

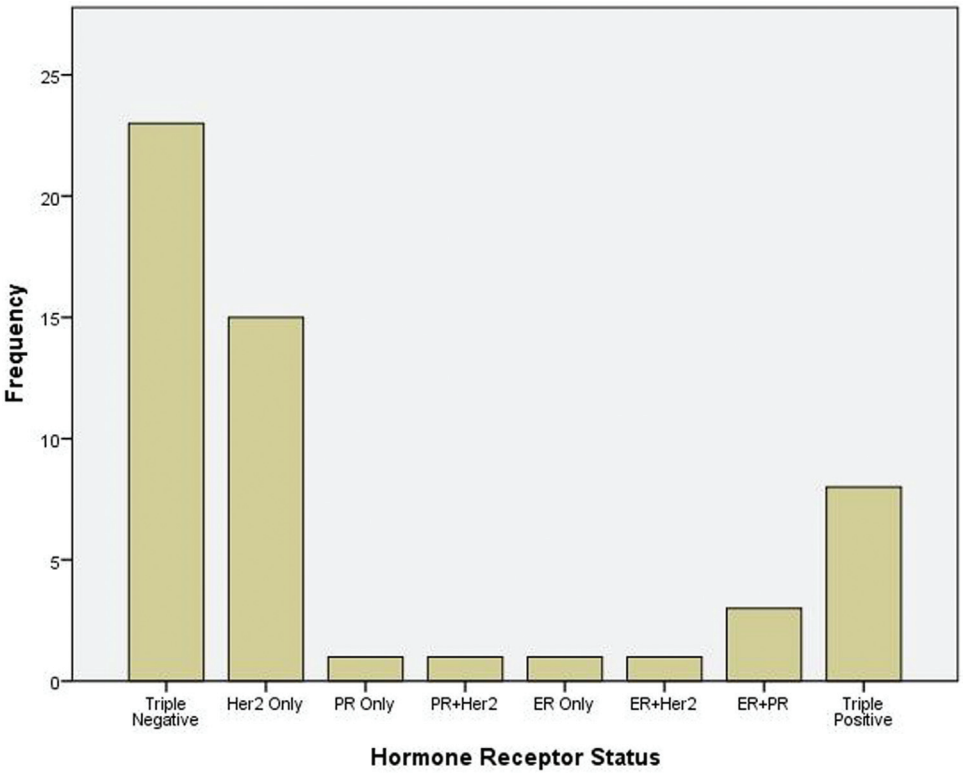

Figure 4: Hormone receptor status of the tumours

black women and other factors such as different susceptibility, different aetiology, and the acceleration of tumour development with a higher frequency of common risk variant in black than white patients when genome-wide association studies were done.[12] Another study attributed this early presentation as merely demography-driven rather than intrinsic biological behavior as most African countries have cone-shaped population pyramids with low life expectancy resulting in a larger percentage of youth and young adults than the elderly.[13]

The gender distribution of breast cancer in this study agrees with that in the literature,[8,14] however, Ibrahim *et al*.[15] reported a higher percentage of male breast cancer (6.1%) among breast cancer cases in Kano.

Invasive ductal carcinoma is the most common type of breast cancer, comprising more than 50% of all cases.[6] Our findings show a higher proportion 212 (89.8%) of invasive ductal carcinoma NST than other histological subtypes. This is similar to previous findings in this environment.[8,10,11] Even among the Invasive carcinoma NST subtype of breast cancers, clinical prognosis is highly variable and is dependent on several parameters such as histological grade, presence of lymphovascular invasion, lymph node status and immunohistochemical profile.[4,10,14,15,16]

We found that close to half (41.5%) of breast cancer cases seen have lymphovascular invasion. Lymphovascular invasion is an independent prognostic factor, as tumors showing lymphovascular invasion have increased recurrence and reduced survival rate.[6,9] We also observed that 171 (72.5 %) of the cases in this study are grade 2 or 3. There is strong correlation between high histologic grade and prognosis with grade 1 tumors having a significantly better survival than those with grade 2 and 3.[6] Various studies in Nigeria have also made similar observations as noted in our study.[8,10]

The decision for therapy in breast cancer in hinged on clinical stage and immunohistochemical profile. Immunohistochemical testing is recommended for all newly diagnosed invasive breast cancers and for first recurrence of breast cancer when possible.[17] ER/PR positive and HER2 positive patients will benefit from hormonal and targeted therapy respectively. The incidence of ER-negative and HER2-positive cancers is relatively constant in all ethnic groups, but the number of ER-positive cancers is lower in non-white women.[9] This study demonstrated that only 54 (22.9%) of cases had immunohistochemical testing done alongside their histology despite the availability of the facility. This is close to the findings of a study at the Lagos University Teaching Hospital, which reported that 26% of histologically diagnosed breast cancer had hormone receptors and/or HER2 tested.[18]The low rate in our study can be attributed to the cost, as the immunohistochemical testing is billed separately from the histology. It is not covered by National Health Insurance Scheme (NHIS) so most of our patients pay out of pocket. With regards to the subset that had immunohistochemistry testing in this study, most of them are negative to hormone receptor. This is similar to most other studies which have shown that blacks are most likely to have hormone receptor negative tumours thereby excluded from targeted hormone therapies.[4,10,19].

CONCLUSION

Histopathological features suggesting aggressive disease was predominantly observed. Efforts should be made towards early diagnosis, adequate evaluation and prompt treatment. Cancer care should be fully incorporated in the National Health Insurance Scheme (NHIS).

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Conflicts of interest

There are no conflicts of interest.

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