

Histopathological analysis of male breast cancer in Southwestern Nigeria: A single-center retrospective study

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ABSTRACT

Background: Breast cancer in men is still an uncommon and largely understudied disease. It accounts for 1% of all breast cancers. The aim of this study was to review all the male breast cancer cases diagnosed at the tertiary medical institution in South West Nigeria over a 10-year period and to compare the findings with other similar studies done in Nigeria and globally. **Methods:** We retrospectively reviewed all histologically diagnosed cases of male breast cancers in the Department of Pathology, Tertiary Medical Institution in South West Nigeria over a 10-year period from January 1, 2009, to December 31, 2018. Clinicopathological parameters including patients' age, laterality, and specific histological sub-types were extracted from surgical day book and Cancer Registry of the Department. The data were analyzed using the IBM SPSS Statistics (version 22; IBM Corporation, Armonk, New York, USA). The results were subsequently presented in tables, relative frequencies, group percentages, and photomicrographs. **Results:** Forty-two cases of male breast cancer were seen accounting for 1.7% of all breast cancer cases. The age range was between 22 and 91 years with a mean age of 60.3 years, and a peak occurrence was in the 8th decade. The right breast was more affected than the left accounting for 52% of the total number of cases seen. The most common histological sub-type found was invasive ductal carcinoma accounting for 88% of all the cases. **Conclusion:** Male breast cancer is relatively uncommon compared to female breast cancer. It is more common in the older age group, and invasive ductal carcinoma is still the most common histological subtype.

Key words: Ibadan, invasive ductal carcinoma, male breast cancer, male breast carcinoma, Nigeria

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INTRODUCTION

Breast cancer is one of the most prevalent malignancies with a high annual mortality rate in men and women. It still poses a threat to human life even with introduction of various treatment modalities.^[1] Male breast cancer in men is still an uncommon and largely understudied disease. Only very few prospective studies focusing on breast cancer in men have been conducted. This is because

breast cancer is still seen largely as a cancer that affects the female gender.^[1,2]

Male breast cancer accounts for approximately 1% of all breast cancer cases.^[2] In 2018, an estimated 2500 incident breast cancer was estimated to be diagnosed in men in the United States, and approximately 500 men are expected to die

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from this disease.^[3] Data from the Surveillance, Epidemiology, and End Results program indicated that the age-adjusted incidence rate has increased from 0.85 cases per 100,000 men in the general population in 1975 to a high of 1.43 cases per 100,000 in 2011.^[4] The lifetime risk of breast cancer for a man is approximately 1:1000, as compared with 1:8 for a woman.^[2] As is the case with many cancers, breast cancer in men is an age-related disease, with incidence rates rising steadily with age. The incidence of male breast cancer shows an increase in advanced ages and remains steady until it reaches a plateau around age 80.^[5] Male breast cancer has increased in recent years with an increased incidence rate of 26% over the past 25 years.^[6] The average age at diagnosis is approximately 5 years older for men than for women (67 years for men vs. 62 years for women).^[6]

Black men appear to be at greater risk than non-Hispanic white men.^[4,7] The risk of breast cancer is doubled for men who have a first-degree relative with the disease.^[2] The risk factors for breast cancer includes radiation exposure, increased serum estradiol, Klinefelters syndrome, gynaecomastia, liver disease, obesity, and testicular abnormalities.^[2] Similarly, a history of breast cancer in a male first-degree relative is associated with an increased risk of breast cancer in men.^[8] Mutations in BRCA are among the most clearly established risk factors for breast cancer in men.^[2] Population-based studies have shown that 0%–4% of men with breast cancer have BRCA1 mutations, and 4%–16% have BRCA2 mutations.^[2,9,10]

Few studies have been done in Southwestern Nigeria to review the incidence and clinicopathological features of male breast cancer.^[11-17] Aghadiuno in a previous study from Ibadan reported that male breast cancer accounts for 0.4% of all male neoplasia in Ibadan and about 3.4% of all breast cancers in both females and males.^[11]

The aim of the present study was to review all the histologically diagnosed male breast cancer cases at the University College Hospital Ibadan over a 10-year period which would serve as an update of the earlier study and to compare the findings with other similar studies done in Nigeria and globally.

METHODS

This was a 10-year hospital-based retrospective study that was designed to review all histologically diagnosed cases of male breast cancers in the Department of Pathology, tertiary medical institution in South-west Nigeria from January 1, 2009, to December 31, 2018.

Cases with missing bio-data and cases in which histology slides and/or FFPE tissue blocks could not be found were excluded from the study. Clinical and pathological data were extracted from the surgical day book, histology request cards, and the Cancer Registry of the Department. Histology slides were

reviewed by two pathologists. The data were analyzed using the IBM SPSS Statistics (version 22; IBM Corporation, Armonk, New York, USA). The results obtained were subsequently presented in tables, relative frequencies, group percentages, and photomicrographs. Ethical approval was not indicated for this study. The data extracted did not violate the principles of confidentiality on patients' information or diagnosis.

RESULTS

A total of 42 cases of male breast cancer were seen, accounting for 1.7% of all breast cancer cases. The age range was between 22 and 91 years with a mean age of 60.3 years and a peak occurrence in the 8th decade. Patients in the 9th and 10th decades of life had the lowest frequency of breast cancer cases representing 2.4% of the cases seen, respectively, for each age group [Table 1]. Most of the cases affected are from the right breast accounting for 52% of the total number of cases seen. Most of the patients presented with a retro-areola lump/mass. The most common histological sub-type found in this study is the invasive ductal carcinoma [Figure 1] accounting for 88% of the cases seen [Table 2]. There was a case each of invasive lobular carcinoma, microinvasive carcinoma, and spindle cell sarcoma accounting for 2.4% of the cases seen, respectively. There were also two cases of mucinous carcinoma [Figure 2] accounting for 4.8% of all the breast cancer cases seen. The peak incidence of male breast cancer cases was in 2013 with eight cases while the least incidence of two cases each was seen in the years 2012 and 2016 [Figure 3].

DISCUSSION

The male breast is still subject to neoplastic changes

Table 1: Age distribution of patients with male breast cancer

Age group (years)	Frequency (%)
21-30	3 (7.1)
31-40	3 (7.1)
41-50	7 (16.7)
51-60	7 (16.7)
61-70	7 (16.7)
71-80	13 (31)
81-90	1 (2.4)
91-100	1 (2.4)
Total	42 (100)

Table 2: Histological subtypes of male breast cancers

Histologic subtype	Frequency (%)
Invasive ductal carcinoma	37 (88)
Mucinous carcinoma	2 (4.8)
Invasive lobular	1 (2.4)
Spindle cell carcinoma	1 (2.4)
Microinvasive carcinoma	1 (2.4)
Total	40 (100)

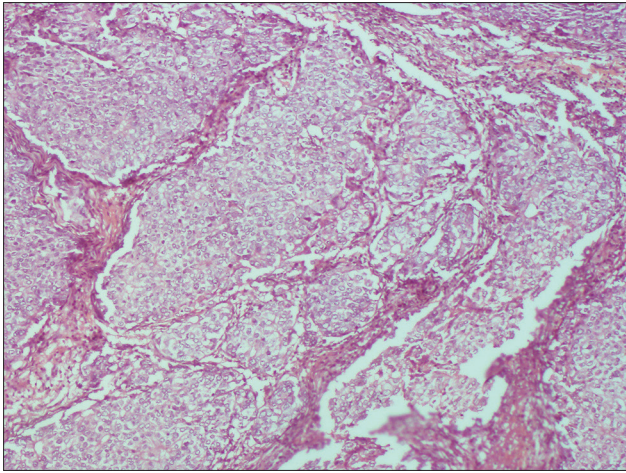


Figure 1: Photomicrograph showing invasive ductal carcinoma of the male breast (H and E, x100)

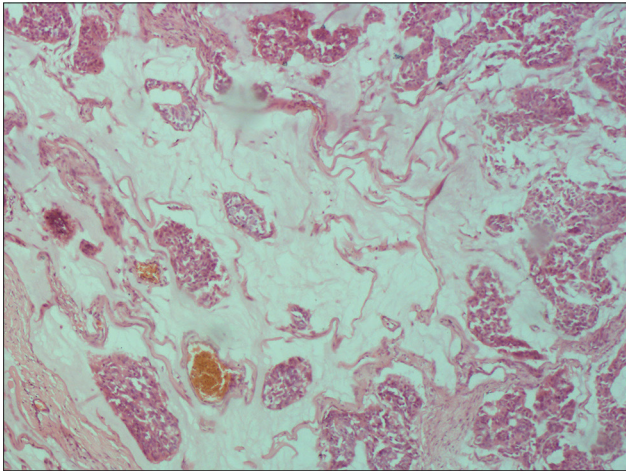


Figure 2: Photomicrograph showing nests of malignant epithelial cells in a pool of mucin consistent with mucinous carcinoma of the male breast (H and E, x100)

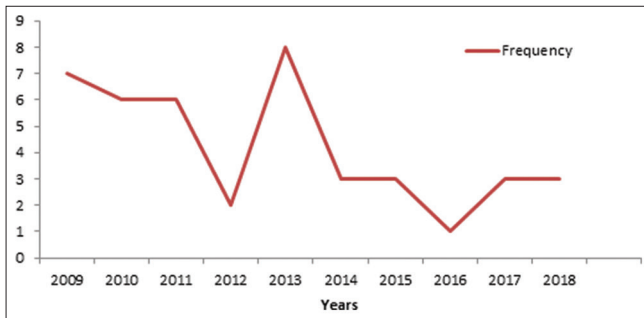


Figure 3: Annual distribution of male breast cancer cases

simulating the female counterpart but attention has however been focused mainly on the female lesions.^[18] Only few reports are available on male breast cancer leading to the erroneous impression that the disease is entirely a female problem.^[18] Breast cancer in men accounts for approximately 1% of all breast cancer cases worldwide.^[2] It

is said to be more frequent in sub-Saharan Africa, accounting for 4%–13% of all breast cancer cases seen.^[19] In this study, male breast cancer cases accounted for 1.7% of all breast cancer cases seen, and this finding compares favorably with similar studies done in other parts of Nigeria. However, a similar earlier study from the same center reported a higher prevalence rate of 3.4% of all breast cancer cases.

A study from Lagos by Orah and Daramola^[13] reported an almost similar prevalence rate of 1.6%, while two separate studies from Ile-Ife by Adeniyi *et al.*^[14] and Adisa *et al.*^[16] reported slightly higher prevalence rates of 1.9% and 2.4%, respectively. Ajayi *et al.*^[17] in Lagos and Ezeome *et al.* in Enugu^[20] also reported slightly higher rates of 2.4% and 2%, respectively. However, some studies reported clearly higher prevalence rates. Oguntola *et al.*^[12] reported a rate of 8.86% in a study done in Oshogbo while Hassen and Mabogunje^[21] and Ahmed *et al.*^[22] reported a rate of 9% each from two separate studies done in Zaria. Hypoestrogenism has been linked to the higher incidence of male breast cancer in African cohort, and this has been causally linked to endemic liver infections in Africa.^[23]

The wide age range of patients seen in this study from 22 to 91 years was also similar to what other studies have reported. Akosa *et al.*^[24] and Kidmas *et al.*^[25] reported age ranges of 32–79 and 12–85 years, respectively, while Ezeome *et al.*^[20] and Dogo *et al.*^[26] reported age ranges of 25–84 years and 19–80 years, respectively. The peak age of occurrence for male breast cancer in this study center was in the 8th decade, this was a decade later than that what was reported by Ezeome *et al.*,^[20] while Kidmas *et al.*^[25] and Dogo *et al.*^[25] reported a lower peak age of occurrence in the 5th decade. The mean age of 60.3 years seen in this study was also consistent with what some studies have reported. Oguntola *et al.*^[12] and Ezeome *et al.*^[20] both reported a mean age of 60.5 years while Adisa *et al.*^[16] and Olu-Eddo and Momoh^[27] reported mean ages of 64.7 years and 64.4 years, respectively. Ihekwa^[15] reported a lower mean age of 54 years.

In this study, there was a slight right-sided predominance in the male breast cancer cases representing 52% of all cases seen while 48% of the cases are left sided. This was somewhat similar to reports from Jos where Kidmas *et al.* reported a preponderance of right-sided breast cancers in males accounting for 58% of the cases seen.^[24] However, Ezeome *et al.* in Enugu reported a left side preponderance accounting for 54% of the cases seen.^[20] No case of bilateral breast cancer in males was seen in this study; however, Olu-Eddo and Momoh in Benin reported bilaterality in 12.5% of cases seen.^[27]

The most common histological subtype of breast cancer in this study was invasive ductal carcinoma which accounted for 88% of all the cases seen. This was consistent with what other studies have also reported. Mucinous carcinoma accounted for 4.8% of all male breast cancer cases seen in this study. A similar study by Dogo *et al.*^[26] in Maiduguri

reported that mucinous carcinoma accounted for 4.2% of the cases while mucinous carcinoma accounted for 11% of the male breast cancer cases in a study done in Ghana by Akosa *et al.*^[24] There was only one case of spindle cell sarcoma seen representing 2.4% of all cases, this contrasts sharply with a higher value of 7.7% for male breast sarcoma reported in Jos by Kidmas *et al.*^[25]

Comparison of the overall prognoses for male and female breast carcinoma patients is controversial. Studies reporting a worse prognosis for males have suggested that the anatomy of the male breast may provide less of a barrier to metastases or that more aggressive tumor biology may be the basis of survival variation.^[28] However, others have found that, once separated according to stage or lymph node involvement, the prognosis is the same.^[29,30] Although our study did not look at the clinical outcomes or survival rates of the diagnosed cases, an earlier study in Ibadan reported a 5-year survival rate of 7%. The reasons for the poor prognosis and outcomes in male breast cancer cases include late presentation, advanced disease, and ineffectiveness of chemotherapy in diagnosed cases.^[28]

CONCLUSION

Breast cancer in men is relatively uncommon compared to female breast cancers; however, they share similar clinico-pathological features. Male breast cancers are more common in the older age group and invasive ductal carcinoma is still the most common histological subtype seen. Many gaps still remain in our knowledge about breast cancers in men.

Limitation

This study is a baseline retrospective histopathological study which will open up to further studies on immunohistochemical and genetic analysis (to determine the hormone receptors and mutations) of the cases of male breast cancer in future.

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Conflicts of interest

There are no conflicts of interest.

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