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RESEARCH ARTICLE

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Factors Associated with Mortality from Digestive Hemorrhage at Donka Hospital in Conakry

Diallo Ahmed Tidiane[1,4]*, Diallo Mamadou Sarifou[1,4], Diallo Kadiatou[1,4], Diallo Djenabou[1,4], Sow Ousmane[2], Sylla Salifou Marietou[3,4], Amadou Camara[1] and Sylla Djibril[1,4]

[1]Department of Internal Medicine / Hepato-Gastroenterology Unit, Donka University Teaching Hospital (CHU Donka), Conakry, Guinea.

[2]Department of Hepato-Gastroenterology, Argenteuil University Hospital (CHU Argenteuil), Paris, France.

[3]Department of Medicine, Almay Samory Touré Military Hospital, Conakry, Guinea.

[4]Faculty of Health Sciences and Techniques, Gamal Abdel Nasser University of Conakry, Conakry, Guinea.

ABSTRACT

Introduction: Upper gastrointestinal bleeding is a common and potentially fatal gastroenterological emergency. Identifying prognostic factors is crucial to guide management. The objective was to determine the factors associated with an adverse outcome (death) in patients hospitalized for gastrointestinal bleeding.

Materials and Methods: This was a prospective analytical study of 150 patients admitted for gastrointestinal bleeding. Demographic, clinical, laboratory, and therapeutic characteristics were collected. Univariate and multivariate logistic regression was performed to identify independent factors associated with mortality.

Results: The mean age of patients was 48.9 ± 17.2 years, with a male predominance (61.3%). Overall mortality was 34.7%. In multivariate analysis, age (OR = 1.40 per 10 years; 95% CI: 1.03–1.90; p = 0.030), impaired Glasgow Coma Scale (stage 2: OR = 3.25; 95% CI: 1.35–7.82; p = 0.009), decreased prothrombin time (OR = 1.45 per 10%; 95% CI: 1.12–1.88; p = 0.005), and elevated Child-Pugh score (Class C: OR = 5.42; 95% CI: 2.07–14.20; p < 0.001) were significantly associated with death.

Conclusion: The prognosis of gastrointestinal bleeding depends primarily on age, neurological status, and liver function (Child-Pugh and PT). These parameters must be integrated early to stratify risk and guide management.

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KEYWORDS

Gastrointestinal bleeding, Mortality, Prognostic factors, Conakry.

Introduction

Gastrointestinal bleeding (GIB) represents a major cause of morbidity and mortality in emergency and intensive care units worldwide [1]. Its prognosis is particularly poor in sub-Saharan Africa, where limited access to diagnostic (urgent endoscopy) and therapeutic (vasoactive drugs, endoscopic hemostasis techniques) resources worsens patient outcomes [2,3]. Most prognostic studies originate from high-income countries, and the validated scoring systems (Rockall score, Glasgow-Blatchford score) include parameters that are often unavailable in routine practice in our settings [4,5]. There is therefore a crucial need to identify, among clinical and biological parameters, those independently associated with death in order to better stratify risk upon admission. This study aims to fill this gap by investigating the predictive factors of mortality in patients admitted for GIB at Donka Hospital in Conakry, the main university teaching hospital in Guinea.

Materials and Methods

This was an analytical, prospective, single-center study conducted at Donka Hospital in Conakry over an 8-month period from October 2024 to May 2025. The study included 150 consecutive patients admitted with confirmed gastrointestinal bleeding (hematemesis, melena, or rectorrhagia). Exclusion criteria were incomplete medical records and patients transferred to another facility before the end of management. Data were collected from medical records using a standardized form. Both qualitative and quantitative variables were collected and analyzed using R software version 4.1.0. Quantitative variables are presented as mean ± standard deviation, and qualitative variables as numbers (percentages). A univariate logistic regression analysis first identified variables associated with mortality. Variables with $p < 0.1$ were then included in a multivariate logistic regression model to identify independent risk factors. Regression results are presented as Odds Ratios

Contact: Diallo Ahmed Tidiane, Department of Internal Medicine / Hepato-Gastroenterology Unit, Donka University Teaching Hospital (CHU Donka), Conakry, Guinea, Tel: +224622732814.

(OR) with 95% confidence intervals (95% CI). A p-value < 0.05 was considered statistically significant.

Results

The mean age was 48.9 years (±17.2) with a male predominance (61.3%). Most patients were married (66.0%) and had a low level of education (61.3% with no or primary education). A history of gastrointestinal bleeding (GIB) was common (63.3%). The distribution according to the Child-Pugh score was: Class A (42.7%), B (35.3%), and C (22.0%). The overall mortality rate was 34.7% (Table 1).

Table 1: Characteristics of the Study Population (N = 150)

Characteristics	Number	Percentage
Age (years)*	/	48.9 (17.2)
Sex		
- Male	92	61.3
- Female	58	38.7
Marital Status		
- Single	21	14.0
- Married	99	66.0
- Widow/Widower	30	20.0
History of Gastrointestinal Bleeding (GIB)	95	63.3
Hypertension (HTN)	38	25.3
Diabetes	21	14.0
Liver Disease	75	50.0
Gastric Disease	47	31.3
Smoking	36	24.0
Alcohol Use	30	20.0
Glasgow Score	120	80.0
- Normal (15)	105	70.0
- Stage 1 (13–14)	15	10.0
- Stage 2 (9–12)	25	16.7
- Coma (≤8)	5	3.3
Transfusion	129	86.0
Hemoglobin (g/dL)*	/	6.3 (2.2)
Platelets (G/L)*	/	166 (120)
Prothrombin Time (PT, %)*	/	61.5 (23.1)
Length of Hospital Stay (days)	150	9.1 (6.2)
Child-Pugh Classification		
- Class A	64	42.7
- Class B	53	35.3
- Class C	33	22.0
Outcome		
- Favorable	98	65.3
- Death	52	34.7

*Mean ± standard deviation

Several factors were significantly associated with an increased risk of death in univariate analysis: age (OR=1.38 per 10 years), decrease in hemoglobin (OR=1.28 per 2 g/dL), platelet count decrease (OR=1.19 per 100 G/L), prothrombin time decrease (OR=1.55 per 10%), shorter hospital stay (OR=0.91 per day), higher Child-Pugh score (Class B OR=3.12; Class C OR=8.45), and altered Glasgow score (Stage 2 OR=4.92) (Table 2).

Five factors remained independently associated with mortality after adjustment (Table 3):

- Age (per 10-year increase): adjusted OR = 1.40 (95% CI: 1.03–1.90; p=0.030)
- Glasgow score Stage 2 (vs. Normal): adjusted OR = 3.25 (95% CI: 1.35–7.82; p=0.009)
- Prothrombin rate (per 10% decrease): adjusted OR = 1.45 (95% CI: 1.12–1.88; p=0.005)
- Length of hospital stay (per day): adjusted OR = 0.93 (95% CI: 0.87–0.98; p=0.010)
- Child-Pugh score (Class C vs. A): adjusted OR = 5.42 (95% CI: 2.07–14.20; p<0.001).

The final model showed good performance (AIC = 139.2, AUC-ROC = 0.842).

Table 2: Associated Factors — Univariate Analysis.

Characteristics	Crude OR	95% CI	P-value
Sex (Male vs Female)	1.25	0.68–2.32	0.472
Age (per 10-year increase)	1.38	1.07–1.78	0.012
Hypertension (HTN)	0.78	0.39–1.55	0.478
Diabetes	1.12	0.52–2.41	0.772
Chronic Liver Disease	1.45	0.78–2.71	0.241
Gastric Disease	0.82	0.44–1.53	0.533
Smoking	1.32	0.68–2.56	0.412
Alcohol Use	1.18	0.61–2.28	0.623
Blood Transfusion	1.87	0.74–4.72	0.186
History of Gastrointestinal Bleeding (GIB)	1.49	0.77–2.88	0.235
Hemoglobin (per 2 g/dL decrease)	1.28	1.05–1.56	0.015
Platelets (per 100 G/L decrease)	1.19	1.02–1.39	0.031
Prothrombin Time (per 10% decrease)	1.55	1.22–1.98	<0.001
Length of Hospital Stay (days)	0.91	0.86–0.96	0.001
Child-Pugh Classification			0.004
- Class A	Ref	1	—
- Class B	3.12	1.45–6.72	—
- Class C	8.45	3.78–18.91	—
Glasgow Score			0.004
- Normal	Ref	1	—
- Stage 1	1.57	0.58–4.26	—
- Stage 2	4.92	2.10–11.52	—
- Coma	4.09	0.83–20.18	—

Table 3: Multivariate Analysis of Independent Factors Associated with Unfavorable Outcome (Death)

Characteristic	Adjusted OR	95% CI	P-value
Age (per 10-year increase)	1.40	1.03–1.90	0.030
Glasgow Score (vs. Normal)			0.009
Stage 2	3.25	1.35–7.82	—
Prothrombin Time (per 10% decrease)	1.45	1.12–1.88	0.005
Length of Hospital Stay (per day)	0.93	0.87–0.98	0.010
Child-Pugh Classification (vs. Class A)			<0.001
Stage B	2.58	1.05–6.35	—
Stage C	5.42	2.07–14.20	—

Discussion

This study identifies a high-risk mortality profile for gastrointestinal bleeding in the Guinean context, similar to that reported by Ngami et al. [6] at the Brazzaville University Hospital (36.6%). This level of mortality is typical in African contexts

where endoscopic hemostasis remains limited or delayed. Conversely, in centers with full technical capacity, mortality drops considerably: Itoundi-Bignoumba et al. [7] reported a 3% rate in Gabon in 2018, and French data average around 5%.

The strong association between the severity of liver disease (Child-Pugh C) and mortality is consistent with global literature [8,9]. It highlights that portal hypertension due to cirrhosis is the main etiology and prognostic driver in our cohort, as described elsewhere in Africa [10]. Altered consciousness (Glasgow score ≤12) is a classic marker of hemorrhagic shock or hepatic encephalopathy—two conditions with poor prognosis. Our findings align with studies showing that neurological impairment upon admission is a strong predictor of mortality [11].

The prothrombin rate (PT) directly reflects hepatic synthesis function. Its independent prognostic value, even after adjusting for the Child-Pugh score, is noteworthy. This suggests that PT provides complementary information on acute liver function beyond the global assessment of cirrhosis. A low PT indicates impaired production of coagulation factors, worsening bleeding and complicating management [12].

The association between older age and increased risk of death is well documented [13], likely reflecting reduced physiological reserve and greater comorbidity prevalence. Finally, the inverse relationship between hospital stay duration and mortality is a known artifact, or “length-of-stay bias” [14]. Patients who die tend to do so early, artificially shortening their median hospital stay. Thus, a short stay is an indirect marker of early death rather than its cause.

Conclusion

Mortality due to gastrointestinal bleeding at Donka Hospital remains high (34.7%). This study identifies four simple, independent prognostic factors readily available upon admission : age, Glasgow score, prothrombin rate, and Child-Pugh score. Combining these factors allows for easy identification of patients at very high risk of death. We recommend using this profile for admission triage to prioritize these patients for intensive care, thereby optimizing limited resources and improving survival. Validation of these factors in a larger cohort would be a useful step toward developing a prognostic score adapted to the African context.

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