

Research Article

Epidemiological, Clinicopathological, and Therapeutic Profile of Breast Cancer in Young Women in Yaounde, Cameroon: A 10-Year Retrospective Study

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Abstract

Breast cancer remains the leading cause of cancer in women worldwide, with cases in young women (under 40 years old) being more aggressive and associated with poorer outcomes. In Cameroon, data specific to this population are scarce. This study aimed to describe the epidemiological, clinicopathological, and therapeutic profile of young breast cancer patients at the Yaounde General Hospital (YGH). This 10-year retrospective descriptive study was conducted at the Yaounde General Hospital and included 32 women under 40 years with invasive breast carcinoma. Out of 204 evaluable breast cancer patients, 32 (15.7%) met the inclusion criteria, with a mean age of 34.6 ± 3.4 years and an average diagnostic delay of 9.5 ± 9.3 months. A significant proportion (75%, $n=24$) of patients presented with locally advanced or metastatic disease (Stage III or IV). Invasive ductal carcinoma was predominant (90.6%), with SBR Grade II being the most common histological grade (46.9%). Only 21.9% ($n=7$) of patients underwent immunohistochemistry (IHC), revealing a predominance of the *Triple-Negative subtype* (42.8% of tested cases). All patients (100%) received first-line chemotherapy, with a low 5-year survival rate of 12.5% and a median survival of 2.6 years. The study concludes that breast cancer in young women in Yaounde is characterized by a late presentation, aggressive biological characteristics, and an unfavorable prognosis. These findings highlight an urgent need for targeted awareness campaigns, early screening, and access to molecular diagnostics to improve outcomes in young women with breast cancer in Cameroon.

Keywords

Breast Cancer, Young Women, Profile, Yaounde, Survival, Cameroon

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1. Introduction

Breast cancer is the leading cause of cancer and cancer mortality in women worldwide [1]. According to the latest estimates from the World Health Organization (WHO), it was the most frequently diagnosed cancer in 2020, with over 2.3 million new cases [2]. Although the highest incidence is observed in women over 50, its occurrence in young women, defined as those under 40 years of age, represents a distinct clinical challenge [3]. This age group accounts for about 6.6% of all breast cancer cases [4].

Early-onset breast cancer is often associated with more aggressive biological and clinical characteristics. Tumors tend to be high-grade, larger in size, and more frequently exhibit negative hormone receptors or HER2 overexpression, leading to more aggressive subtypes like triple-negative [5]. These features are linked to a poorer prognosis, a higher probability of recurrence, and lower survival compared to older women [6, 7]. Furthermore, genetic susceptibility, notably mutations in the *BRCA1* and *BRCA2* genes, is more prevalent in this population [8].

In Sub-Saharan Africa, and particularly in Cameroon, breast cancer presents with specific epidemiological and clinical features. Incidence is steadily increasing, and patients frequently present at advanced stages of the disease [9, 10]. This diagnostic delay is a major prognostic factor, often attributable to a lack of awareness, under-equipped health systems, and prolonged delays across the continuum of care [11, 12]. Few local studies have specifically focused on the profile of breast cancer in young women, a particularly vulnerable population [13]. The main objective of this study is to describe the epidemiological, clinical and pathological characteristics, as well as the therapeutic outcome and survival of breast cancer in women under 40 years old at the Yaounde General Hospital (YGH), a referral center in the Cameroonian capital.

2. Materials and Methods

2.1. Study Type, Location, and Period

We conducted a descriptive, retrospective study at the Medical Oncology Department of the Yaounde General Hospital (YGH). The study included data collected over a 10-year period, from January 1, 2008, to December 31, 2018.

2.2. Study Population and Selection Criteria

The study population consisted of all female patients under 40 years of age diagnosed with invasive breast cancer and followed up at the YGH. The inclusion criteria were:

- 1) Female gender.
- 2) Age under 40 years at the time of diagnosis.
- 3) Histological diagnosis of invasive breast carcinoma.
- 4) Follow-up at the YGH Medical Oncology Department

between 01/01/2008 and 31/12/2018.

- 5) Received treatment, including surgery, chemotherapy, radiotherapy, or hormone therapy.

Patient records deemed unusable, due to missing critical data (age, dates of diagnosis, treatment, recurrence, or last follow-up), were excluded. A non-probability, consecutive sampling method was used.

2.3. Data Collection and Analysis

Data were extracted from patient medical records and oncology department registers. Variables collected included sociodemographic data, medical history, clinical characteristics (initial signs, stage according to the TNM 7th edition classification [6]), histological (type, SBR grade), and biological data (CA 15-3 level, HR and HER2 status by IHC), as well as therapeutic data (type of chemotherapy, surgery, radiotherapy) and outcomes (response, survival).

Data were analyzed using SPSS 20 and Microsoft Excel 2010 software. Quantitative variables were described by their mean, standard deviation, and range. Overall survival was calculated using the Kaplan-Meier method. Multivariate analysis (Cox model) was not performed due to the limited sample size. The statistical significance threshold was set at $p < 0.05$ (95% Confidence Interval).

2.4. Ethical Considerations

The study received research authorizations and ethical clearance from the Centre Regional Ethics Committee for Human Health Research (CRERSH/C) CE N°517/CRERSHC/2019 of April 12, 2019, and the Institutional Ethical Review Board of the Faculty of Medicine and Biomedical Sciences of the University of Yaounde I N° 087/UYI/FMSB/VDRC/CSD of April 11, 2019. Confidentiality of all information was ensured.

3. Results

3.1. Epidemiological Characteristics

Out of a total of 204 evaluable breast cancer patient records, 32 patients (prevalence of 15.7%) met the inclusion criteria. The mean age was 34.6 ± 3.4 years (range 29-39 years).

Time to treatment initiation was notably prolonged:

- 1) Mean delay to 1st consultation: 6.4 ± 5.7 months.
- 2) Mean diagnostic delay: 9.5 ± 9.3 months.
- 3) Mean delay to oncology consultation: 12.1 ± 10.3 months.

Regarding risk factors, absence of breastfeeding was the most common (46.9%). Only 6.3% of patients were nulliparous or had late pregnancy, and 6.3% were HIV-positive.

Table 1. Epidemiological characteristics of patients.

Characteristic	Count (n)	Percentage (%)
Mean Age	34.6±3.4 years	-
Mean Diagnostic Delay	9.5±9.3 months	-
Risk Factors		
Absence of breastfeeding	15	46.9%
Nulliparity/Late pregnancy	2	6.3%
Oral Contraceptive use	3	9.4%
Co-morbidity (HIV)	2	6.3%

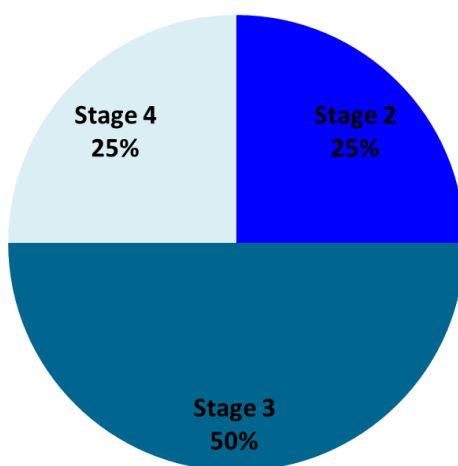
3.2. Clinical and Pathological Characteristics

The most frequently reported clinical signs were the *breast lump (nodule)* and *pruritus* (both at 90.6%).

Table 2. Initial Clinical Signs.

Clinical Sign	Number (n)	Percentage (%)
Breast lump	29	90.6%
Pruritus	29	90.6%
Breast pain	12	37.5%
Breast Mass aspect	8	25.0%
Orange peel aspect	7	21.9%
Breast ulceration	4	12.5%
Nipple retraction	3	9.4%
Nipple discharge	1	3.1%

At the time of diagnosis, the majority of patients presented with advanced stages of the disease (Figure 1).

**Figure 1.** Stages at diagnosis.

From a histological perspective, Invasive Ductal Carcinoma was predominant (90.6%), and the SBR Grade II histological grade was the most frequent (46.9%).

Only 7 patients (21.9%) had Immunohistochemistry (IHC) performed. Among these, the Triple-Negative subtype was the most frequent (42.8%).

Table 3. Pathological Characteristics.

Characteristic	Subtype	Number (n)	Percentage (%)
Histological Type	Invasive Ductal	29	90.6%
	Lobular	1	3.1%
	Others	2	6.3%
Histological Grade (SBR)	Grade II	15	46.9%
	Grade III	17	53.1%
Molecular Subtype (IHC: n=7)	Triple Negative	3	42.8%
	Luminal	2	28.6%
	HER2+	2	28.6%

3.3. Therapeutic Management

All patients (100%) received first-line chemotherapy, mainly according to the FAC (53.1%) and AC (46.9%) protocols.

Surgery was performed in 65.6% (n=21) of patients, with a strong predominance of radical mastectomy (90.5% of operated cases). Radiotherapy was administered to 25% (n=8) of patients.

3.4. Responses and Survival

The overall treatment response was: Complete Response (CR) at 37%, Partial Response (PR) at 44%, and Progression at 19%.

The median overall survival was 2.6 years. The 5-year survival rate was only 12.5%. The Kaplan-Meier survival curve below illustrates the low survival.

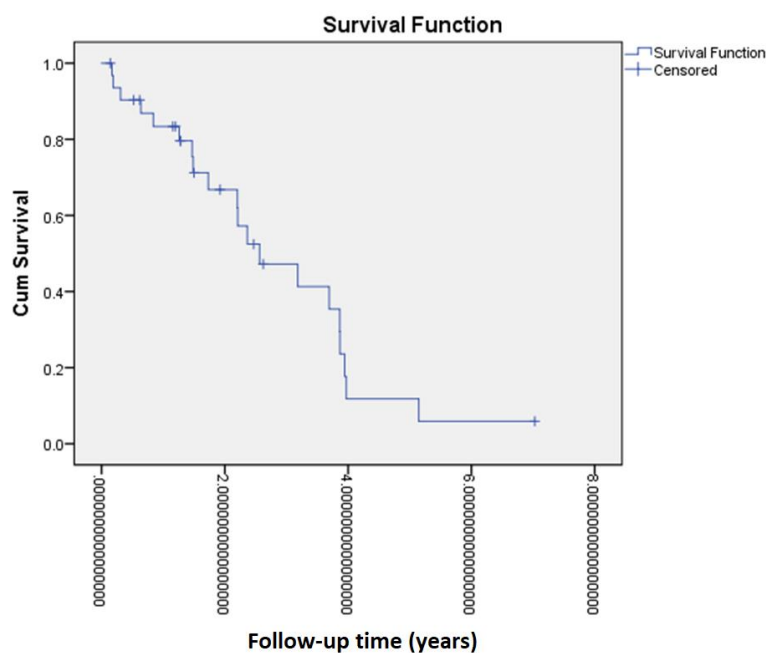


Figure 2. Survival curve of patients.

4. Discussion

This retrospective study is crucial for detailing the profile of breast cancer in young women in Cameroon. Our results highlight a concerning clinical situation, dominated by late presentation, aggressive tumors, and an extremely poor prognosis.

The high rate of young patients (15.7%) in our overall breast cancer cohort is notably higher than figures from high-income countries (around 6.6%) [4]. The mean diagnostic delay of 9.5 months is a critical factor and an indicator of poor prognosis [14]. This delay, significantly longer than in developed countries [14], directly explains the presentation at advanced stages (75% Stage III or IV). This phenomenon is often attributed in Sub-Saharan Africa to a lack of public awareness, poor knowledge of warning signs, limited access to primary care, and prolonged referral times to oncology [11, 15].

The predominance of invasive ductal carcinoma (90.6%) and SBR Grade II tumors is consistent with international perspectives on the biological behavior of breast cancer in young women [16]. More alarmingly, the Triple-Negative subtype represented 42.8% of the cases tested by IHC. Triple-negative breast cancer is intrinsically more aggressive, characterized by the absence of hormone receptors and HER2, and is often associated with *BRCA1* mutations [17]. These biological characteristics, coupled with late diagnosis, are the main drivers of the very low survival observed.

The 5-year survival rate of 12.5% is dramatically lower than rates reported in high-income countries, where 5-year overall survival for early-onset breast cancer can exceed 80% [18]. This result is a direct consequence of advanced-stage presentation and obstacles to optimal management.

A major challenge is the low rate of immunohistochemistry performance (21.9%). Assessment of hormone receptors (HR) and HER2 status is the cornerstone of modern breast cancer management, allowing for the use of targeted therapies such as hormone therapy and trastuzumab [19]. The lack of this data for the majority of our cohort prevents truly personalized medicine and limits the use of effective treatments, contributing to unfavorable survival outcomes. Similarly, the high proportion of radical mastectomies (90.5% of surgeries) reflects the necessity for extensive interventions due to the large tumor size at diagnosis [20].

This study has significant limitations. Its retrospective nature and small sample size ($n=32$) do not allow for a robust multivariate analysis to identify independent prognostic factors. The lack of complete data, particularly for IHC, introduces a selection bias and limits the generalizability of the results.

5. Conclusion

Breast cancer in young women at the Yaounde General

Hospital is a serious public health issue, characterized by late diagnosis, a high proportion of advanced stages and aggressive tumor types, and extremely poor short- to medium-term survival outcomes.

Concerted efforts are urgently needed. It is crucial to implement targeted awareness campaigns for young women, such as mammography and breast ultrasound, and reduce treatment delays by improving access to specialists and advanced diagnostic techniques, especially immunohistochemistry. These measures could enable the disease to be diagnosed at earlier stages, thereby improving patient survival and quality of life in Cameroon.

Abbreviations

AC	Doxorubicin and Cyclophosphamide (Chemotherapy Protocol)
CA 15-3	Cancer Antigen 15-3 (Tumor Marker)
CR	Complete Response
FAC	5-Fluorouracil, Doxorubicin, Cyclophosphamide (Chemotherapy Protocol)
HER2	Human Epidermal Growth Factor Receptor 2
HIV	Human Immunodeficiency Virus
HR	Hormone Receptors Status
IHC	Immunohistochemistry
PR	Partial Response
SBR	Scarff-Bloom-Richardson (Histological Grading System)
TNM	Tumor, Node, Metastasis (Staging Classification)
WHO	World Health Organization
YGH	Yaounde General Hospital

Author Contributions

Berthe Sabine Esson Mapoko: Conceptualization, Data curation, Formal Analysis, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing

Esther Dina Bell: Conceptualization, Methodology, Supervision, Validation, Visualization, Writing – review & editing

Veronique Batoum Mboua: Validation, Visualization, Writing – review & editing

Dominique Anaba: Validation, Visualization, Writing – review & editing

Kenn Chi Ndi: Formal Analysis, Software, Validation, Visualization, Writing – review & editing

Etienne Atenguena: Conceptualization, Methodology, Software, Supervision, Validation, Visualization, Writing – review & editing

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Conflicts of Interest

The authors declare no conflicts of interest.

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