

Epidemiological, Diagnostic, Therapeutic and Clinical Outcome Aspects of Upper Gastrointestinal Bleeding at La Paix Hospital in Ziguinchor (Senegal)

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Abstract

Introduction: Upper gastrointestinal bleeding (UGIB) constitutes one of the principal emergencies in hepato-gastroenterology. It is associated with significant morbidity and mortality, requiring prompt and appropriate management. In Senegal, studies addressing UGIB are scarce, with fragmentary data primarily pertaining to the region of Dakar. This study aims to characterize the epidemiological, diagnostic, therapeutic, and clinical outcome aspects of UGIB at La Paix hospital in Ziguinchor, southern Senegal. **Patients and Methods:** This is a retrospective, descriptive study conducted from January 1st, 2018 to June 30th, 2022 (4 years and 6 months). Epidemiological, clinical, biological, endoscopic, and outcome data were collected using standardized case report forms and analyzed with Sphinx plus 2 v.5.1.0.5 and Excel software. **Results:** Ninety-six patients were included (62 males and 34 females; sex ratio 1.82). The mean patient age was 50 years (range: 16 - 92 years). Hematemesis was the presenting symptom in 77.1% of cases. Eighteen patients (18.75%) sought medical consultation within the first 24 hours of the hemorrhagic episode. Thirty-two patients (33.3%) had a history of gastroduodenal ulcer disease and 14 (14.58%) were presenting cirrhosis. Gastrotoxic medications were used by 16 patients (16.7%). Hemodynamic instability was documented in 67.5% of cases. The Glasgow-Blatchford score exceeded 10 in 6.25% of patients, and the Rockall score was either above or equal to 8 in 6 cases (6.25%). The mean time to upper gastrointestinal endoscopy was 57 days (range: 1 day - 1 year). The leading causes of UGIB were gastroduodenal ulcer disease (29.1%), acute gas-

trooduodenal lesions (16.7%), and portal hypertension (15.6%). 47.92% of patients received a blood transfusion. Intravenous proton pump inhibitors were prescribed in 96.9% of cases. No patient received vasoactive therapy or endoscopic hemostatic treatment. A favorable clinical outcome was observed in 63.5% of patients. Twenty-seven deaths were recorded (28.1%), occurring at a mean of 11 days (range: 1 - 25 days). The hemorrhagic recurrence rate was 3.1%. **Conclusion:** UGIB in our setting is characterized by a younger patient population, a high prevalence of gastroduodenal ulcers, and an elevated mortality rate, frequently associated with the use of gastrotoxic medications. Reducing the delay to upper gastrointestinal endoscopy and implementing endoscopic hemostatic interventions may contribute to improved prognosis.

Keywords

Upper Gastrointestinal Bleeding (UGIB), Portal Hypertension, Gastroduodenal Ulcers

1. Introduction

Upper gastrointestinal bleeding (UGIB) represents one of the leading emergencies in hepato-gastroenterology. It can be a life-threatening disease and therapeutic emergency. Its severity is determined by the magnitude of blood loss with risks of hemorrhagic shock, the patient's underlying comorbidities and the timeliness of medical management. Gastroduodenal ulcer disease (GUD) and portal hypertension (PHT) are its principal etiologies [1]-[3]. Approximately 20% of ulcers are complicated by hemorrhage, and 40% of gastrointestinal bleeds are of ulcerative origin [4]. Upper gastrointestinal endoscopy (UGE), if performed urgently, serves diagnostic, therapeutic, prognostic, and etiological purposes.

In Senegal, studies on UGIB are limited, with fragmentary data primarily pertaining to the capital city, Dakar. The aim of this study was to determine the epidemiological, diagnostic, therapeutic, and clinical outcome characteristics of UGIB at la Paix hospital in Ziguinchor, southern Senegal.

2. Patients and Methods

This was a retrospective, descriptive study conducted between January 1st, 2018 and June 30th, 2022, over a duration of 4 years and 6 months. It was conducted on all patients admitted to the emergency department, the internal medicine and medical specialties ward, and the digestive endoscopy unit of La Paix hospital in Ziguinchor, Senegal. All patients presenting clinically manifest UGIB in the form of hematemesis, melena, and/or hematochezia were eligible. Patients with incomplete or unusable medical records were excluded. Data collection was performed using a standardized case report form capturing epidemiological, clinical, para-clinical, therapeutic, prognostic, and outcome variables.

Data were processed using Sphinx plus 2 v.5.1.0.5 and Microsoft Excel soft-

ware. Descriptive analysis included calculation of frequencies and proportions for qualitative variables, and means with standard deviations for quantitative variables.

The study was authorized by the heads of the institution, namely the hospital Director and the chairman of the medical staff committee. The data were collected and analyzed in strict compliance with patient anonymity.

3. Results

7609 patients were admitted across the different hospital departments. 106 patients' records were identified, of which 10 that were deemed unusable were excluded. Ninety-six patients were ultimately included, yielding a hospital prevalence of 1.26%. The mean patient age was 50 years (range: 16 - 92 years). Two peaks were identified in the 30 - 44 and 60 - 74 years age groups. Forty-seven patients (48.95%) were over 50 years. A male predominance was observed, with a sex ratio of 1.82 (62 males). The most common manifestation of UGIB was combined with hematemesis and melena, accounting for 34.4% of cases. In patients presenting with hemochezia, the rectal bleeding was associated with hematemesis (**Figure 1**).

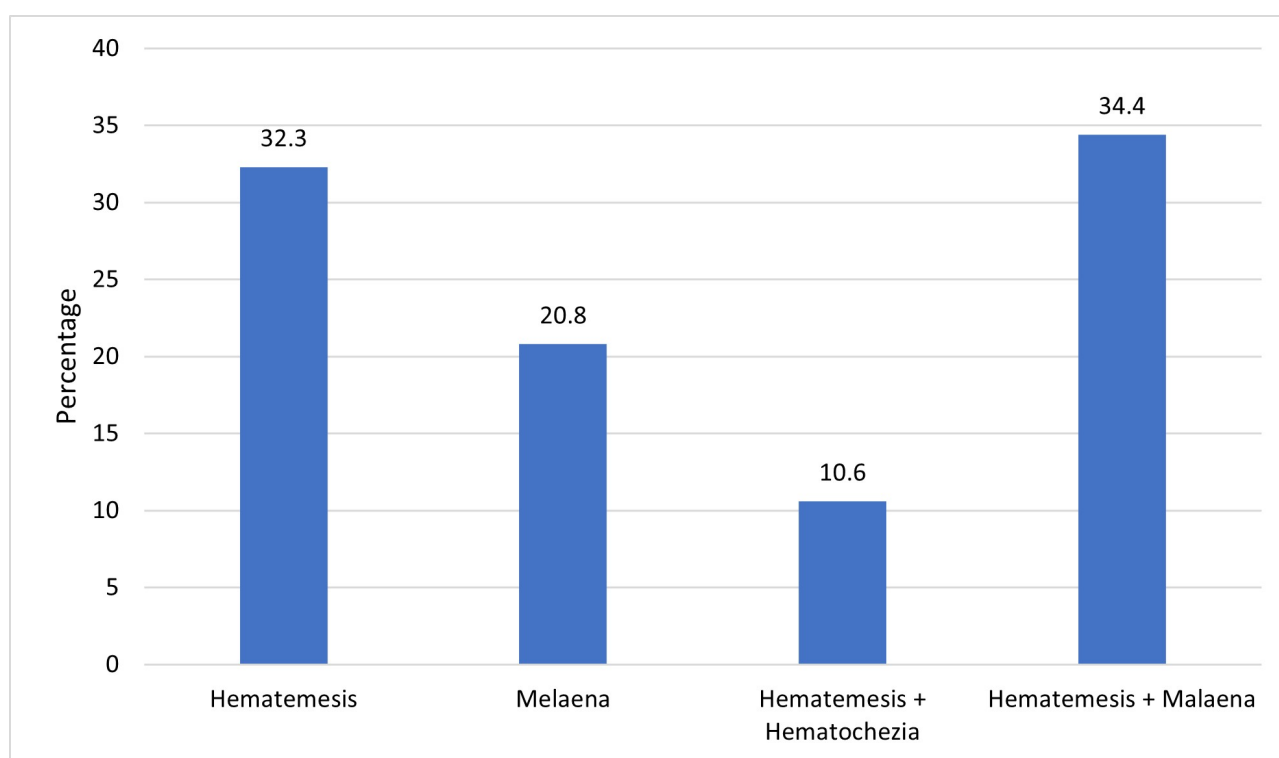


Figure 1. Distribution of patients according to the clinical presentation of upper gastrointestinal bleeding.

The mean consultation delay was 36 days (range: 2 hours - 1 year). Eighteen patients (18.75%) sought medical help within 24 hours of the hemorrhage episode (**Table 1**).

Table 1. Patient consultation period.

Consultation period	n	%
≤24 hours	18	18.75
2 - 8 days	42	43.75
9 - 15 days	3	3.1
15 - 29 days	8	8.3
30 - 89 days	16	16.6
90 - 180 days	6	6.25
>180 days	3	3.1

Many patients (33%) had a prior history of gastroduodenal ulcer disease (**Table 2**).

Table 2. Distribution of patients according to past medical history and comorbidities.

Past medical history/Comorbidity	n	%
Gastroduodenal ulcer disease	32	33.3
High blood pressure	17	17.7
Liver cirrhosis	14	14.6
Diabetes mellitus	8	8.3
Cardiomyopathy	8	8.3
Prior UGIB	7	7.3
Hepatocellular carcinoma	6	6.25
Secondary liver cancer	3	3.1
Chronic kidney disease	3	3.1
HIV	3	3.1
Gastroesophageal reflux disease	2	2.1
Chronic hepatitis B carrier	2	2.1
Heart failure	2	2.1
Pulmonary tuberculosis	2	2.1
Chronic obstructive pulmonary disease	2	2.1
Cerebrovascular accident	2	2.1
Hemophilia	1	1.04
Gouty polyarthritis	1	1.04
Pregnancy	1	1.04
Hypothyroidism	1	1.04

Sixteen patients (16.7%) were taking gastrotoxic medications, including NSAIDs in 7 cases, corticosteroids in 1 case, aspirin in 4 cases and anticoagulants in 4 cases.

15 hospitalized patients suffered from altered consciousness ranging from grogginess (7.2%) to coma (10.8%). Seventy-six patients showed impaired general con-

dition (IGC): WHO performance status 1 in 37 patients (38.54%), status 2 in 30 patients (31.25%) and status 3 in 9 patients (9.38%). The mean systolic blood pressure was 109.9 mmHg (range: 60 - 190 mmHg) and the mean diastolic blood pressure was 71.3 mmHg (range: 30 - 120 mmHg). Hemodynamic instability was found in 56 patients (67.5%), manifesting as hypotension in 33 cases (39.8%) and cardiovascular collapse in 23 cases (27.7%). Tachycardia was documented in 51 patients (61.4%). Tachypnea was noted in 59 patients (71.1%) and respiratory distress in 60 patients (72.3%), with oxygen saturation (SpO₂) ranging from 71% to 95%. Physical examination revealed epigastric tenderness in 75 patients (78.13%) (**Table 3**).

Table 3. Clinical findings.

Signs	n	%
Epigastric tenderness	75	78.13
Jaundice	41	42.7
Active gastrointestinal bleeding	35	36.44
Anemia Syndrome	29	30.21
Hepatomegaly	22	22.9
Portal hypertension	12	12.5
Epigastric mass	3	3.13

Laboratory investigations revealed anemia in 70 patients, with a mean hemoglobin level of 8.07 g/dL (range: 2 - 14.9 g/dL). The anemia was normocytic in 34 cases (48.6%) and microcytic in 26 cases (37.1%). Thrombocytopenia was identified in 8 patients, and thrombocytosis in 13 others. Liver function tests demonstrated hepatocellular insufficiency with a prothrombin time (PT) below 50% in 7 cases (8.5%). Hepatic cytolysis was observed in 7 cases (7.3%), with ASAT > 3N and ALAT > 3N. Seven patients had elevated bilirubin with a mean level of 742.9 mg/L (range: 30 - 1357 mg/L). 29 patients (38.16%) presented kidney failure.

Upper gastrointestinal endoscopy (UGE) was performed on 52 patients (54.17%). Its mean time performance was 56.95 days (range: 1 day - 1 year, IQR: 16 days). Endoscopic lesions were identified in 51 cases (98.08%). The leading etiologies of UGIB were gastroduodenal ulcer disease (n = 28), acute gastroduodenal lesions (n = 16), and portal hypertension (n = 15) (**Figure 2**).

Gastric ulcers were identified in 9 cases (32.14%) and duodenal ulcers in 19 cases (67.85%), with a mean size of 5.4 mm (range: 2 - 6 mm). Fifty percent were classified Forrest stage III (**Table 4**).

Varices were identified in 13 patients (13.5%). They were esophageal in 8 cases (53.3%), with red signs in 50% of those. Variceal grading was as follows: grade I in 1 case, grade II in 5 cases and grade III in 2 cases. Gastric varices were present in 5 cases (33.3%). Portal hypertensive gastropathy was documented in 2 patients (13.3%).

An ulcero-proliferative obstructing tumor was identified in 6 patients: esophageal in 2 cases and gastric in 4 cases.

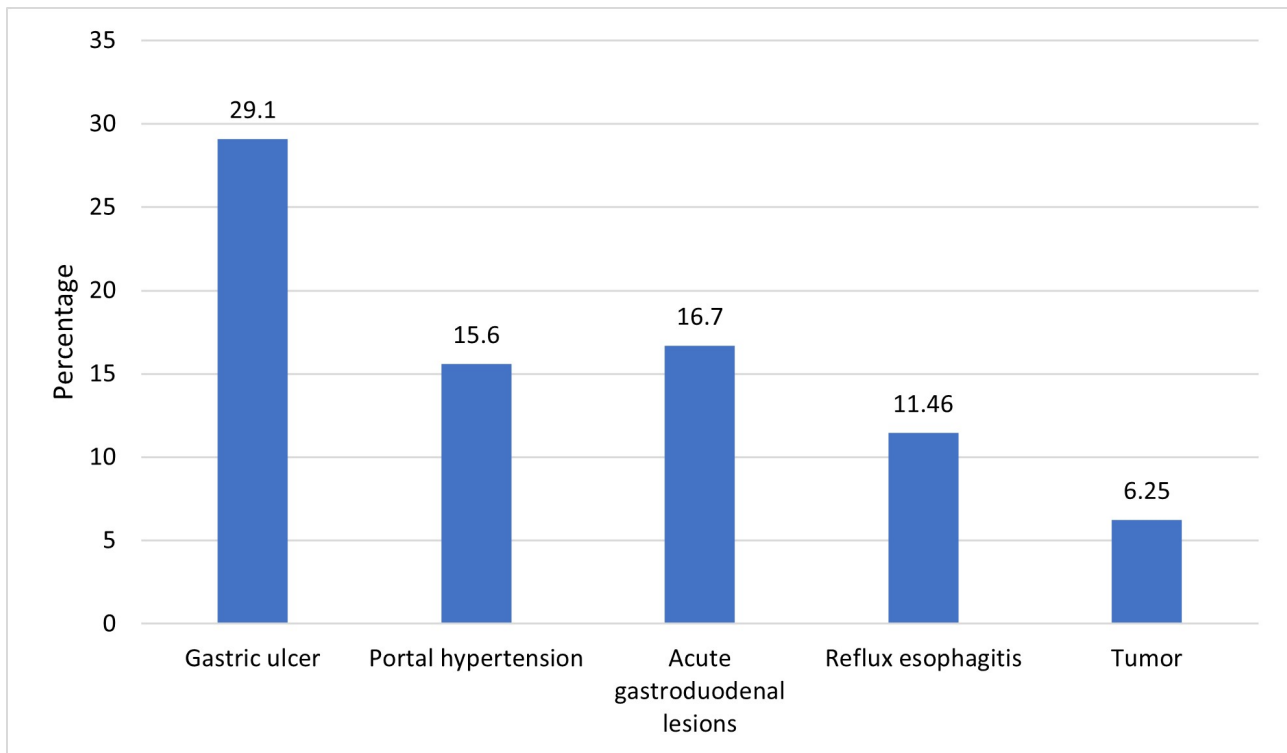


Figure 2. Etiological distribution of upper gastrointestinal bleeding.

Table 4. Distribution of ulcers according to the Forrest classification.

Forrest classification	Gastric ulcer	Duodenal ulcer	Total	%
Ia	0	0	0	-
Ib	1	7	8	28.57
IIa	0	0	0	-
IIb	0	1	1	3.57
IIc	0	0	0	-
III	7	7	14	50.00
Not specified	1	4	5	17.85
Total	9	19	28	100

Endoscopy revealed gastritis in 14 patients: erosive in 6 cases, erosive and ulcerated in 4 cases, and erythematous and congestive in 2 cases. Distribution was antral in 11 cases and fundic in 3 cases. Bulbitis was found in 2 patients, with an erythematous, congestive, and hemorrhagic appearance.

An abdominal CT scan was performed in 22 patients (22.91%), revealing lesions in 18 cases (81.82%). The principal findings were gastric tumor in 5 cases (27.8%), hepatocellular carcinoma in 3 cases (16.7%), and secondary hepatic malignancy in 3 cases (16.7%).

The mean Glasgow-Blatchford bleeding Score (GBS) was 6.91 (range: 1 - 13). GBS was ≤ 6 in 46 cases (47.92%), and 12 patients (12.5%) had a score of 0 (**Figure 3**).

The mean Rockall score was 3.66 (range: 1 - 9). Seven patients had a score of 0, and the score was ≥ 8 in 6 cases (**Figure 4**).

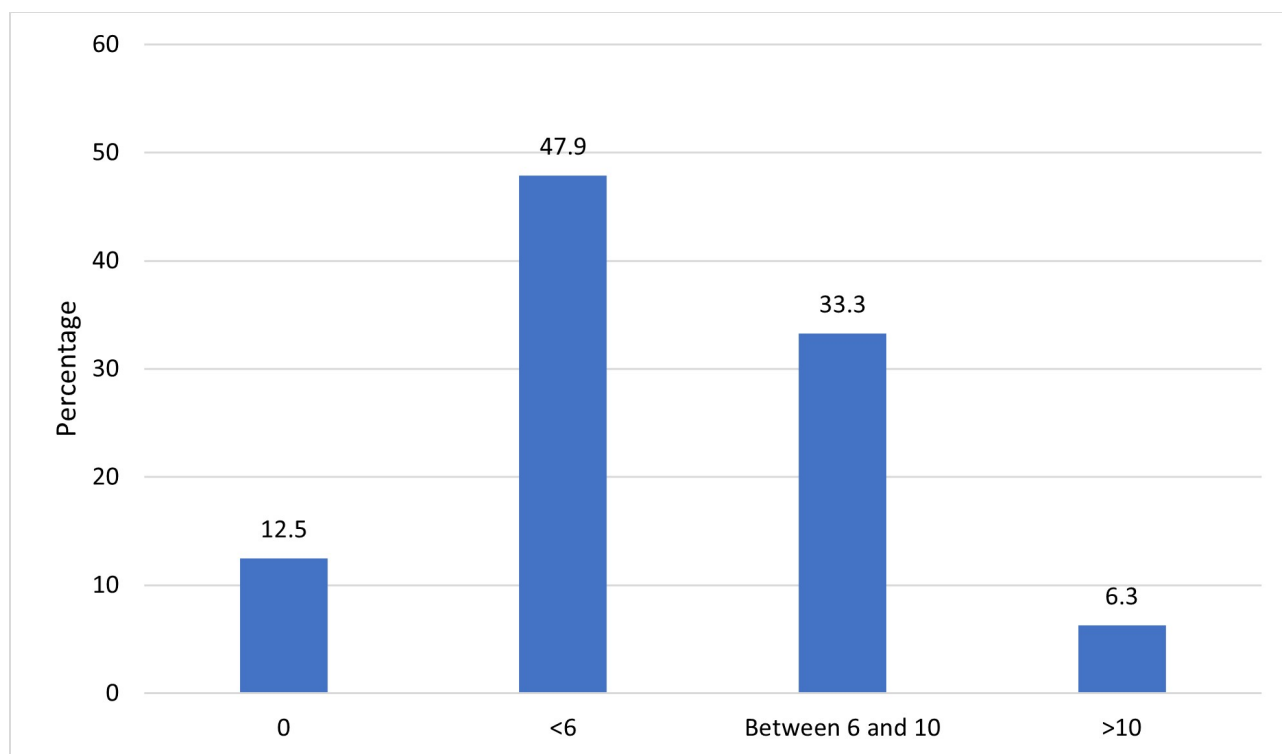


Figure 3. Distribution of patients according to the Glasgow-Blatchford score.

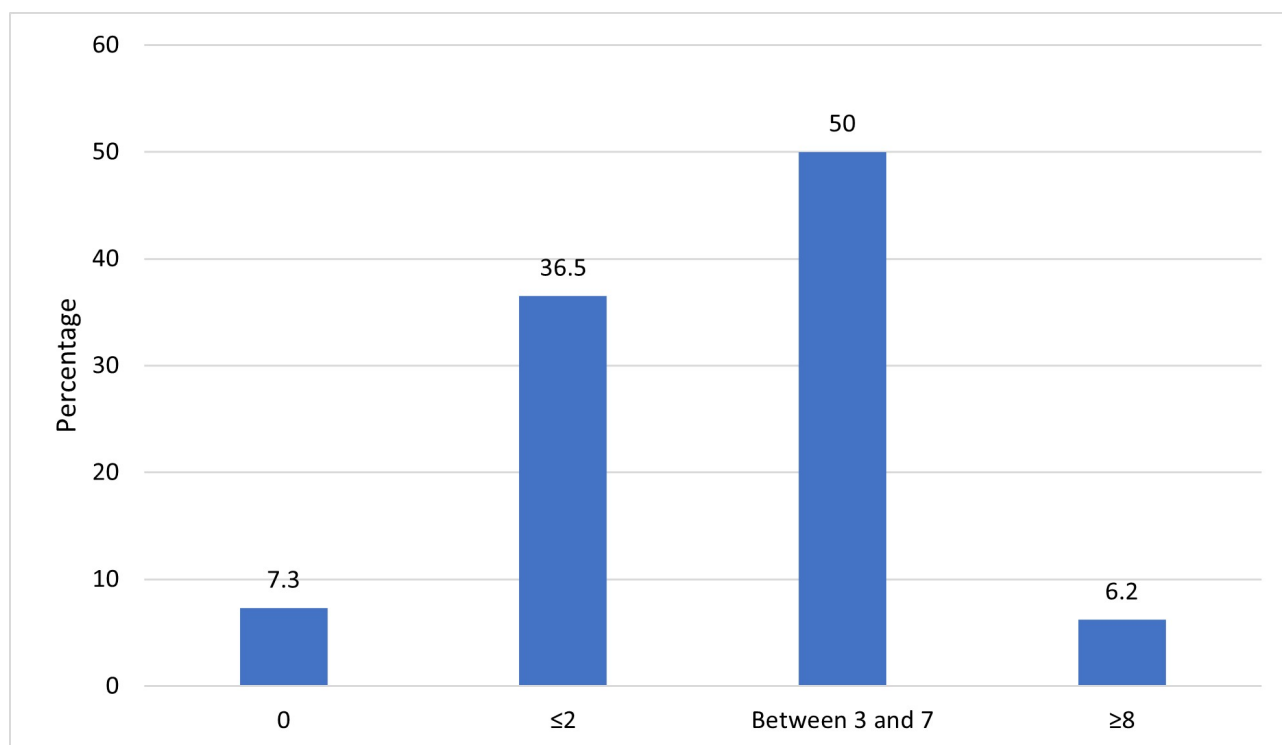


Figure 4. Distribution of patients according to the Rockall score.

For 52 patients who went endoscopy, the Rockall score was complete with all items. For the others, the score was pre-endoscopic.

Therapeutic management was initiated with hemodynamic stabilization. Fluid resuscitation was achieved with crystalloids in 72.9% of cases and colloids in 21.9%. Seven patients (7.29%) received hemostatic agents including tranexamic acid and etamsylate. Among the 8 patients with variceal bleeding, none received vasoactive therapy due to its unavailability in Senegal.

Supplemental oxygen was administered in 15 cases (15.62%). Forty-six patients (47.92%) received blood transfusion, with a mean of 2 units of whole blood transfused (maximum: 4 units).

Intravenous proton pump inhibitors were prescribed in 93 patients (96.9%). Antibiotic therapy was initiated in 66 patients (68.8%). Lactulose was administered to 14 patients (14.6%), of whom 6 had hepatocellular carcinoma and 8 were cirrhotic.

No patient underwent endoscopic hemostatic treatment.

The mean length of hospital stay was 11 days (range: 1 - 26 days). A favorable clinical outcome was observed in 61 patients (63.5%). Three patients discharged themselves against medical advice and were subsequently lost to follow-up. Twenty-seven deaths were recorded (28.1%), occurring at a mean of 11 days (range: 1 - 25 days). Seventeen patients died within the first 5 days of admission, 8 of whom had a GBS >10. Among deceased patients, only one had a Rockall score of 0; the score ranged from 3 to 7 in 13 cases.

The hemorrhagic recurrence rate was 3.1%, occurring within 24 hours in 1 patient and within 48 hours in 2 others. One patient developed spontaneous bacterial peritonitis; microbiological culture of the ascitic fluid yielded *Klebsiella pneumoniae*. Treatment with intravenous amoxicillin-clavulanic acid (3 g/day) was initiated, but the patient died on day 11 of hospitalization.

4. Discussion

The hospital prevalence of UGIB at La Paix hospital in Ziguinchor was 1.26%. In Dakar, a multicentric prospective study conducted in internal medicine, intensive care, and emergency departments across 4 hospitals reported a prevalence of 12.5% in 2002 [5]. A more recent study from 2021, conducted in the emergency department of General Idrissa Pouye hospital, reported a prevalence of 1.13% [6]. These figures are consistent with published sub-Saharan Africa data [7]-[10]. The incidence of UGIB is approximately 120 per 100,000 inhabitants per year in France and between 45 and 150 per 100,000 inhabitants per year in the United States of America [11]. The mean patient age in our cohort was 50 years (range: 16 - 92 years). While UGIB affects all age groups, patients in Africa tend to be younger than those reported in European and North American studies—a finding that may reflect the younger demographic structure of sub-Saharan populations and the differing etiological profile of UGIB in these regions [1] [7] [10]-[13].

In our series, gender distribution demonstrated a male predominance with a

sex ratio of 1.82, consistent with the majority of African studies reporting sex ratios ranging from 1.4 to 3.4 [5] [6] [10] [11] [14] [15]. Western studies similarly document male predominance exceeding 60%, with sex ratios between 1.2 and 3.3 [16]. This is likely related to the principal etiologies of UGIB—namely PHT and GUD—which disproportionately affect male patients.

The mean consultation delay in our cohort was 36 days (range: 2 hours - 1 year), with only 18 patients presenting within 24 hours of the hemorrhagic episode. This limited rate of timely emergency consultation may be attributable to inadequate healthcare infrastructure in the southern Ziguinchor region, which restricts access to health services, as well as to the low socioeconomic conditions in this area.

Gastrotoxic medication use was documented in 16 patients (16.7%). The use of such agents has been reported at variable rates across multiple African studies [3] [7] [9] [17] [18] and is compounded by widespread self-medication practices observed throughout the continent [1] [15].

In our series, 67.5% of patients presented with hemodynamic instability, a rate substantially higher than those reported in Dakar and other African centers [1] [3] [5] [6] [11] [19] [20]. Rates from sub-Saharan Africa data are generally higher than those from the Maghreb and Western countries. In Morocco, El Mekkaoui *et al.* documented hemodynamic shock in only 2% of patients [17], while in France, hypotension was observed in 25% of cases [12]. This disparity may be explained by the existence of pre-hospital emergency care systems in developed countries, which frequently allow patient stabilization prior to hospital admission—a resource largely unavailable in the African context, where delayed access to care is common [20] [21].

Upper gastrointestinal endoscopy was performed in 52 patients (54.17%), compared with nearly 90% in Western series [12] [13]. This low endoscopy rate in Africa is attributable to insufficient endoscopy centers and limited financial resources. In southern Senegal, the La Paix hospital is the only facility equipped with a digestive endoscopy unit. The mean time to endoscopy was 57 days (range: 24 hours - 1 year), which is longer than that reported in earlier Senegalese studies. UGE remains the gold standard investigation for UGIB and should ideally be performed urgently within 12 hours of the hemorrhagic episode. Our study, consistent with several African series, is characterized by a low endoscopy rate and a markedly prolonged time to examination. Nevertheless, endoscopic lesions were identified in 98.08% of performed procedures. GUD was the leading etiology of UGIB, accounting for 29.1% of endoscopic findings. Although etiological distributions vary across countries, GUD and PHT consistently represent the most common causes. The high prevalence of GUD is attributable to the frequency of *Helicobacter pylori* (*H. pylori*) infection and the use of gastrotoxic medications. *H. pylori* is estimated to be associated with 70% of gastric ulcers and 90% of duodenal ulcers [5]. The prevalence of PHT-related bleeding reflects the high burden of cirrhosis, a condition that is often clinically silent until the onset of complications, particularly portal hypertension. In our series, as in Dakar and Abidjan, no

cirrhotic patient received vasoactive therapy [5] [6] [8]. The use of vasoactive agents remains rare in African series, particularly in sub-Saharan Africa, despite its recognized importance in the acute management of PHT-related UGIB—primarily due to their unavailability on account of prohibitive costs [22] [23]. Similarly, endoscopic hemostatic therapy, widely used in Europe and even in the Maghreb, remains poorly implemented in sub-Saharan Africa, a consequence of insufficient technical capacity, limited therapeutic resources, and the high cost of endoscopic treatment kits [24] [25]. The in-hospital mortality rate was 28.1%, with death occurring at a mean of 11 days. Key risk factors for hemorrhagic recurrence and mortality included advanced age, associated comorbidities, hemorrhagic shock, severe anemia, hepatic encephalopathy, and elevated Glasgow-Blatchford and Rockall scores [26] [27].

5. Conclusion

Upper gastrointestinal bleeding represents a potentially life-threatening diagnosis and therapeutic emergency with significant morbidity and mortality, requiring prompt and tailored management. In our clinical context, UGIB is characterized by a younger patient population and an elevated mortality rate. Reducing delays to upper gastrointestinal endoscopy and implementing endoscopic hemostatic procedures may contribute to improved patients' outcomes.

Conflicts of Interest

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

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