

Research Article

Sociodemographic and Histological Trends of Breast Lumps in A Sub-Saharan African Population: A Cross-Sectional Study in A Surgical Oncology Department

Ulrich Igor Mbessoh Kengne¹, Jaafar Ibn Abou Talib Thiam^{1,2}, Salif Balde¹, Mamadou Ndiaye¹, Amacoumba Fall¹, Esaie Kasokota¹, Awa Niasse¹, Amadou Amadi Sow¹, Mamadou Sow¹, Mohammed Ezzet Charfi¹, Sidy Ka^{1,2}

¹Oncology department of Dalal Jamm University Hospital, Dakar, Senegal

²Department of Surgery and Specialties, Faculty of Medecine, Pharmacy and Odontostomatology, Cheikh Anta Diop University, Dakar, Senegal

Received: 05 November, 2023

Accepted: 10 December, 2023

Published: 18 December 2023

Abstract:

Objective: The purpose of the study was to present histological profile of both benign breast tumors (BBT) and breast cancer (BC) in our setting and highlight age trends in the occurrence of BBT.

Methods: A retrospective cross-sectional study was conducted in the surgical oncology unit of the Dalal Jamm University Hospital from January to July 2023. Dalal Jamm University Hospital is a teaching hospital based in Dakar, Senegal.

Results: The median age was 45 years for BC and 31.5 years for BBT. The main histological types of BC were invasive ductal carcinoma (93.2%) and invasive lobular carcinoma (4.5%) whereas it was fibroadenoma (66.6%) for BBT. Fibroadenoma and benign phyllodes tumor was more common in adolescents and under 40 years ($p = 0.046$) old while fibrocystic changes were more prevalent during perimenopause ($p < 0.001$).

Conclusion: Invasive ductal carcinoma and fibroadenoma are the most common breast tumors in sub-Saharan African setting. Fibroadenoma and benign phyllodes tumor are more prevalent in adolescents and under 40 years while fibrocystic changes occur most within the fourth and fifth decades of life.

Key words: Benign breast tumor; Breast cancer; Africa; histological patterns

Introduction

The human breast is paired mammary glands composed of specialized epithelium and stroma in which can occur both benign and malignant lesions(1). Benign breast tumors are very common in senology(2). Most of these tumors have an ordinary course and require simple monitoring while for other tumors, management needs surgical procedure, either because they cause bothersome functional repercussions or because they present a risk of cancerization(2). Breast cancer is the most common cancer affecting women in Africa (100per 100,000), and is the second leading cause of cancer deaths (49 per 100,000)(3–5). Benign breast tumors (BBT) and Breast cancer (BC) are frequent breast lesions(1). Thus, this study aims to present histological profile of both BBT and BC in our setting and highlight age trends in the occurrence of BBT.

Materials and Methods

Study design

A retrospective cross-sectional study was conducted in the surgical oncology unit of the Dalal Jamm University Hospital from January to July 2023. Dalal Jamm University Hospital is

a teaching hospital based in Dakar, Senegal. It is the greatest cancer care reference center in the country. The local institutional review board approved this retrospective study, which waived the requirement to obtain written informed consent from patients.

Data collection

All medical records of patients operated for a breast tumor (BBT or BC) were selected from the archives. Records containing relevant variables for the study were included. Those variables were age, gender, and histological type of the breast lump. Medical records missing at least one of these data were systematically excluded from the study. All relevant data were first reported on a questionnaire and then registered in statistical analysis software.

Data analysis

SPSS statistical software package version 25.0 (Statistical Package for Social Sciences) was used to carry out the statistical analysis of the data. Age of patients was described by median, interquartile range and age groups. Categorical variables were presented by effectives and percentages in frequency tables.

Chi-square test and Student T test were used to look for a potential relationship between median age, age groups and histological types of BBT. A p-value less than 0.05 was considered as statistically significant.

Results

One hundred fifty patients with breast tumors were included in the study (132 neoplasms and 18 BBT). All patients were females.

The median age for BC was 45 years and 47.7% of females were under 45 years old. Regarding BBT, the median age was 31.5 years and 66.7% of females were under 40 years old. The age of females BBT was significantly lower than that of females with BC (p < 0.001) (Table 1).

Table 1: Age’s statistics of breast tumors

Age statistics of breast tumors	N (%)
Breast neoplasms (n = 132)	
[20;35[	24 (18.2)
[35;45[	39 (29.5)
[45;55[	39 (29.5)
[55;65[	12 (9.1)
[65;75[	18 (13.6)
Median	45 years*
Minimum	21 years
Maximum	74 years
Interquartile range	37 – 54
Benign breast tumors (n = 18)	
[18;30[	9 (50)
[30;40[	3 (16.7)
[40;50[	0 (0)
[50;60[	6 (33.3)
Median	31.5 years*
Minimum	18 years
Maximum	55 years
Interquartile range	19 – 51

*p < 0.001 Student T Test

The main histological types of BC were invasive ductal carcinoma (IDC) and invasive lobular carcinoma (ILC) with respectively 93.2% and 4.5% of cases, whereas it was fibroadenoma, fibrocystic changes and phyllodes tumor for BBT in respectively 66.6%, 16.7% and 16.7% of cases (Table 2).

Table 2: Histological patterns of breast tumors

Histological types of breast tumors	N (%)
Breast neoplasms (n = 132)	
Invasive ductal carcinoma	123 (93.2)
Invasive lobular carcinoma	6 (4.5)
Mucinous carcinoma	3 (2.3)
Benign breast tumors (n = 18)	
Fibroadenoma	12 (66.6)
Fibrocystic changes	3 (16.7)
Benign phyllodes tumor	3 (16.7)

Fibroadenoma and benign phyllodes tumor are more prevalent in adolescents and under 40 years (p = 0.046) old while fibrocystic changes are more prevalent during perimenopause (p < 0.001) (Table 3).

Table 3: Age differences between BBT

Age statistics	Fibrocystic changes	Fibroadenoma	Benign phyllodes tumor
Median age	55***	26**	29*
[18;30[	0	6	3
[30;40[	0	3	0
[50;60[	3	3	0

***p < 0.001 **p = 0.046 *p = 0.14

Discussion

This study has been conducted with the purpose of presenting histological profile of both BBT and BC in our setting and highlight age trends in the occurrence of BBT.

Articles published in Africa reveal that females are far more affected by both BBT and BC than males(3–12). In agreement with this strong evidence, all patients in this study was females. Note that in males, the breast is a rudimentary structure, relatively insensitive to endocrine influences. This may be the reason for the strong affinity between breast lesions and females(13). The median age of occurrence of BBT in this study was 31 years. Uwaezuoke *et al* in Nigeria and Kane Gueye *et al* in Senegal reported a mean of 29 years and 24 years respectively(1,2). These findings show that BBT occur most within the second and third decades of life. Regarding Breast cancer, various publications on the topic shows that black African populations present at a relatively younger age

compared to white-skinned African populations. Indeed, the mean age of BC in black African populations range from 45 to 48 (3,5,6,8,10,12,14); yet, in white-skinned populations, the mean age is around 52 years and tends to be similar to that of European natives (9,11,15–17). This findings highlights an interracial difference in populations at risk for breast cancer. The two major histological types of BC in this study were IDC and ILC with respectively 93.2% and 4.5% of cases. These findings are concordant with those in several publications made in Africa (3–6,8–12,14).

Fibroadenoma (66.6%) followed by fibrocystic changes (16.7%) and phyllodes tumors (16.7%) were histological types of BBT encountered in this study. In agreement with Uwaezuoke *et al* in Nigeria and Kane Gueye *et al* in Senegal, fibroadenoma was the most common BBT (1,2). Concerning age differences between BBT, Uwaezuoke *et al* (1) reported in mean age of 29 years for fibroadenoma and Choi *et al* (18) reported a mean age of 39 years for benign phyllodes tumors. These reports are in agreement with those of our study which demonstrated that fibroadenoma and benign phyllodes tumor are more prevalent in adolescents and under 40 years ($p = 0.046$). Furthermore, various published studies on fibrocystic changes reported the age of patients above 40 years and ranged from 44 to 52 years (19–21). These reports are in agreement with our results and are suggestive that fibrocystic changes occur most within the fourth and fifth decades of life and are more prevalent during perimenopause.

Conclusion

Invasive ductal carcinoma and invasive lobular carcinoma are the most common histological types of breast cancer in sub-Saharan African setting while fibroadenoma, fibrocystic changes and phyllodes tumors are the most frequent benign breast tumors. Fibroadenoma and benign phyllodes tumor are more prevalent in adolescents and under 40 years while fibrocystic changes occur most within the fourth and fifth decades of life and are more prevalent during perimenopause.

Conflict of Interests

Authors declared no conflict of interest.

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