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Prognosis of breast cancer after primary chemotherapy from 2020 to 2024 at the Gabriel Touré University Hospital in Bamako (MALI)

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Abstract: The aim was to evaluate the prognosis of breast cancer patients after chemotherapy at the Gabriel Touré University Hospital. **Materials and Methods:** this was a descriptive and analytical cross-sectional study with retrospective data collection that covered a period from January 1, 2020 to December 31, 2024, i.e. a period of 05 years. **Results:** out of a total of 250 breast cancer cases included, 53 cases benefited from initial chemotherapy, i.e. a frequency of 21.2%. The cancer was at stage 3 TNM in 36 patients (67.9%). Non-specific invasive carcinoma was the most common histological type with 98.1%. Grade II was the most common with 64.2%. Cancer was triple negative in 45% of cases. The sequential AC60+Taxanes protocol was the most used with 66%. The treatment most associated with primary chemotherapy was surgery. It was performed in 37.7% of patients. 17% of patients died and 28% of patients lost to follow-up. **Conclusion:** Chemotherapy improves survival but the death rate remains high because the majority of our patients consult at an already advanced stage.

Keywords: Cancer, primary chemotherapy, AC60.

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INTRODUCTION

Breast cancer is defined as the development of a malignant tumor at the expense of the breast tissues [1]. It is a major public health problem in terms of incidence and mortality. In fact, according to the World Health Organization (WHO), in 2022, there were 2.2 million new cases of breast cancer and more than 666,000 deaths worldwide. Although the incidence is increasing in most parts of the world, there are huge inequalities between developed and developing countries [2]. Incidence rates remain highest in the most developed regions, but mortality is much higher in developing countries due to late diagnosis, lack of access to care and breast cancer screening [3,4]. In France, the incidence rate was 99.2 per 100,000 person-years in 2023 [5]. In the WHO African Region, breast cancer incidence rates in 2022 vary widely, ranging from 61 per 100 000 in Algeria to 7 per 100 000 in Sierra Leone. This region alone accounted for 8.6% of new breast cancer cases worldwide [2]. In Mali, the number of breast cancers was 2450 new cases in 2020 or 17.3% and 1425 cases of death or 13.9% of deaths [6,7]. Breast cancer prognosis is serious in Mali [8]. Women with cancers detected by screening have longer time to distant metastases and a longer life than women with cancer detected otherwise [9]. Breast cancers at an early stage of evolution have a survival rate of more than 90%. When metastases occur, the prognosis of women with breast cancer becomes poorer: the 5-year survival rate drops from 80-90% to around 20% [10]. The management of locally advanced breast cancers (LABC) is multidisciplinary. The main objective remains to improve the prognosis and therefore survival by limiting the morbidity of treatments and improving the quality of life of patients. Neoadjuvant chemotherapy (NAC) has become the standard treatment for locally advanced breast cancers. It reduces tumor size and offers a better chance for conservative treatment in patients who are initially candidates for mastectomy or inoperable [11,12].

To our knowledge, no study has been conducted on the prognosis of breast cancer after neoadjuvant chemotherapy at the Gabriel Touré University Hospital.

Objective

The aim was to evaluate the prognosis of breast cancer patients after initial chemotherapy at the Gabriel Touré University Hospital. The **specific objectives:** To

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determine the epidemio-clinical characteristics of breast cancer patients; To specify the anatomopathological and immunohistochemical forms of breast cancer. To describe the management. To specify survival.

METHODOLOGY

This was a descriptive and analytical cross-sectional study with retrospective data collection that covered a period from January 1, 2020 to December 31, 2024, i.e. a period of 05 years. **Study proposal:** The study focused on the files of breast cancer patients in the Gynecology and Obstetrics Department of the Gabriel Touré University Hospital who had undergone neoadjuvant chemotherapy courses during the study period. **Sampling:** This was an exhaustive sampling. **Inclusion criteria:** All patients who received courses of neoadjuvant chemotherapy were included; patients with a usable medical record; patients who received follow-up to assess the prognosis in the medium or long term. **Non-inclusion criteria:** The following were not included in this study: Patients with non-advanced or metastatic breast cancer at the time of diagnosis; Patients without a usable medical record. **Data collection :** A pre-established individual survey sheet was used to collect patient data from medical records and hospitalization records. The variables recorded on survey sheets and then entered on SPSS version 27.0. Arithmetic means and statistical tests will be calculated with a risk of α-1.96 and p <0.05. Word entry and processing will be done on Word and Excel 2024.

RESULTS

Epidemiological aspects

Out of a total of 250 breast cancer cases included, 53 patients underwent neoadjuvant chemotherapy, i.e. a frequency of 21.2%. The highest number of cancer cases were diagnosed in 2021 with 79 cases or 31.6%. The majority of patients were between 36 and 50 years old. The extreme ages were 28 and 73 years with a mean of 46.79 years and a standard deviation of 12.45 years. Housewives accounted for 64.2% and multiparous women 54.7%. These epidemiological aspects are summarized in Figures 1, 2 and Table 1.

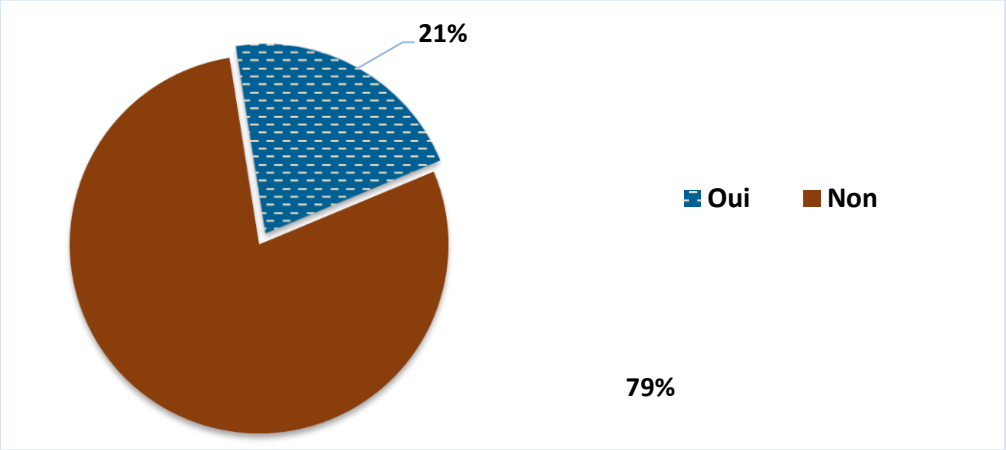

Figure 1: the frequency of neoadjuvant chemotherapy for breast cancer at the Gabriel Toure University Hospital in Bamako from 2020 to 2024 in Mali.

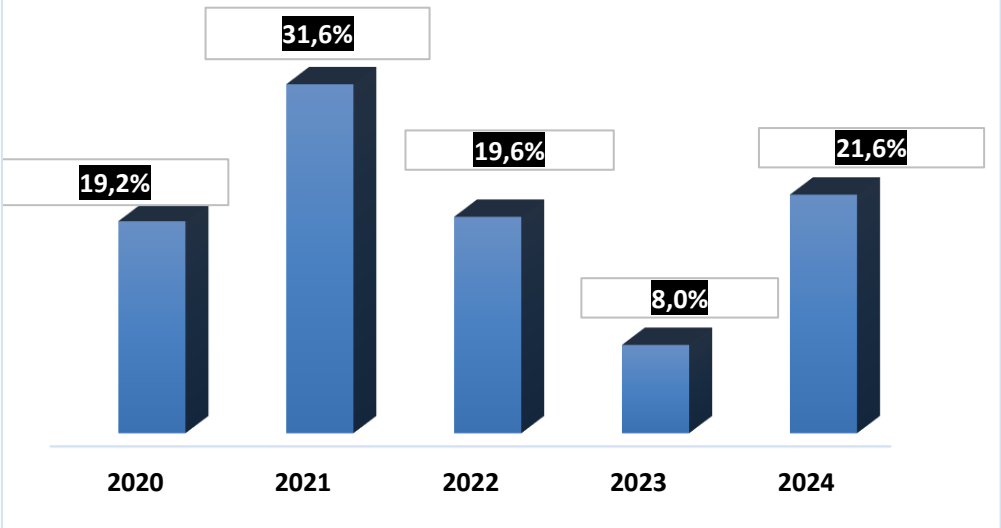

Figure 2: Frequency of breast cancer cases by year.

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Table 1 : the epidemiological aspects of women who received chemotherapy at the Gabriel Toure University Hospital in Bamako from 2020 to 2024 in Mali.

Age	Workforce	Percentage (%)
20 - 35 years old	12	22,6
36 - 50 years	22	41,6
> 50 years	19	35,8
Profession	**Workforce**	**Percentage (%)**
Housewife	34	64,2
Shopkeeper	3	5,7
Farmer	2	3,8
Midwife	2	3,8
Economist / Accountant	2	3,8
Teacher	1	1,9
Electrical Engineer	1	1,9
Dressing table	1	1,9
Security guard	1	1,9
Telecommunications Agent	1	1,9
Not specified	5	9,4
Parity	**Workforce**	**Percentage (%)**
Multiparous	29	54,7
Paucipare	8	15,1
Large multiparous	12	22,6
Nulliparous	4	7,5

Clinical aspects

Only 21% of patients had used contraception. Estrogen-progestin COCs represented 72.7% of contraceptive methods. The duration of use was less than 3 years in 54.5%, only 9.1% of patients had a duration of use greater than 6 years. Patients did more than 12 months before consulting in 17% of cases. The right breast was the most affected in 56.6% of cases. The two upper-inner and outer quadrants were affected in 28 patients (52.8**%).** The presence of a breast mass was the reason for consultation in 75.5% of cases. Cancer was at stage 3 TNM in 36 patients (67.9%). Non-specific invasive carcinoma was the most common histological type with 98.1%. Grade II was the most frequent with 64.2%. Immunohistochemistry was performed in 38%. These clinical aspects are presented in Figures 3,4,5 and Table 2.

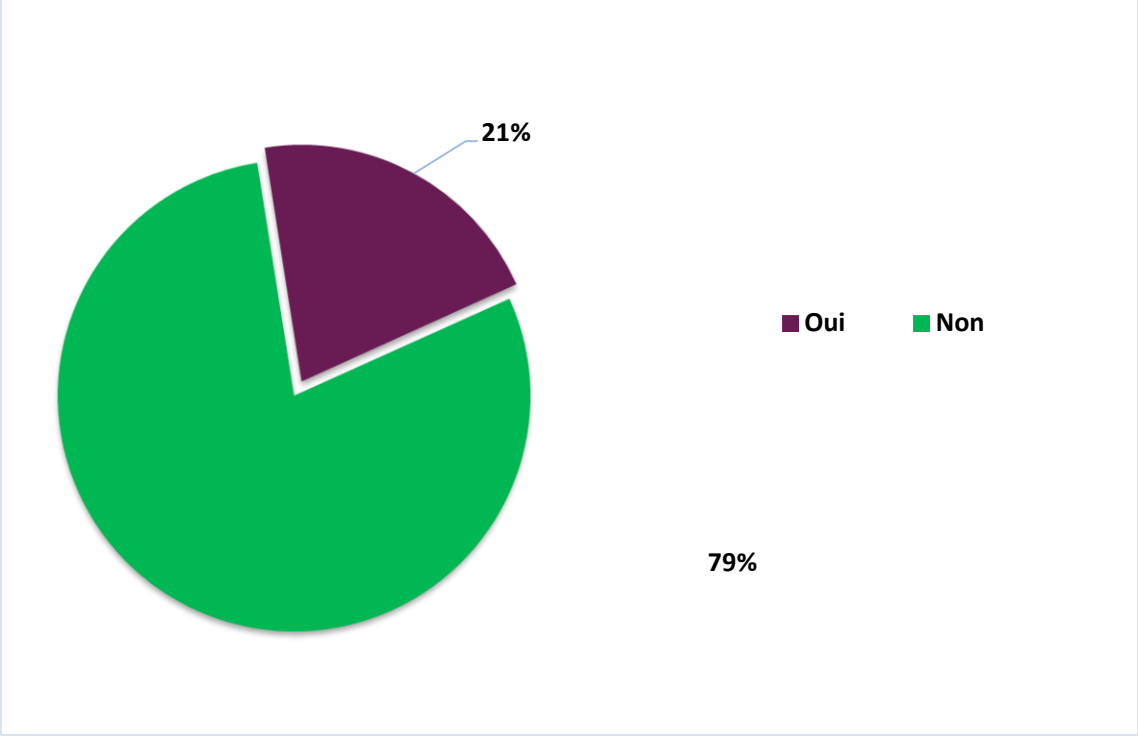

Figure 3: Distribution of patients by contraceptive use.

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Table 2: Distribution of patients by contraceptive methods used (n=11)

Contraceptive methods	Workforce	Percentage (%)
Oral (estrogen-progestin)	8	72,7
IUD	2	18,2
Progestogen implant	1	9,1
Duration of use of contraception	**Workforce**	**Percentage (%)**
0 - 3 years	6	54,5
4 - 6 years old	4	36,4
More than 6 years old	1	9,1
Start and consultation time (months)	**Workforce**	**Percentage (%)**
Inf to 3 months	2	3,8
3 - 6 months	21	39,6
7 - 12 months	21	39,6
Sup to 12 months	9	17,0
Cancer localization	**Workforce**	**Percentage (%)**
Law	30	56,6
Left	22	41,5
Bilateral	1	1,9
Quadrant	**Workforce**	**Percentage (%)**
Upper-outer quadrant	14	26,4
Upper-inner quadrant	4	7,5
Infero-outer quadrant	3	5,7
Infero-internal quadrant	3	5,7
Upper-inner + outer quadrant	28	52,8
Entire breast	1	1,9
Reason for consultation	**Workforce**	**Percentage (%)**
Breast mass	40	75,5
Mastodynie	8	15,1
Breast wound	5	9,4
TNM Stadium	**Workforce**	**Percentage (%)**
Stage 1	2	3,8
Stage 2	15	25,3
Stage 3	36	67,9
Histological type	**Workforce**	**Percentage (%)**
Invasive carcinoma non-specific type	52	98,1
Mimic carcinoma	1	1,9
Grade SBR	**Workforce**	**Percentage (%)**
Grade I	2	3,8
Grade II	34	64,2
Grade III	17	32,1

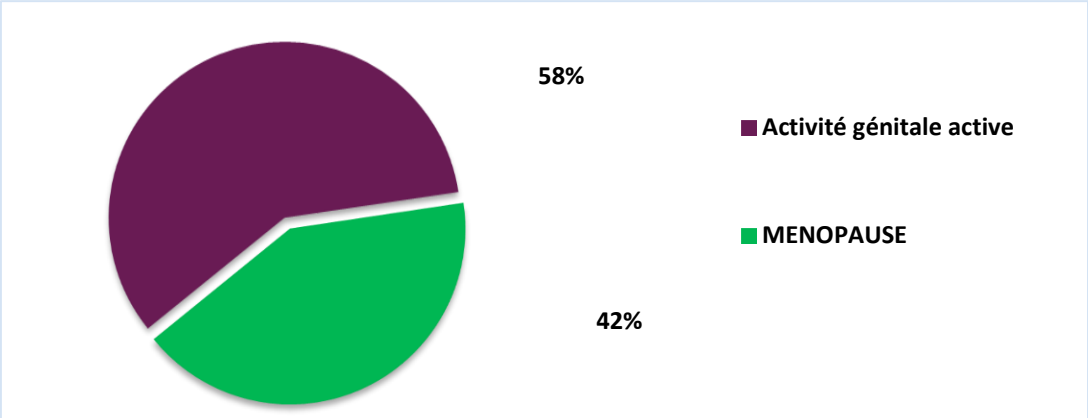

Figure 4: Distribution of patients according to the period of genital activity.

Patients were menopausal in 42% of cases.

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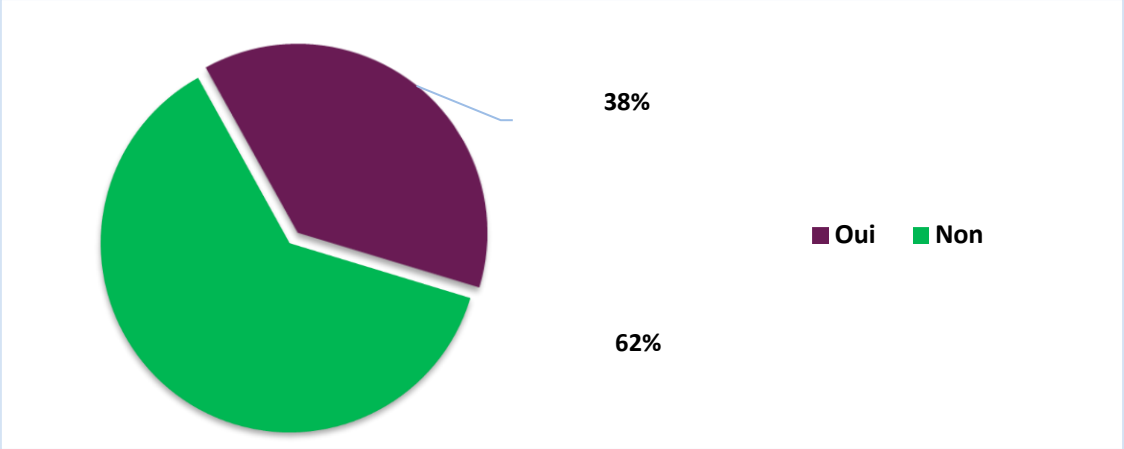

Figure 5 : Distribution of patients according to the performance of immunohistochemistry.

Therapeutic aspects

Patients had triple-negative breast cancer in 45% of cases. The sequential protocol AC60+Taxanes was the most used with 66%. Others: AC60+ Paclitaxel+Carboplatin, AC60/Taxol/CDDP. *AC60: Doxorubicin-cyclophosphamide.

Digestive disorders were more frequent with 22.3%. The treatment most associated with primary chemotherapy was surgery. It was performed in 37.7% of patients. Mastectomy + axillary dissection was performed in 95% of patients. These therapeutic aspects are summarized in Table 3.

Table 3 : the therapeutic aspects of women who received neoadjuvant chemotherapy at the Gabriel Toure University Hospital in Bamako from 2020 to 2024 in Mali.

Hormonal Status	Positive	Negative	Total
Estrogen Receptor	6 (30%)	14 (70%)	20
Progesterone Receptor	4 (20%)	16 (80%)	20
HER2	7 (20%)	13 (8O%)	20
Triple negative	9 cases (45%)		20

Chemotherapy protocol received	**Workforce**	**Percentage (%)**
AC60* + Paclitaxel or Docetaxel	35	66,0
Other protocols	18	34,0
Total	**53**	**100**

Side effects	**Workforce**	**Percentage (%)**
No side effects reported	38	71,7
Neutropenia	5	9,4
Nausea/Vomiting	5	9,4
Anemia	3	5,7
Renal impairment	1	1,9
Peripheral neuropathy	1	1,9
Total	**53**	**100**

Chemotherapy-related treatments	**Workforce**	**Percentage (%)**
Surgery	14	26,4
Surgery + Radiotherapy	2	3,8
Surgery + Hormone Therapy	3	5,6
Surgery + Radiotherapy + Targeted therapy	1	1,9
Targeted therapy	2	3,8

Type surgery	**Workforce**	**Percentage (%)**
Mastectomy + axillary dissection	19	95
Lumpectomy + axillary dissection	1	5
Total	**20**	**100**

Prognostic aspects

Patients died in 17% of cases and 28% of patients were lost to follow-up. 5-year survival was 39.6% of cases. There is no statistically significant difference between TNM stage and progression with $P > 0.05$. There is no statistically significant difference between surgery and progression with $P > 0.05$. There is no statistically significant difference between histological type and

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progression with P > 0.05. There is no statistically significant difference between SBR grade and progression with P > 0.05. These prognostic aspects are represented in the table.

Table 4 : Prognostic aspects

Evolution	**Workforce**	**Percentage (%)**
Alive	29	54,7
Deceased	9	17,0
Lost from sight	15	28,3
Total	**53**	**100**
Survival	**Workforce**	**Percentage (%)**
Less than 6 months	6	11,3
6 - 12 months	12	22,6
12 - 36 months	14	26,4
36 - 60 months	21	39,6
Total	**53**	**100**

TNM Stadium	**Evolution**		**Total**	**P value (Test)**
	Alive	**Deceased**		
Stage 1	2 (100%)	-	2	0,367 (Fisher: 3,078)
Stage 2	8 (80%)	20 (20%)	10	
Stage 3	19 (76%)	6 (24%)	25	
Total	**29**	**8**	**37**	
Histological type	**Evolution**		**Total**	**P value (Test)**
	Alive	**Deceased**		
Invasive carcinoma non-specific type	29 (78,4%)	8 (21,6%)	37	0,237 (Fisher)
Mimic carcinoma	-	1 (100%)	1	
Total	**29**	**9**	**38**	
Surgery	**Evolution**		**Total**	**P value (Test)**
	Alive	**Deceased**		
Yes	15 (93,8%)	1 (6,3%)	16	0,052 (Fisher)
No	14 (63,6%)	8 (36,4%)	22	
Total	**29**	**9**	**38**	
Grade SBR	**Evolution**		**Total**	**P value (Test)**
	Alive	**Deceased**		
Grade I	2 (100%)	-	2	1,000 (Fisher: 0.511)
Grade II	19 (76%)	6 (24%)	25	
Grade III	8 (72,7%)	3 (27,3%)	11	
Total	**29**	**9**	**38**	

DISCUSSION

Limitations: We encountered some difficulties in carrying out our study, in particular: incomplete files; insufficient information on the outcome of some patients; loss of sight of some patients.

Epidemiological aspects

In the literature review, international trends show an increase in the use of the NAC. Van der Voort *et al* in their study (Dutch National Registry), analyzing trends between 2011 and 2021, reported an overall increase in NAC use from 23% to 41% over the period. This increase was particularly notable for stage II (from 26% to 56%) and stage III (from 64% to 83%) cancers [13]. In the United States, an analysis of the *National Cancer Database* (NCDB) by Gangi *et al* also documented an increase in the use of CNA in patients eligible for surgery from the outset (Stages I-III), from 22.8% in 2010 to 31.8% in 2016. The increase was largest for HER2+ tumors and TNBC [14]. Our study at the Gabriel Toure University Hospital in Bamako, Mali, over a five-year period from 2020 to 2024, reports a frequency of 21,2% neoadjuvant chemotherapy (NAC). The incidence was higher during 2021, accounting for 31.6% of the total number of breast cancer diagnosed. The rate of 21.2% of NAC observed in our series is slightly lower than the rates reported in the most recent North American or European registries, where use tends to exceed 30% to 40%. This difference can be explained by the profile of the patients in our cohort or by the specific practices of the institution. The peak in diagnosis observed in 2021 could reflect cyclical dynamics (for example, a catch-up in diagnostic delays related to the COVID-19 pandemic), which highlights the importance of analyzing treatment delays.

Our population was predominantly premenopausal. The mean age at diagnosis was 46.79 years, with a standard

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deviation of 12.45 years. The majority of patients (modal range) were in the 36-50 age category. The extreme ages of the cohort were 28 years for the youngest patient and 73 years for the oldest. This average age of 46.79 years is an important clinical indicator, as it is below the usual average age of menopause (usually around 51 years). Breast cancer in young women (often defined as ≤ 40 or ≤ 50 years) is biologically distinct from that in older women [18]. These premenopausal cancers are more frequently associated with: a higher prevalence of Triple-Negative (TNBC) and HER2-positive (HER2+) tumors; higher histological grades (Grade III) and a high Ki-67 proliferation index; an increased likelihood of germline mutations [15]. These biological characteristics (aggressive but often chemo-sensitive) precisely justify the frequent use of neoadjuvant chemotherapy in this population, in order to obtain a pathological response (pCR) and improve the prognosis [16].

In the literature, the average age of our cohort is very consistent with the demographics observed in large international trials and cohorts on NAC.

A recent cohort study conducted by Bar-Meir *et al*. [13], analyzing 1195 patients (Israel/US) receiving CNA, reported a median age at diagnosis of 50 years with extreme ages of 23 and 86 years), which is very close to our average of 46.79 years [18]. Similarly, the study by Zhu *et al*. [16], which included 579 Chinese patients treated with CNA, also reported a median age of 49 years (range: 23-74 years). This study specifically explored the prognostic impact of age. It confirmed that younger patients (≤ 40 years) were more likely to achieve pCR, but paradoxically had a higher risk of recurrence and lower overall survival, especially in hormone-dependent subtypes [16]. The mean age of 46.79 years in our study is in line with international standards for populations selected for neoadjuvant chemotherapy.

Clinical aspects

Among our staff, no patient had a personal history of breast cancer. The time between the start and the consultation was 3 to 6 months in 79.6%. Only 17% consulted after 12 months after the appearance of the first signs. In our study, 54.7% of patients were multiparous and 7.5% nulliparous. This rate is higher than that of Thera Z [17] which found 5.1%. Nulliparity is recognized as a risk factor for breast cancer. In our series, 56.6% of tumors affected the right breast. This result is comparable to those of Togo [18] in Mali (56.19%) and Diop [19] in Senegal (62.5%) of location in the right breast. Both the superior-external and internal quadrants were simultaneously affected in 52.8%.

Concerning the TNM stadium**:** 67.9% of our patients were received at stage III and 25.3% at stage II, these rates are comparable to those in Togo [18] in Mali, which found 72.84% of patients at stage II or III. The Scarff Bloom-Richardson grade is a histo-prognostic grade that indirectly assesses the proliferative activity index [20]. In our series, grade II accounted for 64.2% and grade III 32.1%. The histological type was non-specific invasive carcinoma with 98.1%. This result is higher than that of Sylla S [21] in Mali (2020) which found 92.6% and Abasse [22] in Morocco, which found 95.8%. These results are consistent with the data in the literature. The estrogen receptor was positive in 30% of cases. This rate is comparable to that of Hawa Park [23] which found 34.09% estrogen receptor; progesterone receptor was positive in 20%. We found 9 cases of triple negative Cancer has no therapeutic target of its own and therefore has a poor prognosis.

Therapeutic aspects

After neoadjuvant chemotherapy, 37.7% of our patients were treated with surgery. One patient benefited from surgery combined with radiotherapy. Three of them received surgery combined with hormone therapy and one patient benefited from surgery combined with radiotherapy and targeted therapy. In addition, 2 patients benefited from targeted therapy alone. Overall, 60.3% did not receive any treatment other than chemotherapy. This is because some patients were lost to follow-up during chemotherapy and in others there was not a sufficient therapeutic response to do surgery. The type of surgery was mastectomy + axillary dissection in 95% of cases.

Prognostic aspects

Overall survival was 54.7 during the study, this rate is higher than that of Mocard P [24] which had found 25% overall survival at 5 years. 17% of the patients had died. this death rate is comparable to that of Thera Z [17] with 20% of deaths; 28.3% were lost to follow-up.

CONCLUSION

Chemotherapy improves survival but the death rate remains high because the majority of our patients consult at an already advanced stage.

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Ethical statement: Approval from the ethics committee.

REFERENCES

1. Manulla L, Manulla A, Nicoulin M. Medical dictionary: medical, anatomical and pharmaceutical abstracts. 7th ed. Paris: Masson; 1996. 300 p. In.
2. United Nations (UN). WHO warns of rising cancer cases and calls for closing gaps in prevention and treatment [Internet]. New York: UN; 2025 Feb 2 [accessed August 2025]. Available at: https://news.un.org/fr/story/2025/02/1152786.
3. World Health Organization, Regional Office for the Eastern Mediterranean (WHO/EMRO). Breast Cancer Awareness Month 2021 [Internet]. Cairo: WHO/EMRO; 2021 [cited August 2025]. Available at: https://www.emro.who.int/fr/noncommunicable-diseases/campaigns/breast-cancer-month-2021.html.

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4. International Agency for Research on Cancer (IARC). The value of cancer data [Internet]. Lyon: World Health Organization; [date unknown] [accessed August 2025]. Available at: https://gicr.iarc.fr/about-the-gicr/the-value-of-cancer-data/.
5. Benabid N, Bouzid A, Bouzid M, Khelifa A, Bensalem S, Cherif Z, et al. A new approach for the design of hybrid composite structures: optimization and experimental validation. Mechanical reports. 2025; 353(1):1-15. doi:10.1016/j.crme.2025.01.003.
6. Sung H, Ferlay J, Siegel RL, Laversanne M, Soerjomataram I, Jemal A, Bray F. Global cancer statistics 2020: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. CA Cancer J Clin. 2021 ; 71(3) : 209–49.
7. Mali Cancer Registry. 2020 Registry Data Report. Bamako: Ministry of Health; 2021.
8. Togo A, Traoré A, Traoré C, Dembélé BT, Kanté L, Diakité I, Maïga A, Traoré SO, Coulibaly AC, Diallo G. Breast cancer in two hospitals in Bamako (Mali): diagnostic and therapeutic aspects. J Afr Cancer / Afr J Cancer. 2010; 2(2):88–91.
9. Joensuu H, Lehtimäki T, Holli K, Elomaa L, Turpeenniemi-Hujanen T, Kataja V, et al. Risk for distant recurrence of breast cancer detected by mammography screening or other methods. JAMA. 2004; 292(9):1064–73.
10. Unicancer, ARC Foundation for Cancer Research. Study SAFIR02 Breast-Immuno: a breakthrough in the management of metastatic triple-negative breast cancers [Internet]. Paris: Unicancer; 2019 Dec 17 [accessed Aug 2025]. Available at: https://www.unicancer.fr/wp-content/uploads/2019/12/CP-Unicancer-Fondation-ARC_SAFIR02_17-de%CC%81cembre-2019.pdf. In.
11. Fitzal F, Riedl O, Mittlböck M, Dubsky P, Bartsch R, Pluschnig U, et al. Oncologic safety of breast conserving surgery after tumour downsizing by neoadjuvant therapy: a retrospective single centre cohort study. Breast Cancer Res Treat. 2011; 127(1):121–8.
12. Mauriac L, Durand M, Avril A, Dilhuydy JM. Effects of primary chemotherapy in conservative treatment of breast cancer patients with operable tumors larger than 3 cm: results of a randomized trial in a single centre. Ann Oncol. 1991; 2(5):347–54.
13. van der Voort A, van der Heiden-van der Loo M, Verloop M, et al. Trends in neoadjuvant chemotherapy use and pathologic response in breast cancer in the Netherlands between 2011 and 2021. Breast Cancer Res Treat. 2023; 203(1):153-162. doi:10.1007/S10549-023-07119-W.
14. Gangi C, Le H, Ahluwalia R, et al. Trends in Mastectomy and Neoadjuvant Chemotherapy Use for Patients with Breast Cancer: A National Cancer Database Study. Ann Surg Oncol. 2020; 27(10):3603-13.
15. Bar-Meir E, Keren-Rosenberg S, Zacharia E, et al. Trends in Ki-67 levels after neoadjuvant chemotherapy in breast cancer and their correlation with pathological response and prognosis. Breast Cancer Res Treat. 2023; 197(2):293-301.
16. Zhu J, Zhang Z, Zhang T, et al. Prognostic value of age at diagnosis in different molecular subtypes of breast cancer patients receiving neoadjuvant chemotherapy. Front Oncol. 2023;13:1134638.
17. Théra Z. Radiotherapy of breast cancer at the oncology-radiotherapy center of the Mali Hospital [Thesis of Medicine]. Bamako, USTTB; 2021 : 109. Available on: https://www.bibliosante.ml/bitstream/handle/123456789/5142/21M402.pdf?sequence=1&isAllowed=y.
18. Togo A, Traoré A, Traoré C, Dembélé BT, Kanté L, Diakité I, Diallo A, Sidibé A, Coulibaly M, Konaté D. Breast cancer in two hospitals in Bamako (Mali): diagnostic and therapeutic aspects. J Afr Cancer. 2010; 2(4): 215-9. DOI:10.1007/S12558-010-0060-X.
19. Diop O, Ndong B, Bathily EA, Sow Diop W, Senghor RS, Leye MMM, Fall M, Ba M, Diallo A, Toure CT. Role of bone scintigraphy in the assessment of the extension of bone metastases of breast cancer in Senegal: preliminary study of 40 cases. Rev CAMES Santé. 2014; 2(1): 24-9.
20. Elston CW, Ellis IO. Pathological prognostic factors in breast cancer. I. The value of histological grade in breast cancer: experience from a large study with long-term follow-up. Histopathology. 1991; 19(5): 403–10.
21. Sylla S. Progressive profile of breast cancers treated with radiotherapy according to hormone receptor expression and HER2 status. Bamako, USTTB; 2021 : 100. Available on: https://bibliosante.ml/bitstream/handle/123456789/5141/21M400.pdf.
22. Abbass F, Bennis S, Znati K, Akasbi Y, Amrani JK, El Mesbahi O, Amarti A. The epidemiological and biological profile of breast cancer in Fez-Boulemane (Morocco). East Mediterr Health J. 2011; 17(12): 930-6. doi:10.26719/2011.17.12.930. PMID:22360007.
23. Park EH, Min SY, Kim Z, Yoon CS, Jung KW, Nam SJ, Lee JE, Kim HJ, Lee SK, Park BW. Basic facts of breast cancer in Korea in 2014: the 10-year overall survival progress. J Breast Cancer. 2017 Mar; 20(1): 1-11. doi:10.4048/jbc.2017.20.1.1. PMID:28382089.
Pocard M, Pouillart B, Asselain B, Falcou MC, Salmon RJ. Hepatic resections for breast cancer metastases: results and prognostic factors. Ann Chir. 2001; 126(5): 413-20. doi:10.1016/S0003-3944(01)00526-0. PMID:11719953

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