

From Portal Hypertension to Peptic Ulcer Disease: An Overview of Upper Gastrointestinal Bleeding in Agadir

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Abstract

Original Research Article

Upper gastrointestinal bleeding (UGIB) is a frequent and serious gastroenterological emergency, representing a major cause of morbidity and mortality. To describe its clinical, etiological, therapeutic, and prognostic characteristics in our context, a retrospective study was conducted at the Regional Hospital Center of Agadir over a six-year period (2015–2020), including 549 patients hospitalized for UGIB. Clinical, biological, endoscopic, and outcome data were collected and analyzed. The mean age of patients was 49 years with a male predominance. The main presenting symptoms were hematemesis (70%) and melena (13%). Anemia was frequently observed, requiring blood transfusion in more than 60% of cases. Endoscopy was performed within 24 hours in 60% of patients and identified portal hypertension (43%), mainly due to esophageal varices, and peptic ulcer disease (17%), often associated with non-steroidal anti-inflammatory drug intake, as the leading causes. Management combined medical treatment (proton pump inhibitors, vasoactive drugs) and endoscopic procedures (elastic band ligation, injection, clipping) depending on the etiology. In-hospital mortality was 6.2% in patients with portal hypertension and 7.3% in those with ulcer disease. Multivariate analysis identified advanced age, male sex, and severe anemia as independent predictors of death. In conclusion, UGIB in Agadir affects a relatively young population and is still dominated by variceal bleeding related to cirrhosis and ulcer disease linked to NSAIDs. Rapid multidisciplinary management and improved access to hemostatic endoscopy, together with preventive measures such as hepatitis vaccination and rational NSAID use, are essential to improve prognosis.

Keywords: Upper gastrointestinal bleeding, Portal hypertension, Esophageal varices, Peptic ulcer disease, Non-steroidal anti-inflammatory drugs, Endoscopic management, Cirrhosis, Anemia, Mortality.

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INTRODUCTION

Upper gastrointestinal bleeding (UGIB) is a major medical and surgical emergency in hepatogastroenterology, responsible for significant morbidity and mortality worldwide [1]. These lesions, located proximal to the ligament of Treitz, account for a substantial number of hospital admissions and require prompt, specialized management to prevent severe complications and improve patient outcomes [2].

UGIB presents a wide etiological spectrum, primarily including esophageal varices related to portal hypertension, gastroduodenal ulcer disease, and digestive tumors, with distribution varying across regions of the world [3]. The key role of early upper gastrointestinal endoscopy in diagnosis and therapeutic

management is well established, as these interventions directly reduce recurrence rates and mortality [4].

Despite their frequency and severity, detailed data on the epidemiological profile, clinical characteristics, and prognosis of UGIB in the regional context of Agadir remain limited. Understanding these specific aspects is crucial for adapting management protocols and guiding targeted prevention efforts.

Therefore, we conducted this study to describe the epidemiological and clinical characteristics of UGIB at the Regional Hospital Center of Agadir, also highlighting factors affecting prognosis and mortality in this population.

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MATERIALS AND METHODS

We performed a retrospective, cross-sectional, descriptive study including all patients admitted for UGIB at the Regional Hospital Center (RHC) of Agadir from January 2015 to December 2020.

Medical records of these patients were exclusively reviewed to extract relevant information regarding demographic, clinical, paraclinical, and etiological data, as well as therapeutic modalities and in-hospital outcomes.

To ensure rigorous data collection, a standardized data extraction sheet was used to centralize and code the different variables. This included age, sex, mode of bleeding presentation, time to first endoscopy, identified causes of shock, medical and endoscopic treatments, occurrence of adverse events, and in-hospital mortality.

Data were analyzed using Jamovi statistical software. Descriptive analyses were performed to characterize the study population, while bivariate and multivariate analyses were conducted to identify predictors of mortality, with a statistical significance threshold set at $p < 0.05$.

RESULTS

A total of 549 patients were included, with a mean age of 49 ± 17.19 years and a male predominance (female/male sex ratio = 0.77; H/F = 1.28).

The most common presenting symptoms were isolated hematemesis in 70% ($n=383$), isolated melena in 13% ($n=73$), hematemesis with melena in 10% ($n=57$), anemic syndrome in 6% ($n=32$), massive rectal bleeding in 0.5% ($n=3$), and hemorrhagic shock without externalized bleeding in 0.2% ($n=1$).

The time between admission and first endoscopy was <24 hours in 60% of patients ($n=330$), 24–72 hours in 34% ($n=189$), and >72 hours in 5.5% ($n=30$).

Bleeding causes were dominated by portal hypertension-related hemorrhage (PH) in 43% of cases ($n=241$) and gastroduodenal ulcers (GDUs) in 17% ($n=95$).

For portal hypertension-related bleeding (43%, $n=241$), the mean age was 48 years, with a female predominance (55%). The main lesions were esophageal varices (EV) in 70% ($n=168$), EV associated with portal hypertensive gastropathy in 11% ($n=27$), and EV with gastric varices in 8% ($n=20$). Cirrhosis was present in 59.7% ($n=144$) and portal hypertension without cirrhosis in 25% ($n=60$). Patients with anemia (hemoglobin Hb <12 g/dL) represented 93% ($n=224$). Child–Pugh scores among cirrhotic patients were A in 53%, B in 35.5%, and

C in 11.1%. Blood transfusions were performed in 63.4% ($n=153$). Patients received standard medical treatment, with endoscopic therapy (variceal ligation) in 64.7% ($n=156$). In-hospital mortality was 6.2% ($n=15$).

Gastroduodenal ulcers accounted for 17.3% of cases ($n=95$), with a mean age of 47 years and male predominance (72.6%). A history of ulcer disease was present in 61% ($n=58$), and 19% ($n=18$) had a history of epigastric pain. Smoking was reported in 57.8% ($n=55$), alcohol use in 6.3% ($n=6$), and 64.2% ($n=61$) were taking nonsteroidal anti-inflammatory drugs (NSAIDs). Anemia (Hb <12 g/dL) was observed in 96.8% ($n=92$). GDUs were classified as Forrest I in 4.2%, Forrest II in 47.3%, and Forrest III in 48.4%. All patients received intravenous proton pump inhibitors (PPIs). Blood transfusions were performed in 70.5% ($n=67$), and 5.2% ($n=5$) underwent endoscopic therapy (adrenaline injection followed by clip placement). In-hospital mortality was 7.3% ($n=7$).

Multivariate analysis identified age, male sex, and anemia as independent predictors of death.

DISCUSSION

This descriptive study involving 549 patients hospitalized for upper gastrointestinal bleeding (UGIB) at the Regional Hospital of Agadir highlights a specific epidemiological and clinical profile influenced by local sociodemographic and etiological characteristics.

The mean age of patients in our series was 49.7 years, considerably younger than averages reported in Western series, often around 60–70 years [1,2]. However, this difference is consistent with data from African and Maghreb studies, such as those by Katile [5] and Diakité [6], reporting similar mean ages of around 45–50 years. This relatively young age could be explained by the higher prevalence of chronic liver diseases occurring earlier in life in these countries, notably viral hepatitis B and C, as well as delayed access to preventive care and early diagnosis [1].

The male predominance (sex ratio M/F = 1.28) observed in our population corresponds to trends reported in most UGIB studies, where men are more affected due to greater exposure to risk factors such as alcohol, tobacco, and nonsteroidal anti-inflammatory drugs (NSAIDs) [7,8]. This sex disparity is a consistent and well-documented phenomenon in the literature [9].

The main presenting symptom in our series was isolated hematemesis (70%), consistent with international data that consider hematemesis as the typical alert sign of upper gastrointestinal disorders due to the presence of fresh vomited blood [10,11]. The less frequent presentations, such as isolated melena (13%) and anemia (6%), are also comparable to other series, highlighting the clinical variability of UGIB [12].

Table 1: Epidemiological, Clinical, and Biological Characteristics of Patients

	Katile <i>et al.</i>, 2020 [5]	Bignoumba <i>et al.</i>, 2019 [13]	Diakité <i>et al.</i>, 2015 [6]	Sombié <i>et al.</i>, 2015 [22]	Halland <i>et al.</i>, 2010 [18]	Button <i>et al.</i>, 2010 [14]	Semlani <i>et al.</i>, 2012 [15]	Mekkaoui <i>et al.</i>, 2011 [17]	Our Study 2021
Location	Kayes-Mali	Libreville-Gabon	Côte d'Ivoire	Burkina Faso	Australia	Oxford-England	Marrakech-Morocco	Fès-Morocco	Agadir-Morocco
Sample size	77	210	285	265	792	24421	186	1303	549
Mean age (years)	45.52	42	47.2	46.8	66	61.4	48	47.6	49
Sex ratio (M/F)	2.3	0.9	3.4	2.4	1.5	1.19	1.8	1.7	1.2
History - Cirrhosis			11.1%	22.3%	23%		9%		28.7%
History - Ulcer							5%	8%	17.3%
History - Epigastralgia							15%		6.6%
History - Gastrotoxic drugs		21.4%	17.3%	37.2%	23.3%		16.3%	16.4%	19.8%
Presentation - Hematemesis	74%	25.2%	73.7%	35.5%	51%	56%	21%	79.6%	70%
Presentation - Melena	6.5%	39%	84.8%	13.6%	46%	42%	11%		13%
Presentation - Both	19.5%	26.7%		51%				32%	10%
Presentation - Anemic syndrome			2.1%	0%	2.5%			43.6%	6%
Hemoglobin - Mean (g/dl)		7	6.7	7.8				7.7	6.9
Hemoglobin - Hb<7		60.5%	18.9%	29%				43.2%	55.7%

The time from admission to first endoscopy was less than 24 hours in 60% of patients. This rate aligns with international recommendations emphasizing the importance of early endoscopy to improve prognosis [16]. Our results are comparable to those of Mekkaoui [17] (65%) and Halland [18] (68%), but higher than some African settings where logistical barriers frequently delay this procedure [5,19]. Delays in some patients can be explained by late consultation, particularly for less dramatic clinical forms such as melena, a symptom sometimes considered non-alarming in our population.

The predominant etiology in our cohort was portal hypertension (PH), responsible for 43% of UGIB cases, mainly due to esophageal variceal rupture (70% of PH cases). This observation aligns with results reported by Katile [5] (56%) and Diakité [6] (49%) in African studies, underscoring the major impact of viral hepatitis B and C and cirrhosis on the occurrence of gastrointestinal bleeding in these regions [1]. Cirrhosis was present in nearly 60% of patients with PH, confirming the importance of this chronic disease in the pathogenesis of local UGIB.

Gastroduodenal ulcer disease (GDU) represented the second leading cause of UGIB, found in

17% of patients, with a marked male predominance (72.6%) [7,8]. This rate is similar to that reported in Moroccan and Western studies, as well as in African series, where GDU is among the most frequent causes [9,20]. NSAID use (64.2% in our series) and smoking (57.8%) are major risk factors, confirmed by the literature highlighting the deleterious effects of these substances on the gastric mucosa [21].

Endoscopic hemostasis was performed in 29% of patients, mainly in PH-related cases through esophageal variceal ligation, and to a lesser extent in patients with bleeding ulcers. This rate reflects a significant advancement in local management and approaches those reported in other Moroccan studies, although it is higher than in African series where limited resources hinder systematic implementation of this life-saving procedure [5,19].

The observed in-hospital mortality rate (6.2%) is comparable to that reported in the Moroccan literature [14]. This rate is nonetheless lower than in some African studies, such as Sombié [22] (17%), where the absence or scarcity of therapeutic endoscopy doubles the risk of death.

Table 2: Endoscopic and Therapeutic Data of Patients

	Katile <i>et al.</i>, 2020 Kayes- Mali [5]	Bignoumba <i>et al.</i>, 2019 Libreville- Gabon [13]	Diakité <i>et al.</i>, 2015 Cote d'Ivoire [6]	Sombié <i>et al.</i>, 2015 Burkina Faso [19]	Halland <i>et al.</i>, 2010 Australia [18]	Button <i>et al.</i>, 2010 Oxford- England [14]	Semlani <i>et al.</i>, 2012 Marrakech- Morocco [15]	Mekkaoui <i>et al.</i>, 2011 Fès- Morocco [17]	Our study 2021 Agadir- Morocco
Sample size	77	210	285	265	972	24421	186	1303	549
Admission-to- endoscopy delay <24H	-	11.4%	36.7%	-	68.8%	16.4%	-	65%	60%
Admission-to- endoscopy delay 24-72H	-	-	39.3%	-	20%	45%	-	-	34%
Admission-to- endoscopy delay >72H	-	-	24%	-	-	38.5%	-	-	5.5%
Bleeding due to portal hypertension (PHT)	55.8%	29.5%	49.3%	50.2%	12%	3%	27.4%	23.3%	43%
Peptic ulcer disease (PUD)	24.6%	45.7%	41.6%	65.4%	33%	22.3%	32.2%	46%	17%
Forrest I	-	7.1%	-	25%	-	-	3.2%	-	4.2%
Forrest II	-	21.4%	-	36.5%	-	-	51%	-	47.3%
Forrest III	-	17.1%	-	38.5%	-	-	-	-	48.4%
Gastritis	16.8%	18.6%	20.7%	8%	5.4%	13.8%	14.1%	7.3%	13%
Esophagitis	1.3%	22.8%	1.8%	10.1%	7.6%	10.1%	4.8%	10.9%	7%
Gastric tumor	6.5%	-	4.5%	4%	3.7%	1.3%	5.2%	2.1%	3.6%
Blood transfusion	-	-	-	78.8%	60%	58.7%	30.2%	-	67%
Endoscopic intervention	-	33%	0.9%	-	1.9%	-	32%	18%	29.3%
In-hospital mortality	3.8%	9.4%	-	17%	4%	10%	6.2%	6.5%	7.8%

Our multivariate analysis identified advanced age, male sex, and the presence of anemia at admission as independent predictors of mortality, consistent with other studies where these factors are regularly implicated in UGIB severity [6,7,23].

Other factors known to negatively influence prognosis, such as active bleeding at endoscopy, initial shock, or tumor-related etiology, were not significantly observed in our cohort, which may be due to the sample size or the local specificity of the included patients.

In conclusion, our results highlight the importance of rapid and multidisciplinary management of patients with UGIB in our regional context, with particular emphasis on preventing chronic liver diseases, limiting ulcer risk factors, and improving access to therapeutic endoscopy.

CONCLUSION

Upper gastrointestinal bleeding (UGIB) remains a serious condition affecting a relatively young population in the hospital setting of Agadir. Our study highlights that portal hypertension, mainly related to cirrhosis, is the leading cause of UGIB, followed by

peptic ulcer disease, which is closely associated with NSAID use and other modifiable risk factors.

In-hospital lethality remains significant, underlining the importance of rapid and appropriate management, combining medical treatment with endoscopic interventions when necessary. Furthermore, the risk of death is increased in older patients, males, and those presenting with anemia at admission, which should guide risk stratification strategies and clinical follow-up.

This study also emphasizes the need to strengthen diagnostic and therapeutic capacities in our local context, particularly regarding rapid access to hemostatic endoscopy. It also calls for preventive actions targeting risk factors, including the fight against viral hepatitis, awareness about prudent NSAID use, and improved access to healthcare for vulnerable populations.

In summary, improving the prognosis of UGIB in regional settings requires an integrated approach combining prevention, multidisciplinary management, and optimization of available medical resources.

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