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Epidemiological, anatomopathological profile and iconography of breast cancer in women at the university clinics of Lubumbashi

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Abstract

Introduction: Most cases of breast cancer occur in low-income countries. Breast cancer patients in resource-limited settings experience longer diagnostic delays, leading to later-stage presentations. The late discovery of breast cancer exposes the patient to longer treatment mutilating, longer, more expensive, with reduced chance of recovery. It is therefore important to promote early detection and diagnosis at the beginning stage to reduce morbidity and mortality.

Patient and Method: our cross-sectional descriptive study was carried out over a period of 5 years (2015-2020) in the surgery department of the university clinics of Lubumbashi. Its main objective was to describe the epidemiological, clinical and histological aspects of breast cancer at the University Clinics of Lubumbashi.

Results: it emerges from this work that breast cancer represents 3.34% of all cancers collected during the study period. The number of breast cancers varied from 3 cases recorded in 2015 to 29 in 2020, with an average of 12 cases per year. The majority of them came from the Lubumbashi commune, i.e. 39% of cases. The age of the majority of patients was over 35 years old or 60% with an average of 41.59 ± 13.44 years. The average consultation time was 10.52 ± 7.12 months, the breast nodule was the revealing sign in most cases, i.e. 94%. The most important primary method of cancer detection was self-examination (59.72%). The most found risk factors were family history and breast density with 36% and 28% respectively. The tumor was located on the left in 65% of cases with the most important seat in the supero-external quadrant (42%). The mean tumor size was 4.43 ± 2.26 cm. The most found histological type was invasive ductal carcinoma with 90% of cases. Management was surgical and consisted of lumpectomy in the majority of cases (58.83%).

Conclusion: breast cancer remains very common in Lubumbashi among women over 35 years old. Its diagnosis is often late, the average delay being 10.52 ± 7.12 months. It is important to strengthen early detection measures in order to reduce mortality linked to late management.

Keywords: Cancer, breast, epidemiology, Lubumbashi, DRC

Introduction

Cancer is a global public health problem. It affects all categories of the world's population, regardless of age, gender or socio-economic level. According to estimates for 2020, more than 19 million people worldwide have been diagnosed with cancer, and almost 10 million have died in the same year from this disease ^[1].

Each year, Africa registers approximately 1.1 million new cases of cancer, and up to 700,000 deaths from the disease. Breast cancer, as well as cancers of the cervix, prostate, liver and colorectal, account for almost half of the new cases of cancer recorded on the continent each year ^[2]. It accounts for 23% of female cancers and 10.9% of all human cancers worldwide ^[3]. In the DRC, according to data from the World Health Organization (WHO), cancers of the cervix and breast are the first cancers in women. Mashinda *et al.*, in their study from 1969 to 2008 based on the registers and protocols of Biopsies consulted with the histopathology

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laboratories of the University Clinics of Kinshasa and the General Reference Hospital of Kinshasa, found that cancers of the cervix (27.7%) and breast (13.7%) were the most common in women [4].

Breast cancer (BC) is a major health problem with an increasing trend in prevalence and mortality worldwide [3]. Indeed, it constitutes a significant global health challenge: it is the most frequently diagnosed cancer in the world with approximately 2.26 million cases recorded in 2020 and it is the leading cause of cancer death in women [5]. About 685,000 women died of breast cancer in 2020 [6].

Accumulating evidence has indicated that various factors (i.e., genetic and environmental factors) may be associated with the initiation and progression of breast cancer [7]. According to the WHO, almost half of breast cancers are born in women who do not present any significant risk factor, except for their sex (female) and their age (over 40). Certain factors increase the risk of breast cancer, including but not limited to increasing age, obesity, alcohol abuse, family history of breast cancer, exposure to radiation, gynecological history (age of patient at the beginning of her menstruation, her first pregnancy, etc.), smoking and post-menopausal hormonal treatment. A family history of breast cancer increases the risk of breast cancer, but the majority of women who are diagnosed with breast cancer have no known family history [6]. Certain inherited "high penetrance" genetic mutations greatly increase the risk of breast cancer. The most important of these are present in the BRCA1, BRCA2 and PALB2 genes [6, 8].

Various imaging techniques such as mammography, magnetic resonance imaging (MRI), positron emission tomography (PET), computed tomography (CT) and single photon emission computed tomography (SPECT) can be used for the diagnosis and monitoring of patients with breast cancer at different stages. Likewise, biochemical biomarkers such as proteins, DNAs, mRNAs and microRNAs could be used as new diagnostic and therapeutic tools for breast cancer patients [9].

Most cases of breast cancer occur in low-income countries [6, 10]. It is the most common female cancer in the world and hence ranks first in both developed and developing countries [3]. Although historically considered a disease of largely developed countries, more than half of breast cancer diagnoses and two-thirds of breast cancer-related deaths occurred in less developed regions of the world in 2020. Incidence breast cancer is strongly correlated with human development. The worldwide age-standardized incidence rate in women is estimated at 48/100,000, ranging from less than 30/100,000 in sub-Saharan Africa to more than 70/100,000 in Western Europe and North America [5].

Currently in Sub-Saharan Africa (SSA), uncontrolled urbanization, dietary transition and disorderly lifestyle changes are creating optimal conditions for the emergence of chronic non-communicable diseases, which are making cancer epidemic. Due to the epidemiological transition and the development of risk factors, including physical inactivity, alcohol consumption, smoking, low fiber diets and changes in reproductive life, the number of cancer cases has increased significantly in recent decades [4]. Indeed, according to the WHO unfortunately, even if we controlled all the risk factors involved in its genesis that can be, we would only be able to reduce the risk of breast cancer by 30% at most [6].

It is therefore important to promote early detection and diagnosis at the beginning stage to reduce morbidity and mortality. Breast cancer screening is usually diagnosed either by the screening or by a symptom (for example, pain or a palpable

mass) that triggers a diagnostic examination. Screening healthy women is associated with finding tumors that are smaller, have a lower risk of metastasis, are more amenable to breast-conserving and limited axillary surgery, and are less likely to require chemotherapy. This scenario results in reduced treatment-related morbidity and improved survival [9]. Diagnosing patients with early stage breast cancer is one of the important aspects of breast cancer treatment [7] while cancer management requires costs, high which are subsidized by the government and health mutuals [11].

Breast cancer patients in resource-limited settings experience longer diagnostic delays than patients in high-income settings, leading to later-stage presentations [10]. In fact, in developing countries, the lack of prevention strategies, women's ignorance of pathology breast cancer, the lack of qualified personnel as well as cultural conceptions contribute to the late arrival of patients in consultation in 57-95.4% [10]. The late discovery (75%) of cancers of the breast exposes the patient to longer treatment mutilating, longer, more expensive, with reduced chance of recovery [11].

Combined with limited access to effective treatments, these delays therefore lead to high case fatality rates [10]. This situation also concerns the DRC where cancer mortality remains high, with low survival linked to poor access to care and late management [4].

Although breast cancer is the most common cancer in women, very few studies have been conducted in the DRC where current knowledge on the epidemiology of breast cancer remains insufficient and poorly documented in women [3].

Breast cancer by morbidity and mortality is a problem major in public health in the Republic Democratic Republic of the Congo (DRC) [11]. This study aims to describe the aspect epidemiological, histological and therapeutic aspects of breast cancer breast at the University Clinics of Lubumbashi.

Method

This is a descriptive cross-sectional study with retrospective collection method carried out over a period of 5 years from January 1, 2015 to December 31, 2020 in the surgery department of the university clinics of Lubumbashi.

Study population: Patients who were seen in the surgery department for cancer during our study period.

Size of the sample: We selected for convenience 72 cases of breast cancer.

Inclusion criteria: Were included, all the women in whom the diagnosis of breast cancer was made without prejudging the age or the nature histology of the tumor.

Exclusion criteria: Patients lost to follow-up before the start of or during their treatment were excluded.

Data Collection: Tools and Technique.

The data were taken from the files of the patients hospitalized during the study period as well as from the registers of the operating theatres. For this purpose, a survey questionnaire including study variables was used.

Study variables

Sociodemographic parameters (age, years, origin, risk factors), clinical parameters (time to consultation, circumstance of discovery, revealing signs, location and size of the tumour, site

and histological type, treatment).

Statistical analyzes

The data was encoded and analyzed with epi-info 7.2 and Microsoft Excel 2019 software. frequency, mean and standard deviation. The tables were produced using Microsoft Word 2019 software.

Presentation of results

Frequency

We collected 72 cases of breast cancer out of a total of 2157

hospitalizations during the 5 years of study, i.e. a frequency of 3.34%. The number of breast cancers varied from 3 cases recorded in 2015 to 29 in 2020, with an average of 12 cases per year.

Sociodemographic Characteristics

Table N°1 shows the occurrence of the majority of cases in 2020, i.e. 40%. The majority of them came from the Lubumbashi commune, i.e. 39% of cases. The age of the majority of patients was over 35 years old or 60% with an average of 41.59 ± 13.44 years.

Table I: Sociodemographic characteristics

Variables	Number (N)	Percentage (%)	Statistical Parameters
Years	72	100	Average
2015	3	4	12 cases/year
2016	7	10	
2017	5	7	
2018	12	17	
2019	16	22	
2020	29	40	
Origin	72	100	
Annexe	13	18	
Kamalondo	1	1	
Kampemba	16	22	
Katuba	7	10	
Kenya	5	7	
Lubumbashi	28	39	
Ruashi	2	3	
Age (years)	72	100	Mean
<18	3	4	41.59
18-35	26	36	SD
>35	43	60	13.44

Clinical Characteristics

Consultation delay was more than 12 months and the nodule was the revealing sign in most cases, respectively 37% and 94%. The mean time to consultation was 10.52 ± 7.12 months. The most important primary method of cancer detection was self-examination (59.72%). The most found risk factors were family history and breast density with 36% and 28% respectively.

According to table 3, the tumor was localized on the left in 65% of cases with the most important seat in the supero-external quadrant (42%). In most cases, the size of the tumor was between 2 and 5 cm. The mean tumor size was 4.43 ± 2.26 cm. The most found histological type was invasive ductal carcinoma with 90% of cases.

Table II: Clinical characteristics

Variables	Number (N)	Percentage (%)	Statistical Parameters
Risk factors	72	100	
Family History	26	36	
Contraception	8	11	
Breast density	20	28	
Nulliparity	13	18	
Lifestyle	5	7	
Others	0	0	
Consultation Time	72	100	Mean
<3 Months	15	21	10.52
3-6 Months	10	14	Median
6-12 Months	13	18	9
>12 Months	27	37	Standard deviation
Undetermined	7	10	7.12
Primary method of cancer detection	72	100	
Palpation	43	59.72	
Mammography	9	12.5	
Echography	20	27.78	
Revealing Signs	73	100	
Inflammation	2	3	
Nodule	68	94	
Nipple discharge	2	3	

Table III: Characteristics of the tumor

Variables	Number (N)	Percentage (%)	Statistical Parameters
Tumor Location	72	100	
Left	47	65	
Right	24	33	
Bilateral	1	2	
Tumor Site/	72	100	
Super external Quadrant	30	42	
Super internal Quadrant	13	18	
Lower external Quadrant	10	14	
Lower Internal Quadrant	18	25	
Mammary Plaque	1	1	
Tumor Size	72	100	Mean
< 2Cm	10	14	4.43
2-5Cm	39	54	Standard Deviation
> 5Cm	23	32	2.26
Histological Types	72	100	
Invasive Ductal Carcinoma	65	90	
Tubular Carcinoma	2	3	
Poorly Differentiated Carcinoma	4	6	
Triple Negative	1	1	
Others	0	0	

Management

Management was surgical and consisted of lumpectomy in the majority of cases (58.83%).

Table IV: Treatment

Variables	Number (N)	Percentage (%)	Statistical Parameters
Treatment	72	100	
Tumorectomy	42	58.83	
Mastectomy with node dissection	29	40.27	
Mastectomy without node dissection	1	1.40	

Iconography



Fig 1: Invasive ductal carcinoma, 40 years old



Fig 2: Invasive ductal carcinoma, 30 years old



Fig 3: invasive ductal carcinoma, 28 years old



Fig 4: Radical mastectomy with node dissection, 70 years old



Fig 5: Invasive ductal carcinoma, 55 years old



Fig 6: Tubular Carcinoma, 43 Years Old



Fig 7: Triple Negative Breast Cancer, 16 Years Old

Discussion

Frequency

We collected 72 cases of breast cancer out of 2157 cancers during the 5 years of study, i.e. a frequency of 3.34% with an average of 12 cases per year. Our frequency is lower than those found by Dominique *et al.* in Lubumbashi in 2020 (9.3%) [12], Mashinda *et al.* in Kinshasa in 2012 (13.7%) (13), Kingu *et al.* in Kinshasa in 2019 (24%) (11) and Katumbayi in Kinshasa in 2022 (49.9%) [14].

This difference could be explained by the fact that our study only concerned the surgery department of the university clinics of Lubumbashi, unlike the other studies which were carried out in at least two hospitals and anatomopathological centers. Also our study period was shorter (5 years) compared to others.

Socio-Demographic Characteristics

Age

In our series, the age of the majority of patients was over 35 years old, i.e. 60%, with extremes of 15 to 70 years and an average of $41.59 \pm$ years. Our results agree with those found by Essiben *et al.* in Cameroon; 42.9 ± 13.6 years with extremes of 17 and 75 years [15].

However, they differ slightly from those of Zaki *et al.* 44.10 ± 12.63 years (Range: 14–86 years) [1], from Ermiah *et al.* 45.4 years (with extremes varying between 22 and 75 years) [16], from Engbang *et al.* 46.58 ± 15.72 years with extremes varying between 13 and 95 years [17], from Kingu *et al.* 48.5 ± 10.2 years [11] and 48.5 ± 14 years (Range: 15–89 years) [10].

Clinical Characteristics

In our series, the most important primary method of cancer detection was self-examination (59.72%) and the nodule was the revealing sign in most cases, i.e. 94%. Our results agree with several data from the literature [11, 15, 18, 19].

The time to consultation was over 12 months or 37% with an average of 10.52 ± 7.12 months and a median of 9 months. Our results are similar to those found in Cameroon and Libya with averages of 9.2 ± 3.4 months [15] and 7.5 months with 25 months as maximum [16]. These results agree with the literature which reports a delay in diagnosis in countries with limited resources [10].

Characteristics of the tumor

The tumor was localized on the left in 65% of cases with the most important seat in the supero-external quadrant (42%). Our results are consistent with data from the literature [10, 11, 15, 20]. However, according to another study carried out in Morocco, there was no significant difference between the location in the right breast (48.7%) compared to the left breast (48.1%) [19].

The mean tumor size was 4.43 ± 2.26 cm. Our results differ from those found by Abbass *et al.* 3.6 ± 2.6 cm [20] and Elmorabit 6.06cm [19]. Invasive ductal carcinoma was the most encountered histological type with 90% of cases. Our results are similar to literature data [1, 11, 15, 17, 19, 20].

Conclusion

Breast cancer is common in Lubumbashi among women over the age of 35 and its incidence continues to increase. It is mostly discovered by the patient self-examination and the major revealing sign is the breast nodule. However, its diagnosis is more often late with an average consultation time of 10.52 ± 7.12 months.

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