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Research Article

Gastric Cancer: Clinical Profile, Care Pathway and Factors Associated with Death at Brazzaville University Hospital (Congo)

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Abstract

Objective: to describe the clinical profile and care pathway of patients with gastric cancer at Brazzaville University Hospital and to identify factors associated with death. *Patients and method:* this was an observational, analytical study with retrospective data collection, based on the records of patients managed for gastric cancer from 2015 to 2025 in the gastroenterology, digestive surgery and medical oncology departments of Brazzaville University Hospital. Data were collected from March to September 2025. Incomplete records were excluded. Factors associated with death were identified using Fisher's exact test and the Mann–Whitney test. *Results:* 124 patients were included. The hospital frequency was 1.02% in gastroenterology, 1.24% in digestive surgery and 1.86% in oncology. Mean age was 56 ±15 years, with a male predominance. Epigastric pain was the main symptom (72.6%), followed by vomiting (40.3%) and gastrointestinal bleeding (33.1%). Tumors were mostly antral (40.4%) and ulceroproliferative. Adenocarcinoma was found in 66.7% of cases, and the tumor was advanced (T4) in 72.7% of staged cases at diagnosis. The median consultation delay was 5 months. Only 6.5% of patients had a complete care pathway and 12.1% were discussed at a multidisciplinary team meeting (MDT). Death was documented in 19.4% of patients, and 78.2% were lost to follow-up. Death was associated with adenocarcinoma (p = 0.005) and tumor location. Conclusion: gastric cancer is diagnosed late and managed in a fragmented way. Early diagnosis, multidisciplinary management and active patient follow-up are needed to better assess and improve prognosis.

Keywords

Cancer, Stomach, Diagnostic Delay, Care Pathway, Prognosis, Brazzaville

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1. Introduction

Gastric cancer remains a public health problem worldwide because of its incidence. With nearly 970,000 new cases and 660,000 deaths estimated in 2022, it ranks fifth among cancers in both incidence and mortality [1]. The most affected regions are Asia, Eastern Europe and South America, where incidence is 10 times higher than in Western Europe [1]. Its prognosis depends above all on the stage at diagnosis and on the possibility of curative resection.

In sub-Saharan Africa, data come from hospital-based series. They describe patients who are younger than in Western countries, diagnosed at an advanced stage and with limited access to curative treatment [2]. In Côte d'Ivoire, gastric cancer accounted for 6.1% of all cancers [3]. In Togo, it ranked third among cancers (8.4%) [4], with an average of 31 cases per year at the Campus University Hospital in Lom é[5]. In Congo, its hospital frequency was 0.7% at Brazzaville University Hospital [6], and the Brazzaville cancer registry reported the first data on this site [7].

In this context, the prognosis remains poor because of diagnostic delay and limited access to treatment. It depends not only on tumor biology but also on the care pathway, the time to first consultation, the speed of diagnosis and then of treatment, and the coordination between gastroenterologists, surgeons and oncologists around a decision made at a multidisciplinary team meeting, as recommended by international guidelines [8, 9].

At Brazzaville University Hospital, these patients are managed in three separate departments. Delays and coordination between these departments have never been assessed. To improve the management and prognosis of these patients, we conducted this study, whose objectives were to describe the clinical, paraclinical and therapeutic profile of patients, to assess delays and the care pathway, and to identify factors associated with death.

2. Patients and Method

This was an observational, analytical study with retrospective data collection. It was based on the medical records of patients managed for gastric cancer from 2015 to 2025 in the gastroenterology, digestive surgery and medical oncology departments of Brazzaville University Hospital. Data were collected from March to September 2025.

Records of patients with gastric cancer of any histological type (adenocarcinoma, gastrointestinal stromal tumor [GIST], lymphoma) were included. Incomplete records were not retained. Exhaustive sampling was performed, including all records of patients meeting the inclusion criteria. Data collection was carried out in two steps: identification and selection of records, then recording of data on standardized survey forms.

The variables studied covered sociodemographic data, medical history and lifestyle; clinical and paraclinical data; endoscopic data (tumor location and appearance), histological data (type, immunohistochemistry), TNM classification (UICC, 8th edition), as well as treatment and outcome.

Socioeconomic status was classified according to occupation and the daily amount spent on household food: low (< 616 FCFA, i.e., < 1 US dollar), middle (616 to 1,000 FCFA) or high (> 1,000 FCFA).

Three delays were measured, in months:

1) Consultation delay: from symptom onset to the first consultation in one of the three departments;
2) Diagnostic delay: from that consultation to endoscopic or histological diagnosis;
3) Treatment delay: from diagnosis to the start of treatment.

The care pathway was defined by the combination of departments attended by each patient. We also recorded whether a multidisciplinary team meeting (MDT) had been held.

Death was recorded when documented in the medical record or reported by the family. Deceased patients were compared with all other patients, whether alive at last contact or lost to follow-up.

Data were entered with Epi Info 7.2.4 and analyzed with IBM SPSS Statistics 27.0.1. Normality of distributions was assessed with the Shapiro–Wilk test. Quantitative variables were expressed as mean with standard deviation (SD) or as median with first and third quartiles (Q1–Q3), and compared using the Mann–Whitney test.

Qualitative variables were expressed as numbers and percentages calculated among patients with available data. They were compared using Fisher's exact test because of small numbers. Associations were expressed as odds ratios (OR) with 95% confidence intervals (95% CI), using a conditional exact method for empty cells. The significance threshold was set at $p < 0.05$. The small number of deaths (n = 24) did not allow multivariate analysis. Given the number of comparisons, this analysis was considered exploratory.

3. Results

Over the study period, 280 cases of gastric cancer were identified out of 22,669 hospitalizations. The hospital frequency was:

1) 1.02% in gastroenterology (127 cases out of 12,430 hospitalizations);
2) 1.24% in digestive surgery (76 cases out of 6,107);
3) 1.86% in oncology (77 cases out of 4,132).

One hundred and twenty-four records were usable and were analyzed.

The population was predominantly male (57.3%), with a sex ratio of 1.3. Mean age was 56 ± 15 years (range: 23 to 89 years), and the most represented age group was 50 to 59 years (32.3%). Patients lived in Brazzaville in 95.2% of cases. Socioeconomic status was low or middle in 88.1% of cases.

Epigastric pain was the leading symptom (72.6%), followed by vomiting (40.3%) and gastrointestinal bleeding (33.1%);

anemia affected 85.2% of patients with a complete blood count (Table 1).

Table 1. *Clinical and laboratory characteristics (n = 124).*

Characteristics	n	%
Epigastric pain	90	72.6
Vomiting	50	40.3
Gastrointestinal bleeding	41	33.1
Deterioration of general condition	74	59.7
Palpable epigastric mass	16	12.9
Hepatomegaly	10	8.1
Ascites	8	6.5
Jaundice	5	4.0
Anemia (n = 115)	98	85.2

Upper gastrointestinal endoscopy was performed in 91.9% of patients. The tumor was located mainly in the antrum (40.4%), the fundus (28.9%) and then the cardia (13.2%). It was mainly ulceroproliferative and hemorrhagic (75.8%). The histological type was documented in 57 patients: adenocarcinoma in two thirds of cases and GIST in one quarter. When documented, the stage was advanced (T4) in 72.7% of cases and metastatic in 61.7%. Surgery was performed in one quarter of patients, mainly partial gastrectomy, and chemotherapy in only 6 patients, with a different regimen for each (Table 2).

Table 2. *Diagnostic and therapeutic characteristics.*

Characteristics	n	%
Histological type (n = 57)		
Adenocarcinoma	38	66.7
GIST	15	26.3
Lymphoma	2	3.5
Signet-ring cell carcinoma / carcinoma in situ	2	3.5
Helicobacter pylori positive (n = 18)	7	38.9
Stage (documented records)		
T4 (n = 55; Tx = 69)	40	72.7
N+ (n = 43; Nx = 79)	8	18.6
M1 (n = 47; Mx = 77)	29	61.7
Treatment (n = 124)		
Surgery	31	25.0
Partial gastrectomy	25	20.2
Total gastrectomy	1	0.8
Chemotherapy*	6	4.8
Imatinib	8	6.5

Characteristics	n	%
Radiotherapy	1	0.8

*5-FU, epirubicin, cisplatin (1); docetaxel, cisplatin, 5-FU (1); doxorubicin, leucovorin, cisplatin (1); ELF (1); FLOT (2).

The longest delay preceded the first consultation: its median was 5 months, and 25% of patients consulted at least 10 months after symptom onset. At the hospital, diagnosis and initiation of treatment each took a median of 1 month. The patient pathway was fragmented: 45.2% of patients were seen in a single department, and only 6.5% in all three. Oncology was involved in only 39.5% of patients; 61.3% of patients attended digestive surgery, but only 25% underwent surgery (Table 3).

Table 3. *Delays and care pathway.*

Indicators	Value
Delays, median (Q1–Q3), months	
Consultation (symptoms → first consultation)	5.0 (1.0–10.0)
Diagnosis (consultation → diagnosis)	1.0 (0.26–3.0)
Treatment (diagnosis → treatment)	1.0 (0.51–3.8)
Departments attended, n (%)	
Gastroenterology only	32 (25.8)
Digestive surgery only	14 (11.3)
Oncology only	10 (8.1)
Gastroenterology + surgery	29 (23.4)
Surgery + oncology	25 (20.2)
Gastroenterology + oncology	6 (4.8)
All three departments	8 (6.5)

However, an MDT was held for only 15 patients (12.1%). Partial remission was observed in 30 patients (24.2%). Death was documented in 24 patients (19.4%), and 97 patients were lost to follow-up (78.2%). In univariate analysis, adenocarcinoma ($p = 0.005$) and tumor location ($p = 0.004$) were associated with death. Delays were longer in patients who died: 6 versus 4 months for consultation and 2 versus 1 month for treatment. These differences were not significant ($p = 0.110$ and 0.105). Epigastric mass, surgery and TNM stage were not significantly associated with death either (Table 4).

Table 4. *Factors associated with death.*

Variables	Deceased (n = 24)	Non-deceased (n = 100)	OR (95% CI)	p
Consultation delay, median (IQR), months	6 (9)	4 (5)	—	0.110
Treatment delay, median (IQR), months	2 (4)	1 (3.1)	—	0.105
Epigastric mass	6 (25.0)	10 (10.0)	2.97 (0.78–10.45)	0.083
Anemia	19/23 (82.6)	79/92 (85.9)	0.78 (0.23–3.67)	0.744
Antral location	11/22 (50.0)	35/92 (38.0)	1.62 (0.57–4.62)	0.340

Variables	Deceased (n = 24)	Non-deceased (n = 100)	OR (95% CI)	p
Fundic location	1/22 (4.5)	32/92 (34.8)	0.09 (0.01–0.62)	0.004
Adenocarcinoma	12/12 (100)	26/45 (57.8)	18.4 (1.03–330)	0.005
T4 (vs. T1–T3)	12/14 (85.7)	28/41 (68.3)	2.74 (0.49–28.74)	0.304
M1 (vs. M0)	7/12 (58.3)	22/35 (62.9)	0.83 (0.18–4.05)	1.000
Surgery	10 (41.7)	21 (21.0)	2.69 (0.92–7.56)	0.063

4. Discussion

This study is the first in Congo to describe gastric cancer across the three departments that manage it. It shows that the disease is diagnosed at an advanced stage, that the main delay occurs before arrival at the hospital, that the hospital pathway is fragmented and poorly aligned with guidelines, and that prognosis cannot be reliably assessed owing to the lack of patient follow-up.

The hospital frequency observed (1.02% to 1.86%) is lower than the 3.7% reported by Nsonde-Malanda et al. in the medical oncology department [7], and lower than the frequencies reported in Togo (14%) in a gastroenterology department and in Benin (11.8%) in a digestive surgery department [5, 10]. These differences are probably due to the denominators used and to the recruitment of each department.

The mean age of 56 years is close to that reported in Brazzaville [6], Cameroon [11] and Togo [12]. It is about ten years lower than in Western and Asian series [1, 13]. This difference reflects the young age of the African population, but also an earlier and more frequent exposure to *Helicobacter pylori* [14]. Most patients with gastric cancer had a low or middle socioeconomic status. This distribution highlights a predominance of patients with limited financial resources in the absence of health insurance. Ahoua et al. made the same observation in Côte d'Ivoire [3]. Socioeconomic status is a major determinant of the care pathway in sub-Saharan Africa. However, this information was available for only 42 patients in our series and does not allow a definitive conclusion.

Epigastric pain, vomiting and gastrointestinal bleeding dominated the clinical picture, as in other African series [6, 11, 12, 15, 16]. The frequency of deterioration of general condition, epigastric masses and anemia reflects a disease that is already advanced at the first consultation.

The antral predominance is also found in Togo and Senegal [5, 17]. It contrasts with the relative increase in proximal locations in Western countries [13]. Adenocarcinoma was the most frequent histological type [18]. The proportion of GIST (26.3%), however, is unusually high, and two selection biases probably explain it. First, histology was documented in only 57 patients; second, GISTs treated with imatinib are followed in oncology, where records were better kept. Testing for *Helicobacter pylori*, the main risk factor for non-cardia adenocarcinoma [19], was documented in only 18 patients, showing that it is not yet systematic.

When documented, the stage was advanced (T4 in 72.7% of cases), as in almost all African studies [2]. In Japan, by contrast, screening allows most cancers to be diagnosed at an early stage [9]. The absence of staging in more than half of the records reflects limited access to computed tomography and endoscopic ultrasound.

Guidelines combine gastrectomy with D2 lymphadenectomy and perioperative FLOT-type chemotherapy for localized tumors [8, 9]. In our series, 25% of patients underwent surgery and 4.8% received chemotherapy. This small number of patients treated according to standards is explained first by the absence of health insurance, which leaves the cost of care to patients and their families, and also by the limited availability of immunohistochemistry, which is essential before prescribing imatinib for GIST and targeted therapies [20].

The median consultation delay was 5 months, compared with 1 month for diagnosis. Most patients therefore consulted several months after symptom onset, trivializing their symptoms or resorting to self-medication or traditional care before hospital management. This delay largely explains diagnosis at an advanced stage. In South Africa too, most of the delay occurs before the first specialist contact [21].

The hospital pathway of patients was heterogeneous. Only 6.5% of patients had a complete pathway through the three departments, and 12.1% of cases were discussed at an MDT, whereas guidelines require this for every patient [8, 9]. Of the 76 patients who attended digestive surgery, 31 underwent surgery. The question of resectability was therefore often raised late, or without a collective decision.

In univariate analysis, two factors were associated with death: tumor location and histological type (adenocarcinoma). These two significant associations probably reflect the same phenomenon. GISTs, often located in the fundus, have a much better prognosis than adenocarcinoma when treated with imatinib [18, 20]. These results therefore confirm the more favorable prognosis of non-epithelial tumors, without reflecting an effect of location itself. Surgery was more frequent in patients who died, without a significant difference. This result

does not mean that surgery worsens prognosis, but may be explained by an ascertainment bias (operated patients being subsequently referred to oncology). Curative resection remains the main determinant of survival [18, 22]. Similarly, the lack of association with TNM stage does not call into question its well-established prognostic value [18, 22, 24]; the many unrecorded stages and the small number of documented deaths may explain this result.

Consultation and treatment delays were longer in patients who died, without reaching significance. This trend is in the expected direction: a prolonged delay favors diagnosis at an advanced stage. The sample of 24 deaths probably lacked the power to confirm it. Similarly, a palpable epigastric mass was twice as frequent in patients who died (25% vs. 10%), without a significant difference. This sign generally reflects a bulky tumor or locoregional extension, and is associated with low resectability in African series [23]. With an estimated power of about 40%, the study can neither confirm nor exclude this association.

Finally, although this study provides relevant data on gastric cancer at Brazzaville University Hospital, some limitations should be highlighted. Its retrospective design explains the many missing data related to record keeping. The main limitation remains the proportion of patients lost to follow-up (78.2%). The "non-deceased" group includes a majority of patients whose outcome is unknown, many of whom probably died outside the hospital. Actual mortality is therefore underestimated, and the analysis of deaths should be considered exploratory. The small number of deaths allowed neither multivariate nor survival analysis.

These limitations are in themselves a finding: they call for a standardized medical record, a hospital registry of digestive cancers and active patient follow-up.

5. Conclusion

Gastric cancer remains a public health problem worldwide. At Brazzaville University Hospital, it affects adults and is most often diagnosed at an advanced stage. The delay occurs mainly before arrival at the hospital, and management is then scattered across several departments. Adenocarcinoma is the most severe form.

This study shows the need to diagnose earlier, by raising public awareness and facilitating access to endoscopy, to promote multidisciplinary management, and to follow patients over time through the digitization of medical records, in order to better understand their prognosis.

Abbreviations

ELF	Etoposide, Leucovorin, 5-fluorouracil
FLOT	5-fluorouracil, Leucovorin, Oxaliplatin, Docetaxel
TNM	Tumor, Node, Metastasis (Classification)
UICC	Union for International Cancer Control

Author Contributions

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Conflicts of Interest

The authors declare no conflicts of interest.

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