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Lower Gastrointestinal Bleeding: A Cross-Sectional Study in Two Referral Hospitals in the City of Douala, Cameroon

Winnie Tatiana Bekolo Nga[1,2*], Marina Bidjogo épse Gwet[2,3], Charifa Njoya[4,5], Olga Machekam épse Matanga[1], Guy Roger Djapa Senga[5], Galdima Mohamadou[4], Eric Pascal Tchoumi Leuwat[6], Christian Tzeuton[7], Firmin Ankouane Andoulo[6], Henry Luma Namme[2,6], Dominique Noah Noah[3], Oudou Njoya[6], Elie Claude Ndjitoyap Ndam[6], Servais Albert Fiacre Eloumou Bagnaka[1]

[1]Faculty of Medicine and Pharmaceutical Sciences, University of Douala, Douala, Cameroon
[2]Douala General Hospital, Douala, Cameroon
[3]Faculty of Medicine and Pharmaceutical Sciences, University of Ebolowa, Sangmélima, Cameroon
[4]Faculty of Medicine and Biomedical Sciences, University of Garoua, Douala, Cameroon
[5]Faculty of Medicine and Pharmaceutical Sciences, University of Dschang, Dschang, Cameroon
[6]Faculty of Medicine and Biomedical Sciences, University of Yaoundé I, Yaoundé, Cameroon
[7]Les Capucines Medical Center, Douala, Cameroon
Email: *winbek@yahoo.fr

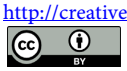
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Abstract

Introduction: Lower gastrointestinal bleeding (LGIB) is a frequent reason for consultation in gastroenterology. Often underestimated by patients and carrying a social stigma, these bleedings can be associated with severe pathologies. This study aimed to evaluate the burden of gastrointestinal bleeding within our hospital setting and to identify factors associated with patient prognosis. **Methodology:** This was an analytical cross-sectional study conducted across two reference hospitals in the city of Douala. We included patients presenting with clinical or paraclinical signs of lower gastrointestinal bleeding and an endoscopic lesion distal to the ligament of Treitz that accounted for the bleeding. The collected data encompassed clinical, paraclinical, therapeutic, and prognostic variables. Statistical analysis was performed using SPSS software, version 23.0. **Results:** We reviewed 847 patient records, among which 195 had lower gastrointestinal bleeding, yielding a prevalence of 23%. We included 108 patient records that were complete. The mean age was 48.9 ± 18.5 years. There were 63 men and 45 women. The mean time to consultation was 6.9 ± 9.8 days and the main clinical sign was hematochezia (80.6%). The main lesions were hemorrhoidal disease (47.2%), diverticular

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disease (25%), malignant tumors (16.7%), colitis (14.8%), and polyps (9.3%). The mean length of hospital stay was 4.8 ± 2.4 days. The mean Oakland score was 11.8 ± 4.2. The mortality and rebleeding rates were 6.5% and 14.8%, respectively. Factors significantly associated with death were: age > 65 years (adjusted OR [aOR] = 3.2; 95% CI [1.2 - 8.1]; p = 0.018); ICU admission (aOR = 8.6; 95% CI [3.2 - 22.9]; p < 0.0001); Oakland score > 10 (aOR = 3.5; 95% CI [1.1 - 10.8]; p = 0.032); rebleeding (aOR = 4.1; 95% CI [1.5 - 11.4]; p = 0.006), receiving > 2 units of PRBCs (aOR = 2.8; 95% CI [1 - 7.4]; p = 0.046). **Conclusion:** Lower gastrointestinal bleeding demonstrated a prevalence of 23%. Mortality was 6.5%, with outcomes being closely linked to patient age, hemodynamic stability, and initial care.

Keywords

Lower Gastrointestinal Bleeding, Prevalence, Prognosis, Cameroon

1. Introduction

Lower gastrointestinal bleeding (LGIB) is defined as bleeding originating from the digestive tract secondary to a lesion located distal to the ligament of Treitz or duodenojejunal flexure [1]. LGIB accounts for 15% to 20% of all gastrointestinal hemorrhages and can present as either acute or chronic [2] [3]. It is a frequent reason for consultation in gastroenterology departments [4]. The clinical presentation is polymorphic, manifesting either as overt bleeding—such as hematochezia or melena—or as occult bleeding [1] [5].

Endoscopic examinations, particularly total colonoscopy sometimes combined with upper gastrointestinal endoscopy in hemodynamically stable patients, are the cornerstone of diagnosis [4] [6]. Abdominal CT angiography is of significant value in the etiological investigation, particularly for unstable patients who cannot undergo bowel preparation [7] [8]. Furthermore, both endoscopy and imaging have therapeutic utility for performing hemostatic procedures [7] [9].

Lower gastrointestinal bleeding is occasionally underestimated not only by patients but also by clinicians, which delays appropriate management. Moreover, it can be indicative of underlying malignancies. All these elements constitute significant factors for morbidity and mortality. The purpose of this study was to describe the sociodemographic, clinical, and paraclinical characteristics of lower gastrointestinal bleeding, and to identify prognostic factors.

2. Methodology

This was an analytical cross-sectional study spanning from January 1, 2020, to December 31, 2024. The study took place in two first-category tertiary referral hospitals in Douala, Cameroon: the Douala General Hospital and the Laquintinie Hospital.

2.1. Study Population

The source population consisted of patients hospitalized for gastrointestinal bleeding. Inclusion criteria required all admitted patients to present with clinical signs (hematochezia, melena) or paraclinical signs (anemia) suggestive of lower gastrointestinal bleeding, with a subsequent digestive endoscopy revealing a lesion distal to the ligament of Treitz that explained the bleeding. Patients with endoscopic lesions indicative of upper gastrointestinal bleeding and those with incomplete medical records were excluded.

2.2. Data Collection

Data collection was performed using patients' medical records. Variables collected included sociodemographic data (age, sex); clinical data (medical history, comorbidities, date of consultation, date of discharge or death, clinical signs); paraclinical data (laboratory results, endoscopy findings); therapeutic interventions (medical treatment, surgical treatment, endoscopic treatment, ICU admission, blood transfusion); and clinical outcomes (death, discharge, recurrence).

2.3. Operational Definitions

- **Anemia:** Hemoglobin level < 12 g/dL.
- **Time to consultation:** The interval between the onset of bleeding and the first consultation.
- **Mean length of hospital stay:** The interval between the date of admission and the date of discharge or death.
- **Incomplete record:** Any file lacking sociodemographic data and/or endoscopic results.

2.4. Statistical Analysis

Collected data were entered into a computer using Statistical Package for the Social Sciences (SPSS) software, version 23.0. Qualitative variables were presented as counts and percentages. For quantitative variables, central tendency parameters were calculated and expressed as mean ± standard deviation (SD), median (interquartile range [IQR]), or maximum and minimum values.

The association between qualitative variables was assessed using Student's Chi-square test, and odds ratios (OR) were calculated with 95% confidence intervals (CI). Logistic regression was utilized to identify factors independently associated with in-hospital mortality during lower GI bleeding episodes. The threshold for statistical significance was set at $p < 0.05$.

2.5. Ethical Considerations

The study was conducted in strict compliance with the fundamental principles of medical research outlined in the Declaration of Helsinki. Administrative research approvals were obtained from the Douala General Hospital (No. 274/AR/MINSANTE/HGD/DM/04/25) and the Laquintinie Hospital (No. 05/AR/MIN-

SANTE/DHL/CMA). Ethical clearance was granted by the Ethics Committee of the *Université des Montagnes* (No. 2025/045/UdM/PR/CEAQ).

3. Results

We reviewed 847 patient records presenting with gastrointestinal bleeding, among which 195 had lower gastrointestinal bleeding, yielding a prevalence of 23%. Ultimately, only 108 patient records met all inclusion criteria.

The mean age of the patients was 48.9 ± 18.5 years. The sample included 63 men and 45 women, representing a sex ratio of 1.4. A history of lower gastrointestinal bleeding was noted in 14.8% of cases (16 patients), while 11.1% (12 patients) reported a history of upper gastrointestinal bleeding (Table 1).

Table 1. Characters of patients with lower gastrointestinal bleeding.

Parameters	Numbers (%)	Mean (SD)
Age (years)		48.9 ± 18.5
Sex		
Male	63 (58.7)	
Female	45 (41.3)	
History and lifestyle		
Upper gastrointestinal bleeding	12 (11.1)	
Lower gastrointestinal bleeding	16 (14.8)	
Hypertension	15 (13.9)	
Diabetes	7 (6.5)	
HIV	7 (6.5)	
Hepatitis	11 (10.2)	
Alcohol	40 (37)	
Tobacco consumption	17 (15.7)	

The mean time to consultation was 6.9 ± 9.8 days. The primary clinical presentations of the hemorrhage were hematochezia alone, melena alone, or a combination of both signs, occurring in 80.6%, 9.2%, and 10.2% of patients, respectively (Table 2). Upon admission, 14 patients exhibited signs of hypovolemic shock, and digital rectal examination revealed blood in the rectal vault in 90.7% of cases (98 patients) (Table 2).

The mean hemoglobin level at admission was 8.8 ± 2.5 g/dL, and the mean platelet count was 219.1 ± 88.4 G/L. The mean prothrombin time (PT) was 78.8 ± 16.9%. Mean serum creatinine was 12.7 ± 13.8 mg/L, and mean blood urea nitrogen (BUN) was 0.5 ± 0.4 g/L (Table 3).

Table 2. Clinical presentation.

Parameters	Count (n)	Percentage (%)
Initial presentation		
Hematochezia	87	80.6
Melena	10	9.2
Hematochezia + melena	11	10.2
Clinical Signs in admission		
Presence of blood on digital rectal examination	98	90.7
Abdominal pain	47	43.5
Mucocutaneous pallor	44	40.7
Asthenia/Fatigue	39	36.1
Dizziness	27	25.0
Hypovolemic shock/Hemodynamic instability	14	13.0
Abdominal mass	3	2.8

Table 3. Biological parameters upon admission.

Laboratory Parameter	Mean ± SD	Median	Interquartile Range (IQR)
Hemoglobin (g/dL)	8.8 ± 2.5	8.8	[6.9 - 10.7]
Platelet count (10^9/L)	219.1 ± 88.4	213.0	[162.3 - 274.5]
Prothrombin Time (PT) (%)	78.8 ± 16.9	80.0	[70.0 - 90.0]
Blood Urea Nitrogen (BUN)/Blood Urea (g/L)	0.5 ± 0.4	0.35	[0.24 - 0.55]
Serum Creatinine (mg/L)	12.7 ± 13.8	10.0	[8.0 - 12.0]

Endoscopy was performed within a mean timeframe of 1.8 ± 1.2 days. The various endoscopic procedures performed included total colonoscopy (75.9%), anoscopy (41.7%), proctosigmoidoscopy (13%), and upper GI endoscopy (11.1%). The primary lesions identified were hemorrhoidal disease (47.2%), diverticular disease (25%), malignant tumors (16.7%), colitis (14.8%), and polyps (9.3%) (**Figure 1**).

The mean length of hospital stay was 4.8 ± 2.4 days. Two patients required admission to the intensive care unit (ICU). Blood transfusions were administered to 83 patients (76.9%), with a mean of 1.9 ± 0.7 packed red blood cell (PRBC) units transfused per patient. The main endoscopic treatment performed was hemorrhoidal band ligation.

The mean Oakland score was 11.8 ± 4.2. The mortality and rebleeding rates were 6.5% and 14.8%, respectively. Factors significantly associated with death were: age > 65 years (adjusted OR [aOR] = 3.2; 95% CI [1.2 - 8.1]; p = 0.018); ICU admission (aOR = 8.6; 95% CI [3.2 - 22.9]; p < 0.0001); Oakland score > 10 (aOR

= 3.5; 95% CI [1.1 - 10.8]; p = 0.032); rebleeding (aOR = 4.1; 95% CI [1.5 - 11.4]; p = 0.006), receiving > 2 units of PRBCs (aOR = 2.8; 95% CI [1 - 7.4]; p = 0.046) (Table 4).

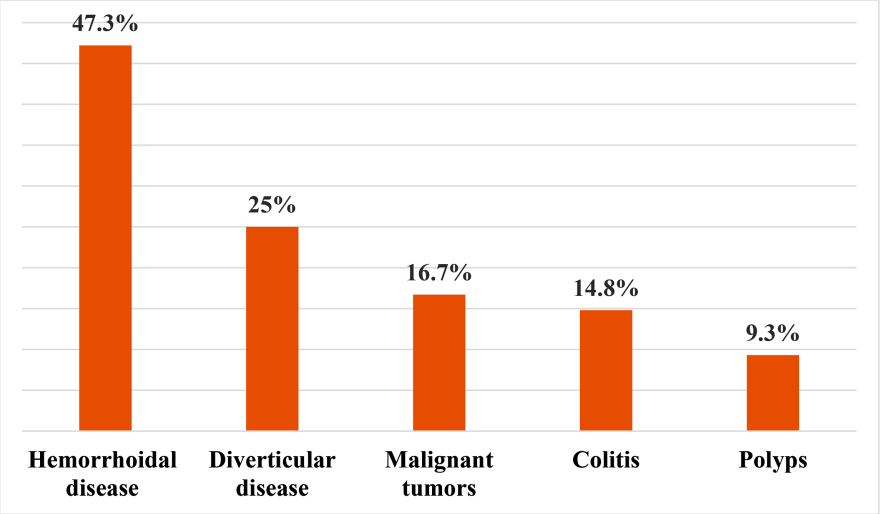


Figure 1. Endoscopic findings.

Table 4. Prognosis factors associated to mortality.

Factors	aOR (95% CI)	p-value
Age > 65 years	3.2 (1.2 - 8.1)	0.018
ICU admission	8.6 (3.2 - 22.9)	<0.0001
Oakland score > 10	3.5 (1.1 - 10.8)	0.032
Rebleeding	4.1 (1.5 - 11.4)	0.006
Receiving > 2 units of PRBCs	2.8 (1 - 7.4)	0.046

4. Discussion

Lower gastrointestinal bleeding is frequently underdiagnosed in our context. In this study, it accounted for nearly a quarter of all gastrointestinal hemorrhages. The typical patient profile was a relatively young male, with a mean age below 50 years. This profile aligns with findings reported by Drissa *et al.* in Mali [10] and Bagny *et al.* in Togo [11]. A personal history of GI bleeding was found in nearly a quarter of the patients.

Clinically, the hemorrhage was overt in most cases, and patients generally sought medical care one week after the onset of bleeding. This prolonged delay before consultation is likely because patients, finding it difficult to seek medical attention for anal symptoms, tend to rely initially on self-medication. This delay in seeking care may have contributed to the hemodynamic instability observed in several patients in our cohort, as well as the documented anemia.

Digestive endoscopy demonstrated a diagnostic yield of 97.2% in identifying

the etiology of lower gastrointestinal bleeding, thereby confirming its diagnostic value despite being performed beyond the 24-hour mark [12]. Total colonoscopy remains the gold standard for identifying the etiology of lower GI bleeding [6] [13] [14]. Upper endoscopy was performed in selected patients presenting with severe hemorrhage or melena; it remains necessary to rule out an upper gastrointestinal origin.

Regarding the specific lesions identified, hemorrhoidal disease remains the primary etiology, as widely described in the literature [10] [11] [15]. Nevertheless, nearly a quarter of the patients presented with either a malignant or benign tumor lesion.

The mean length of hospital stay was 4.8 days. Despite having an Oakland score > 8, very few patients were admitted to the ICU. However, blood transfusions were required for three-quarters of the patients. The sole endoscopic therapeutic intervention performed was hemorrhoidal ligation.

Mortality associated with lower gastrointestinal bleeding remains high. The specific risk factors identified were advanced age, ICU admission, an Oakland score > 10, transfusion of more than 2 PRBC units, and rebleeding.

The main limitations of the study are its retrospective design, the absence of certain records, and incomplete files that led to exclusion from the study. Furthermore, this is a preliminary study conducted in only two reference hospitals. A national multicenter study will allow for a larger sample size and a better identification of factors related to prognosis.

5. Conclusion

Lower gastrointestinal bleeding accounts for nearly a quarter of gastrointestinal hemorrhages in urban hospital settings. It predominantly affects young subjects in their fourth and fifth decades of life. It typically manifests as overt bleeding, most frequently linked to hemorrhoidal disease, and generally carries a favorable prognosis. Patient prognosis is determined by their hemodynamic status upon admission and their initial management.

Author Contributions

- Conception of study: BEKOLO NGA Winnie Tatiana, BIDJOGO Marina Epse GWET;

- Writing articles: BEKOLO NGA Winnie Tatiana;

- Corrections and Inputs: BEKOLO NGA Winnie Tatiana BIDJOGO épse GWET Marina, NJOYA Charifa, MACHEKAM épse MATANGA Olga, DJAPA SENGA Guy Roger, MOHAMADOU Galdima, TCHOUMI LEUWAT Eric Pascal, TZEUTON Christian, ANKOUANE ANDOULO Firmin, LUMA NAMME Henry, NOAH NOAH Dominique, NJOYA Oudou, NDJITOYAP NDAM Elie Claude, NGOUADJEU Eliane, ELOUMOU BAGNAKA Servais Albert Fiacre.

Conflicts of Interest

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

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Abbreviations

GI: gastrointestinal

ICU: intensive care unit

PRBC: packed red blood cells