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ORIGINAL RESEARCH

# Lower gastrointestinal bleeding in adults in two digestive departments in Cotonou from 2017 to 2022: epidemiological, diagnostic, therapeutic, and prognostic aspects

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**Introduction**: Gastrointestinal (GI) bleeding is the main emergency in hepato-gastroenterology, occasionally requiring hospitalisation in an intensive care unit. In lower gastrointestinal bleeding (LGB), the cause is sometimes difficult to identify. This study aimed to describe the epidemiological, diagnostic, therapeutic, and prognostic profile of LGB in Cotonou.

**Methods**: This was a cross-sectional, descriptive, and analytical study with retrospective data collection from January 2017 to December 2022. It covered the medical records of all patients admitted for LGB during the study period at the University Clinic of Hepato-Gastroenterology (CUHGE) of the Hubert Koutoukou Maga National University Hospital Centre (CNHU-HKM) and the digestive endoscopy department of Mènontin Hospital.

**Results**: A total of 674 patients with LGB out of 23 864 patients admitted were found (2.8% frequency). The mean age was 49.2 ± 2.5 years. A male predominance was observed with a sex ratio of 2. Hypertension was the most found history (20.8%, 57/274). Haematochezia was the most frequent mode of LGB exteriorisation (94.4%, 636/674). The duration of symptom evolution was less than one month in most patients (54.2%, 365/674). Most patients underwent endoscopy 48 hours after their first consultation (75.1%, 304/405). The most common aetiology was haemorrhoidal disease (35.9%, 223/621), followed by polyps (23.0%, 143/621) and colorectal tumours (15.9%, 99/621). Rubber band ligation was the most commonly used therapeutic means in haemorrhoidal diseases (74.4%, 166/223), and endoscopic polypectomy was used in all polyp cases (100%, 143/143). The evolution was favourable in most cases (90.0%, 559/621), with a bleeding recurrence in 10.0% (56/621). The mortality rate was 2.7% (18/674). Age (> 65 years; $p = 0{,}036$), severity of bleeding ($p = 0.0003$), and bleeding recurrence ($p = 0.0001$) were associated with death.

**Conclusion**: LGB is relatively common in Cotonou and can be fatal in some cases. The most common aetiologies were haemorrhoidal disease, colonic polyps, and colorectal tumours.

**Keywords**: lower gastrointestinal bleeding, endoscopy, aetiologies, Cotonou

## Introduction

Digestive haemorrhage is the main emergency in hepato-gastroenterology, occasionally requiring hospitalisation in an intensive care unit. Historically, LGB was defined as bleeding originating downstream of the Treitz angle. With the improvement in techniques for exploring the small intestine (video capsule, enteroscopy), it is now commonly accepted that LGB corresponds to bleeding originating downstream of Bauhin's valve and is associated with ano-colorectal bleeding.[1] They account for less than 20% of digestive haemorrhages.[2] It is vital to recognise serious haemorrhages quickly, as they may be life-threatening.

The prognosis of lower GI haemorrhage is essentially related to the patient's condition (i.e. age and associated comorbidities). A study conducted in France found an incidence of 20.5 cases per 100 000 inhabitants per year, with a higher frequency in men and elderly subjects.[2] Other studies have also been carried out in the sub-region, such as in Burkina-Faso, where Yè found a 0.24% frequency of LGB.[3]

An aetiological investigation of digestive haemorrhage, centred on endoscopy, should begin promptly when haemodynamic stability is achieved. Over 75% of LGB will stop spontaneously; however, the recurrence rate is high. This study aimed to describe the epidemiological, diagnostic, therapeutic, and prognostic profile of LGB in two digestive departments in Cotonou.

## Methods

The study was cross-sectional, descriptive, and analytical, with retrospective data collection from 1 January 2017 to 31 December 2022. It included all patients who presented with LGB. The population consisted of all patients seen in consultation/hospitalised and treated at the CUHGE of the CNHU-HKM and the digestive endoscopy department of Mènontin Hospital during the study period. The epidemiological, diagnostic, therapeutic, and evolutionary aspects, and the factors associated with mortality, were studied.

The diagnosis of LGB was made in cases of isolated haematochezia of low abundance, haematochezia of great abundance, and/or melena with no abnormality on upper digestive endoscopy that could explain the bleeding.

The collected data were recorded and processed using Epi Info version 7.2.1.0 and the Statistical Package for the Social Sciences (SPSS) version 25. We examined statistical associations in univariate analysis between several variables using Fisher's chi-square test. The accepted threshold for statistical significance was 5%.

## Results

### *Epidemiological profile of the study population*

We identified 674 cases of LGB from 23 864 patients registered in the target departments during the study period (2.8% frequency). The subjects' average age was 49.2 ± 2.5 years, with extremes of 18 and 87. The highest incidence of LGB was between 39 and 45 years ($n$ = 110) (Table I). Males predominated, with a sex ratio of 2. Shopkeepers and blue-collar workers were the most common occupational category, accounting for 30.7% of the population ($n$ = 207). High blood pressure was the most common antecedent, accounting for 20.8% of cases (57/274).

### *Clinical data*

Clinically, 94.4% of LGB (636/674) were externalised in the form of haematochezia. Most patients (80.7%, 544/674) presented with a small amount of bleeding (< 750 ml). Apart from digestive bleeding, constipation was the most frequent digestive sign, occurring in 21.5% of patients (Table II). Other digestive signs included abdominal pain (14.5%), abdominal masses (9.9%), and diarrhoea (5.7%). The proctological examination was normal in 86.8% of cases (585/674).

### *Paraclinical data*

Biologically, moderate anaemia was noted in 41.3% of patients, and haematocrit was below normal in 74.7% of cases. Digestive endoscopy was the first-line examination used to identify the aetiology of LGB. It was performed in 92.1% of our patients. The LGB aetiology was identified in 92.9% of cases.

**Table I:** Distribution of LGB cases by patient age at CUHGE and Mènontin Hospital (January 2017 to December 2022)

| Age group | *n* | % |
|---|---|---|
| 18–24 | 35 | 5.2 |
| 25–31 | 50 | 7.4 |
| 32–38 | 109 | 16.2 |
| **39–45** | **110** | **16.3** |
| 46–52 | 101 | 15.0 |
| 53–59 | 81 | 12.0 |
| 60–66 | 75 | 11.1 |
| 67–73 | 59 | 8.8 |
| 74–80 | 36 | 5.3 |
| 81–87 | 18 | 2.7 |
| Total | 674 | 100.0 |

CUHGE – University Clinic of Hepato-Gastroenterology, LGB – lower gastrointestinal bleeding

### *Aetiological data*

Haemorrhoidal disease was the most common LGB aetiology in this study, occurring in 35.9% of patients. It was followed by colonic polyps (23%) and colorectal cancer (15.9%) (Table II). These three aetiologies accounted for almost three-quarters of all the aetiologies found in this study. Other causes of LGB were colonic diverticula (9.2%), anal fissures (4%), infectious colitis (2.1%), anal cancers (2%), and chronic inflammatory bowel diseases (IBD), such as ulcerative colitis (1.3%) and Crohn's disease (1.1%).

It should be noted that tumour aetiologies (polyps and cancers) accounted for a significant proportion (39%). No aetiology was found in 7.1% of our patients. Age was identified as a factor

**Table II:** Distribution of LGB cases according to associated digestive signs, lower endoscopy results, and LGB aetiologies according to patient age at CUHGE and Mènontin Hospital (January 2017 to December 2022)

| Associated digestive signs | *n* | % | | | |
|---|---|---|---|---|---|
| No digestive signs | 279 | 41.4 | | | |
| Constipation | 145 | 21.5 | | | |
| Abdominal pain | 98 | 14.5 | | | |
| Abdominal mass | 67 | 9.9 | | | |
| Alternating diarrhoea/ constipation | 47 | 7.0 | | | |
| Diarrhoea | 38 | 5.7 | | | |
| Total | 674 | 100.0 | | | |
| **Lower endoscopy results** | | | | | |
| Haemorrhoidal disease | 223 | 35.9 | | | |
| Polypoid lesion | 143 | 23.0 | | | |
| Ulcerative bourgeois lesion | 99 | 15.9 | | | |
| Diverticular lesion | 57 | 9.2 | | | |
| No lesion | 44 | 7.1 | | | |
| Anal fissure | 27 | 4.4 | | | |
| Rectitis and/or petechial or haemorrhagic colitis | 21 | 3.4 | | | |
| Rectitis and ulcerative colitis | 7 | 1.1 | | | |
| Total | 621 | 100.0 | | | |
| **LGB aetiologies according to patient age** | **Age (years)** | | | | ***p*-value** |
| | **≤ 65** | | **> 65** | | |
| | ***n*** | **%** | ***n*** | **%** | |
| Haemorrhoidal disease | 180 | 80.7 | 43 | 19.3 | 0.058 |
| Colonic polyp | 124 | 86.7 | 19 | 13.3 | 0.105 |
| Colorectal and anal tumours | 47 | 47.5 | 52 | 52.5 | **0.027** |
| Colonic diverticula | 31 | 54.4 | 26 | 45.6 | **0.005** |
| Ulcerative colitis | 5 | 62.5 | 3 | 37.5 | **0.013** |
| Crohn's disease | 5 | 71.4 | 2 | 28.6 | **0.018** |
| Infectious colitis | 10 | 76.9 | 3 | 23.1 | **0.031** |
| Anal fissure | 19 | 70.4 | 8 | 29.6 | 0.077 |

CUHGE – University Clinic of Hepato-Gastroenterology, LGB – lower gastrointestinal bleeding

**Table III:** Treatment received and evolution in LGB patients at CUHGE and Mènontin Hospital (January 2017 to December 2022)

| Final diagnosis | Number of cases | Treatment received | Favourable evolution | % |
|---|---|---|---|---|
| Haemorrhoidal disease | 223 | Phlebotonic + laxative + anti-haemorrhoidal cream or elastic ligation or surgical treatment | 199 | 88.2 |
| Colonic polyp | 143 | Endoscopic polypectomy | 138 | 96.5 |
| Colorectal and anal tumours | 37 | Surgical treatment or chemotherapy | 28 | 75.7 |
| Colonic diverticula | 57 | Analgesic + laxative | 51 | 89.5 |
| Anal fissure | 27 | Local treatment + laxative | 27 | 100.0 |
| Infectious colitis | 13 | Antibiotic therapy | 13 | 100.0 |
| Crohn's disease | 4 | Corticosteroids + immunosuppressants | 3 | 75.0 |
| Ulcerative colitis | 11 | Corticosteroids + immunosuppressants | 8 | 72.7 |
| Not determined | 44 | Symptomatic treatment | 36 | 81.8 |
| Total | 559 | | 503 | 90.0 |

CUHGE – University Clinic of Hepato-Gastroenterology, LGB – lower gastrointestinal bleeding

**Table IV:** Influence of age, abundance, and recurrence of bleeding on the prognosis of LGB cases at CUHGE and Mènontin Hospital (January 2017 to December 2022)

| | Death | | *p*-value | OR | CI 95% |
|---|---|---|---|---|---|
| | Yes | No | | | |
| **Age (years)** | | | | | |
| ≤ 65 | 3 | 332 | **0.036** | 1 | |
| > 65 | 15 | 255 | | 14.66 | 13.41 to 15.91 |
| **Abundance** | | | | | |
| ≤ 1 500 cc | 5 | 554 | **0.0003** | 1 | |
| > 1 500 cc | 13 | 33 | | 31.11 | 30.56 to 31.66 |
| **Recurrence** | | | | | |
| No | 2 | 536 | **0.00001** | 1 | |
| Yes | 16 | 51 | | 62.16 | 61.4 to 62.92 |

CUHGE – University Clinic of Hepato-Gastroenterology, CI – confidence interval, LGB – lower gastrointestinal bleeding, OR – odds ratio

associated with colorectal tumours, and subjects aged > 65 years were the most exposed ($p = 0.027$) (Table II).

### *Therapeutic aspects*

Haemorrhoidal disease was mainly treated by elastic ligation. Of the patients, 74.4% (166/223) with this condition underwent elastic ligation, 20.6% (46/223) received medical treatment based on phlebotonics, laxatives, anti-haemorrhoidal creams, and suppositories, and 4.9% of patients (11/223) had surgical treatment. All cases of polyps had endoscopic polypectomy. Only 37.4% of colorectal and anal tumours (37/99) received surgical treatment/chemotherapy; the other patients were lost to follow-up. Anal fissures were treated with healing creams and transit regulators. No surgical treatment was performed during the study period for this aetiology. IBD was treated with corticosteroids and immunosuppressants. None of these patients had surgical treatment (Table III).

### *Evolution and prognosis*

The outcome was favourable in 90% of our patients (559/621). The unfavourable outcomes were marked by a recurrence of haemorrhage in some patients and death in others. The death rate was 2.7%. Age was identified as a factor associated with death, and patients aged > 65 had a higher risk of dying from LGB than patients aged < 65 ($p = 0.036$) (Table IV). The severity of bleeding was also associated with death, with patients who suffered a major haemorrhage having a higher risk of dying following LGB than patients who suffered a minor or moderate haemorrhage ($p = 0.0003$) (Table IV). Another factor associated with death was haemorrhage recurrence. Patients with recurrent haemorrhage were more likely to die than patients without recurrent haemorrhage ($p = 0.0001$) (Table IV).

## Discussion

Over six years, LGB cases accounted for 2.8% of the total number of patients seen in the relevant departments. This result was higher than that of Yè in Burkina-Faso in 2002, who found a frequency of 0.24%.[3] This difference can be explained by the fact that our population included both inpatients and patients treated on an outpatient basis. However, Yè's frequency comprised inpatients only.

In our study, LGB mainly affected young adults, with an average age of 49.2 ± 2.5 years and extremes of 18 and 87. The age group most affected was 32–45 years. This result was similar to those obtained by Drissa et al.[4] in Mali in 2020, who found an average age of 44 ± 12.7 years. Conversely, in Western countries, older subjects are the most affected. Mäkelä et al.[5] in Finland found an average age of 59 ± 18 years. This difference could be explained by the high proportion of haemorrhoidal pathologies among the aetiologies of LGB in Africa (haemorrhoidal disease affecting much younger adults).

Males were the most affected (66.2%, $n = 446$) in our study, with a sex ratio of 2. This male predominance is corroborated by most authors. Drissa et al.[4] found a male predominance (72.6%) and a sex ratio of 2.6. This male predominance of LGB could be linked to certain risk factors to which men are more exposed. This is the case for alcohol, one of the risk factors identified for haemorrhoidal disease, and which men reportedly consume heavily in our society.[6] The same is true of tobacco, which, when combined with alcohol, is a risk factor for tumour pathologies.

In our study, the majority of LGB were externalised as haematochezia (94.4%), with only 5.6% externalised as melena. These figures are similar to those obtained by the National Association of Hepato-Gastroenterologists of General Hospitals of France in 2009, which found that haematochezia was the most frequent mode of LGB externalisation (93.5%).[7] Constipation and abdominal pain were the most common digestive signs in our study. Constipation was present in 21.5% of patients, and abdominal pain in 14.5%. These results were similar to those of Drissa et al.,[4] who found constipation in 27.3% and abdominal pain in 15.3% of cases.

The most frequent aetiologies in our study were haemorrhoidal disease (35.9%), colonic polyps (23.0%), colorectal and anal cancers (16.0%), and colonic diverticula (9.2%). These results were similar to those of Mbengue et al.[8] in Dakar in 2009, who found that haemorrhoidal disease (53.14%), rectocolitis (17.5%), colorectal tumours (11.9%), polyps (11.2%), and colonic diverticula (11.2%) were the most frequent aetiologies.

Haemorrhoidal disease was the most common cause of LGB in our study (35.9%). This finding was also reported by Djibril et al.[9] in Togo in 2010, Drissa et al.,[4] and Mbengue et al.[8] Polyps were the second most common cause of lower gastrointestinal bleeding (LGB) in our study, accounting for 23.0%. This result was higher than that of Mbengue et al.[8] (11.2%). Colorectal and anal tumours were the third most common cause of LGB in our study, occurring in 16.0% of patients. These figures were close to those of Mbengue et al.,[8] who found colorectal tumours in 11.9% of cases. They also noted that it was the third most frequent LGB aetiology.

In our study, elderly patients (> 65 years) were the most affected (52.5%). Mäkelä et al.[5] found similar results in Finland. Colorectal cancers are increasing in Benin because of the epidemiological transition (increased life expectancy and westernisation of the diet). All these factors favour the occurrence of colonic cancers, which LGB may reveal. According to some Western authors, particularly in France, colonic diverticula are the most common cause of LGB (21.31% of cases in 2009).[7] In our study, diverticula were the fourth most common cause (9.2%). This finding was similar to that of Djibril et al.,[9] who also found diverticula to be the fourth most frequent aetiology of LGB.

IBD accounted for 2.4% of aetiologies in our study. This result was lower than those found in several Western studies (Europe and North America).[10] Overall, it was noted that IBD is less frequent in Africa, where it is emerging. Regarding aetiologies not found, these were cases where endoscopy was unable to find a lesion that would explain the LGB. In our study, no aetiology was found in 7.1% of patients. This figure was close to that of Drissa et al.,[4] who found no aetiology in 6% of patients. Djibril et al.[9] also found no aetiology in 14.12% of their cases.

In our study, haemorrhoidal disease was mainly treated by elastic ligation. Of the patients, 74.4% with this condition underwent elastic ligation, 20.6% received medical treatment based on phlebotonics, laxatives, anti-haemorrhoidal creams, and suppositories, and 5% of patients had surgical treatment. Spindler et al.[11] in France in 2020 also noted that elastic ligation was the technique most commonly used for managing haemorrhoidal disease. In our study, all cases of polyps underwent endoscopic polypectomy. Sow et al.[12] made the same observation in Mali in 2020. Only 37.4% of cases ($n = 37$) of colorectal and anal tumours had surgical treatment/chemotherapy. Treatment for colonic diverticula was essentially symptomatic, involving analgesics and transit regulators. Anal fissures were treated with healing creams and transit regulators.

The overall outcome was favourable in 90.0% of patients, with a 10.0% recurrence of haemorrhage and a 2.7% death rate. This result was similar to that of the National Association of Hepato-Gastroenterologists of General Hospitals of France, which reported a 3.1% death rate in 2009.[7] Our study also found a higher proportion of deaths in subjects aged > 65 (2.1%, $n = 15$), with a statistically significant link between age > 65 and death ($p = 0.036$). Mäkelä et al.[5] also made the same observation. Bleeding severity was also associated with death, and patients who suffered a major haemorrhage had a higher risk of death following LGB than patients who suffered minor or moderate haemorrhage. Xavier et al.[13] in the United States in 2008 reported a higher risk of death in patients with major haemorrhage. Another factor associated with death was haemorrhagic recurrence. Patients with recurrent haemorrhage were more likely to die than patients without recurrent haemorrhage.

## Conclusion

This study showed that LGB is relatively common in Cotonou. There was a predominance of young adult males. The most frequent presentation of LGB was haematochezia. The most common aetiologies were haemorrhoidal disease, colonic polyps, and colorectal tumours. Death was related to age and occurred much more frequently in subjects aged > 65, as well as to the extent and recurrence of haemorrhage.

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### *Conflict of interest*

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### *Ethical approval*

Before the study commenced, approval was obtained from the Director of CNHU-HKM.

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