Epidemiological and Anatomopathological Profile of Breast Cancer at Anoalite Hospital in Mungbere

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Abstract

Introduction: Breast cancer is a global threat that mainly affects women. Worldwide, its prevalence in 2020 was 2.3 million cases and its incidence was 58.5 cases per 100,000 inhabitants. This study was conducted with the aim of describing the epidemiological and anatomo-pathological profile of breast cancer at Anoalite Hospital in Mungbere. **Materials and Methods:** This study was conducted at the Anoalite Hospital in Mungbere, located 138 km from Isiro, in the extreme northeast of the Haut-Uele province. This was a cross-sectional descriptive study with retrospective data collection, spanning from January 1, 2019 to December 31, 2023, *i.e.* over a period of 5 years. The study population consisted of any patient who visited the hospital during our study period. We used exhaustive sampling. Data collection was retrospective based on documentary technique. Data entry was carried out using Microsoft Office 365 Excel 2024 software and analyzed using Epi-Info CDC version 7.5.2.0 software. **Results:** The age group between 61 and 70 years was predominated (30%), single patients were the most affected (67.3%) and unemployed patients (66.8%). Most of the patients came from Isiro (27.6%). The paraclinical results showed that 82.0% had BI-RADS 5, while glucose tolerance abnormality was observed in 3.2% of patients. Infiltrating cancer was the most observed in our series (85.3%), among which 94.1% were carriers of the ductal type. On the other hand, among the 14.7% of patients who were carriers of *in situ* cancer, 53.1% had the ductal type. The majority of our respondents had grade III of SBR with 91.7%; 94.0% were

estrogen receptor-positive and all patients had HER2 overexpressed status > 30%. Finally, all our subjects had Ki 67 ≥ 20%. **Conclusion:** Breast cancer is a real public health problem in our community. Several measures are needed to make early detection more accessible.

1. Introduction

Breast cancer is a global threat that primarily affects women. It accounts for nearly 12% of all cancer cases worldwide. It has become the most commonly diagnosed form worldwide and remains the leading cause of cancer death in women [1].

Worldwide, its prevalence in 2020 was 2.3 million cases and its incidence was 58.5 cases per 100,000 inhabitants. It is estimated that nearly one in 12 women will develop breast cancer in their lifetime [2]. In metropolitan France, its prevalence in 2018 was 58.5 [3]. In Mexico, its prevalence was 17.7% in 2022 [4]. In the United States, breast cancer alone is expected to account for 29% of all new cancers in women [5].

In Africa, several studies describing the prevalence and anatomopathological aspects of breast cancer have been conducted in various countries. A study conducted in Morocco in 2023 found that the prevalence of breast cancer was 17% [6]. It should be noted that breast cancer almost doubled during this period, increasing from 417 to 887 cases in 2023. In Algeria, the prevalence of breast cancer was 0.04% in 2023, in the city of Wilaya Andrar [7]. In the Republic of the Congo, the prevalence of breast cancer was estimated at 32.3% in 2023 [8].

In 2019, a study conducted in the Democratic Republic of the Congo found a prevalence of 13.7% [9].

Breast cancer diagnoses are based on clinical examination, additional examinations and anatomopathological study. This is the essential step in the diagnosis of breast cancer. Indeed, in the presence of tumor cells in the samples (micro or macrobiopsy), the diagnosis of breast cancer will be established [10].

Once the diagnosis of breast cancer is established, additional analyses allow the tumor to be characterized according to the histological type, the histo-prognostic grade of Scarf, Bloom and Richardson, the presence or absence of different markers, estrogen receptors, progesterone receptors, HER2 status, the percentages of the Ki 67 proliferation index. Each of these parameters can be prognostic factors and/or predictive factors of the response [10].

In our environment, no study has been conducted on the epidemiological and anatomopathological aspects. This study aims to be the first of its kind to determine the epidemiological and histopathological profile of female breast cancers in our environment.

Anoalite Hospital is located in Mugbere, in the northeast of the Democratic Republic of the Congo.

2. Materials and Methods

This study was conducted at the Anoalite Hospital in Mungbere, located 138 km from Isiro, in the extreme northeast of the Haut-Uele province. This health structure is located in the Watsa territory, in the rural health zone of GOMBARI and in the TANGI health area.

The choice of this hospital as our study setting was motivated by the fact that it has a laboratory for histopathological analysis of the results. This laboratory is in collaboration with the departments of anatomopathology of the University of Milan in Italy on the anatomopathological interpretation of microscopic analyses and the continuous training of the staff of the histopathology department.

This was a cross-sectional descriptive study with retrospective data collection, from January 1, 2019 to December 31, 2023, *i.e.* over a period of 5 years.

2.1. Study Population

The study population consisted of any patient who had consulted the Anoalite Hospital in Mungbere, precisely its gynecology department, during the period of our study.

2.2. Sampling and Sample

The sample size was calculated using Epi Info CDC 7.5.2.0 software. We referred to the prevalence of 17.7% found in Mexico, which gave us a minimum sample size of 217 cases. We used exhaustive sampling. Thus, all patients followed up with a histologically proven diagnosis of breast cancer and who had a complete medical record, that is, containing all the variables included in this study, were included in the study.

Non-inclusion criteria:

- All patients in whom the diagnosis of breast cancer has not been histologically proven;
- Any patient with incomplete medical records.

2.3. Data Collection

Data collection was retrospective based on documentary technique. The consultation sheet, patient file, laboratory register, analysis vouchers and results of histopathology and immunohistochemistry examination, ultrasound registers, surgical protocol registers and follow-up sheets were consulted for data collection.

As a data collection tool, we used a previously established data collection sheet.

This data collection tool was validated by the management team of the Gynecology-Obstetrics Department of the University Clinics of Kisangani, but also by the ethics committee of the Haut-Uélé province.

2.4. Study Variables

The following parameters are contained in the data collection sheet: sociodemographic characteristics, patient history, data relating to breastfeeding and last pregnancy, clinical, paraclinical, therapeutic and anatomopathological aspects of breast cancer.

2.5. Data Processing and Analysis

Data entry was carried out using Microsoft Office 365 Excel 2024 software in order to create a database that could be analyzed with specialized software. For data analysis, we used Epi-Info CDC version 7.5.2.0 software. For qualitative variables, we calculated the numbers and their percentages, while quantitative variables were grouped into classes (slices) in order to determine the numbers and their percentages.

2.6. Ethical Consideration

This work was conducted in strict compliance with the principles of the Declaration of Helsinki, namely the protection of the dignity, autonomy, privacy and confidentiality of patients. We also obtained approval from the Research Ethics Committee of the University of Uélé bearing the number UNIUELE/CER/405/2024.

3. Results

3.1. Epidemiological Data

Table 1 shows us that the age group between 61 and 70 years predominates with 65 cases out of 217, or 30%. Regarding marital status, we observe that single women are the most affected with 146 cases or 67.3%. As for the profession, the majority of patients were unemployed with 145 cases or 66.8%.

Table 1. Distribution of data according to age, marital status and profession of patients

Features	Effective N = 217	Percentage (%)
Ages (years)		
≤20	2	0.9
From 21 to 30	20	9.2
From 31 to 40	32	14.7
From 41 to 50	49	22.6
From 51 to 60	39	18.0
From 61 to 70	65	30.0
From 71 to 80	10	4.6
Marital status		
Bachelor	146	67.3

Continued

Widow	42	19.4
Divorce	16	7.4
Married	13	6.0
Occupation		
Unemployed	145	66.8
Religious	26	12.0
Student	13	6.0
Shopkeeper	13	6.0
Teacher	9	4.1
Farmer	5	2.3
Nurse	5	2.3
Musician	1	0.5

3.2. Distribution of Patients According to Origin Data

It appears from Table 2 that most of the patients came from Isiro with 60 cases, or 27.6%.

Table 2. Distribution of data according to patient origin.

Origin	Effective	Percentage (%)
Isiro	60	27.6
Watsa	40	18.4
Wamba	33	15.2
Aru	19	8.8
Mambasa	15	6.9
Poko	14	6.5
Dungu	13	6.0
Bunia	5	2.3
Kinshasa	4	1.8
Rungu	4	1.8
Butembo	3	1.4
Niangara	3	1.4
Kisangani	2	0.9
Faradje	2	0.9
Total	**217**	**100.0**

3.3. Distribution of Patients According to Paraclinical Data

From the analysis of Table 3, it emerges that 178 cases out of 217 or 82.0% had

BI-RADS 5; while the abnormality of glucose tolerance was observed in 3.2% of patients.

Table 3. Distribution of data according to paraclinical aspects of breast cancer.

Features	Effective N = 217	Percentage (%)
Breast ultrasound		
BI-RADS 4	8	3.7
BI-RADS 5	178	82.0
Not realized	31	14.3
Fasting blood sugar before surgery		
Normal (70 to 109 mg/dl)	207	95.4
Glucose tolerance abnormality (110 to 125 mg/dl)	7	3.2
Diabetes (above 126 mg/dl)	3	1.4

3.4. Distribution of Patients According to Anatomopathological Data

Reading Table 4 shows that invasive cancer was the most observed in our series with 85.3% of patients; among whom 94.1% were carriers of the ductal type. On the other hand, among the 14.7% of patients who were carriers of *in situ* cancer, 53.1% had the ductal type. The majority of our respondents had grade III SBR with 91.7%; 94.0% were positive for estrogen receptors. The results of our study found that all patients had HER2 overexpressed status > 30%. Finally, all of our subjects had Ki 67 ≥ 20%.

Table 4. Distribution of data according to the anatomopathological aspects of breast cancer

Features	Effective N = 217	Percentage (%)
Types of carcinoma		
Infiltrating	185	85.3
In situ	32	14.7
Infiltrating carcinoma (n = 185)		
Canal	174	94.1
Lobular	9	4.9
Paget's disease of the nipple	2	1.1
Histological type of carcinoma *in situ* (n = 32)		
Canal	17	53.1
Lobular	15	46.9
Histological grade		
Grade II	18	8.3

Continued

Grade III	199	91.7
Immunohistochemistry: Hormone receptors		
Estrogen RO: Positive	204	94.0
Estrogen RO: Negative	9	4.1
Progesterone RP: Positive	3	1.4
Progesterone RP: Negative	1	0.5
Immunohistochemistry: HER2 status		
Over expressed > 30%	217	100.0
Immunohistochemistry: % Ki 67		
≥20%	217	100.0

4. Discussion

4.1. Epidemiological Profile of Patients with Breast Cancer

The results of our study show that the age group between 61 and 70 years predominates with 65 cases out of 217, or 30%.

These results corroborate those reported in South Africa where the mean age at diagnosis of patients followed for breast cancer was 54.4 years [11].

Furthermore, Motolouze *et al.* [12] found that the age of patients varied between 20 and 84 years with a mean age of 48.27 ± 12.44 years. The most represented age group in their study was that ranging from 40 to 49 years (29.5%).

Kemfang Ngowa *et al.* [13] found a mean age of 47.5 years.

Several African studies on breast cancer report varied demographic trends. For example, a Moroccan study by Elidrissi *et al.* [14] in 2016 had identified a peak in incidence between 45 and 54 years, contrary to our trends (61 - 70 years, 30%).

Regarding marital status, we observe that single women are the most affected with 146 cases or 67.3%. A Nigerian study conducted by Ibrahim *et al.* [15] in 2018 noted a predominance of married women (58%), which is different from our observation characterized by the predominance of single women (67.3%).

We believe that this divergence may be linked to distinct socio-cultural contexts.

The predominance of single women in our study could be explained by the fact that they never had the chance to breastfeed. Indeed, according to the literature, it is recognized that breastfeeding is a protective factor against breast cancer for women. In addition to the aforementioned explanation, the strong predominance of single women could be explained by the socio-cultural contexts of our environment essentially characterized by mining activities with regard to the regions of origin of patients. Indeed, in most mining areas of our region, the majority of women are single, thus exposed to nulliparity and/or pauciparity, explaining a vicious circle of factors associated with the occurrence of breast cancer.

Regarding the profession, Senegalese work by Ly *et al.* [16] in 2019 highlighted a high rate of patients with a profession with 61% of cases, contrary to our results which found 66.8% unemployed, reflecting regional economic disparities.

4.2. Paraclinical Aspects of Breast Cancer

Regarding breast ultrasound, 178 out of 217 cases or 82.0% had BI-RADS 5; while pre-intervention glucose tolerance abnormality was observed in 3.2% of patients.

The results of our study corroborate those obtained by other studies in the literature, such as Mphahlele *et al.* [17], in their South African study conducted in 2019, had highlighted that breast imaging remains a crucial tool for early diagnosis in an environment where resources remain limited, with a marked predominance of high BI RADS classifications, a finding that joins our 82% of BIRADS 5 found during our study, indicating a high suspicion of malignancy and a delay in screening, particularly in regions where high-quality mammography is difficult to access.

Along the same lines, Azim *et al.* [18] analyzed in 2023, in the Egyptian context, that the absence of systematic screening and regular follow-up inevitably leads to late presentation, with large tumors.

Furthermore, Dada *et al.* [19], in a Nigerian radiological study published in 2020, highlighted the importance of breast ultrasound and BI-RADS classification in the early detection of suspicious lesions, with a significant proportion of patients classified as BIRADS 5, which directly corroborates our results of 82% and demonstrates that, despite technical and financial limitations, imaging remains an essential tool to guide therapeutic management in contexts where access to more advanced modalities remains limited.

Finally, our result regarding glucose intolerance observed in 3.2% of patients is similar to that obtained by Okeke *et al.* [20], in their 2021 study on glucose tolerance in women with breast cancer in Nigeria who identified an association between abnormalities in carbohydrate metabolism and certain tumor profiles, a finding which, despite its low prevalence (3.2% in our series), opens up avenues for reflection on the possible interaction between metabolic status and tumor progression.

These findings highlight the urgency of improving accessibility to screening services, strengthening the training of health professionals and setting up awareness programs adapted to local realities, in order to enable early detection and optimal therapeutic management, elements which, according to our findings and those of the authors cited above, could significantly contribute to reducing the morbidity and mortality linked to this pathology.

The use of ultrasound for breast cancer staging in our environment is explained by the deficit of our technical platform. In addition, in most cases, this ultrasound examination is initiated for the purpose of diagnostic orientation. Even if the examination of choice is mammography, our health structure uses the means at its disposal.

4.3. Anatomopathological Aspects of Breast Cancer

The results of our study show that invasive cancer was the most observed in our series with 85.3% of patients; among whom 94.1% were carriers of the ductal type. On the other hand, among the 14.7% of patients who were carriers of *in situ* cancer, 53.1% had the ductal type. The majority of our respondents had grade III of SBR with 91.7%; 94.0% were positive for estrogen receptors and all patients had HER 2 overexpressed status > 30%. Finally, all of our subjects had the percentage of Ki 67 ≥ 20%.

These results corroborate those obtained by other authors in the literature. Indeed, Newman [21] had already highlighted in his 2017 study that, in several regions of Africa, the absence of effective screening programs and delays in access to care largely contribute to the predominance of infiltrating cancers, a finding that is in perfect resonance with our 85.3% of cases of infiltrating carcinoma.

Furthermore, the Ivorian study by Koffi *et al.* [22] conducted in 2015 reported a high frequency of infiltrating cancers, highlighting the fact that ductal carcinoma remains the most frequent subtype, although the exact percentages may differ slightly due to variations in histopathological classification and differences in interpretation between laboratories, which corroborates our observation of 94.1% of ductal cancers among infiltrating cancers.

As for the results regarding hormone receptor positivity, a study conducted in Egypt in 2023 by Azim *et al.* [18] reported that the expression of hormone receptors, particularly estrogen receptors, was extremely high, with percentages close to those we observed (94.0%), and also noted that HER 2 overexpression was a marker of poor prognosis, often associated with intense proliferative activity, illustrated by a high Ki 67, which is consistent with our results where all patients present had a Ki 67 ≥ 20% and HER 2 overexpression greater than 30%.

Along similar lines, Mbunda *et al.* [23] in their 2018 Zambian analysis found that the epidemiological profile of breast cancer was characterized by a high proportion of invasive cancers with a predominance of ductal carcinoma, and although their study also noted some variability in biomarker expression, particularly for hormone receptors and HER2, their findings align with our results in showing that breast cancers in Africa tend to have aggressive biological features, including high proliferative activity as measured by high Ki 67.

Furthermore, Diarra *et al.* [24], during their study conducted in Mali in 2022, had a predominance of patients presenting at stage 4 of breast cancer progression, which corroborates with most African studies conducted on this pathology.

The high predominance of patients with HER 2 overexpression > 30 could be explained by the fact that in our environment, most patients come after a transfer from health facilities more or less distant from our study environment, many of them arrive at a very advanced and/or terminal stage of the pathology. The infrastructural constraints of the environment characterized by the deterioration of road infrastructure, the totally rudimentary technical platforms of neighboring structures, and the financial constraints of the population are among many other obstacles that

explain the delay in histopathological diagnosis and management of patients in our sample.

5. Conclusion

At the end of our study, we reached the following conclusion: Breast cancer is a disease present in our environment. It generally affects women aged 61 to 70, single and unemployed. The majority of patients were overweight and alcoholics. As for socioeconomic status, the majority of patients had a low level. Concerning the anatomopathological type of breast cancer, invasive cancer was the most observed in most patients in our series, among whom almost all were carriers of the ductal type. On the other hand, among the patients who were carriers of *in situ* cancer, half had the ductal type. The majority of our respondents had grade III SBR and the presence of estrogen receptors was positive in most patients. The overexpressed HER2 status > 30% was observed in all patients. All of our subjects had Ki 67 ≥ 20%.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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