

Demographic Profile Of Upper Gastrointestinal Bleeding In North Of Morocco: A Comparison Between Variceal And Non-Variceal Bleeding

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Abstract:

Upper gastrointestinal bleeding (UGIB) is a typical medical emergency, with mortality rate of approximately 10%. This study aims to identify the demographic and etiological characteristics of UGIB as well as to report the experience of the department of gastroenterology of the university hospital of Tangier located in a regional hospital, and the differences between the non-variceal and variceal bleeding. This was a retrospective study of patients with UGIB admitted to the emergency department and benefiting from an oesogastroduodenal endoscopy between may 2021 and December 2022. A total of 187 patients were enrolled in the study. The mean age was 49yo, with extremes ranging from 5 to 90 years, a clear male predominance was reported 60.4% of men and a sex ratio of 1.52.

The main revealing mode of hemorrhage was the association of hematemesis + melaenas (57%). The main pathological antecedents found in our series were: hepatic cirrhosis (23%), previous episode of UGIB (21%), smoking (25%), use of gastrototoxic drugs in 20% of patients. The main causes were gastroduodenal ulcer (46%) and rupture of esophageal varices (32%). Endoscopic hemostatic treatment was performed in 34.7% of patients. When comparing the two groups: those with variceal bleeding (n=61) and those with nonvariceal bleeding (n=102). The mean age of the nonvariceal bleeding group was 52, which was higher than the mean age of the variceal bleeding group (47). Additionally, there was a sex ratio difference between the two groups, with the nonvariceal bleeding group having a higher proportion of males (sex ratio of 1.1) compared to the variceal bleeding group (sex ratio of 2.48).

Regarding pathological history, the variceal bleeding group had a higher prevalence of smoking (40%) and the use of gastrototoxic drugs (31%), as well as comorbidities such as diabetes (25%), hypertension (27%), and heart disease (16%). On the other hand, the nonvariceal bleeding group had a history dominated by the presence of liver cirrhosis (72%) and a previous episode of hospitalization due to hemorrhage (47%).

Endoscopy treatment was also performed more frequently in variceal bleeding than in nonvariceal bleeding.

Surgical treatment was exceptional but necessary in 3 patients.

The evolution was marked in 5 patients by a recurrence of bleeding (2.6%) and death occurred in 3 patients (1.6%).

Keywords: Endoscopic treatment; Hemorrhagic ulcer; Upper gastrointestinal bleeding; Variceal bleeding.

Date of Submission: 03-05-2026

Date of Acceptance: 13-05-2026

I. Introduction:

Upper gastrointestinal bleeding (UGIB) is a typical medical emergency, with a significant morbidity and mortality[1]. The incidence of UGIB in Morocco remains underestimated due to the absence of national studies. It is nevertheless estimated in various international studies to be between 36 and 172 cases/100,000 inhabitants and is described as decreasing in most developed countries[2]. The most common causes of UGIB are bleeding ulcers, bleeding related to portal hypertension.

The initial assessment is essential and starts with the hemodynamic status and assessment of the terrain, followed by esogastroduodenal endoscopy for diagnostic, therapeutic and prognostic purposes[3].

The main objective of our study is to specify the epidemiological, clinical and etiological characteristics of upper gastrointestinal bleeding and to report the experience of a hepato-gastroenterology department of a university hospital located in a regional hospital.

The secondary objective is to compare the demographic profile and the clinical presentation of variceal and non-variceal bleeding.

II. Materials And Methods:

Methods

This is a retrospective descriptive study of 187 patients over a period of 20 months from 05/2021 to 12/2022 on the management of externalized upper gastrointestinal bleeding in the hepato-gastroenterology department in Tangier.

All patients presenting with externalized upper GI bleeding such as hematemesis and/or melena or massive rectal bleeding and receiving endoscopy in our facility were included.

We excluded any patient with missing data on their file or with a non-extractive upper GI bleed.

Data collection:

To carry out this study, data were collected from the patients' files and the department's register and reported on evaluation sheets.

Clinical and biological recorded data included age, sex, medication history (NSAIDs, antiplatelet agents, and anticoagulants), personal history (liver cirrhosis), comorbidities, notion of smoking, systolic blood pressure, and heart rate at hospital admission. Hemodynamic instability was defined as systolic blood pressure < 100 mm Hg and heart rate > 100 beats/minute. Mode of onset of bleeding (Hematemesis, melena, massive rectal bleeding) and Hemoglobinemia (g/dl).

Type of lesion on endoscopy (Gastric and/or duodenal ulcer with Forrest classification, esophageal or gastric varices, Mallory-Weiss syndrome, Esophagitis, Esophageal cancer, Stomach cancer).

Therapeutic approaches:

- An antisecretory treatment, a bolus of 80mg and then 8mg/hour for 3 days or 40mg *2/day
- Vasopressors (sandostatin 25 microg and 25microg/h and intravenous antibiotics for 7 days)
- endoscopic treatment (Elastic ligation, biological glue, clips, hemostatic injection)
- Transfusion: in hemodynamically stable patients, the transfusion strategy consists of setting hemoglobin targets at 7g/dl and 9g/dl in patients with heart disease. For unstable patients, the management of hemorrhagic shock is done in the emergency room before transfer to the department.
- Evolution: Recurrence of bleeding, need for surgery, mortality (in-hospital)

Statistical analysis

Statistical analysis was performed using (Statistical Package for the Social Science) version 26.

Quantitative results were expressed as median and quartiles when the distribution was non-Gaussian, and as mean when the distribution was Gaussian (verified by the Kolmogorov-Smirnov test).

Qualitative results are expressed as numbers and percentages.

Quantitative variables were compared using the Mann-Whitney test, and qualitative variables were compared using the chi-square test or Fisher test.

The level of significance was set at $p < 0.05$.

III. Results:

Patients' characteristics:

The demographic profiles of the study population are presented in Table 1. Mean age was 49 years, with extremes in age ranging from 5 to 90 years.

There was a male predominance (60.4 %) and a sex ratio of 1.52.

The average age of male patients was 46 years versus 52 years for female patients. The most common age range was 41-60 years.

A previous episode of UGIB was found in 37 patients (20%), and 44 patients had liver cirrhosis (23.5%). Smoking was reported in 47 patients (25.3%) and gastrotoxic drugs in 35 patients (%). Diabetes and hypertension were reported in 40 (21.4 %) and 44 patients (22.6%), respectively. Comorbidities, such as heart disease and nephropathy, were noted in 21 (11.3%) and 6 (3.6%) patients, respectively.

The comparison between variceal bleeding and non-variceal bleeding found that the sex ratio was close to 1 in variceal versus 2.09 in non-variceal, and in terms of pathological antecedents: The most common comorbidities were gastrotoxic drug intake (31,3%) and smoking (37,2%) in non-variceal, and cirrhosis (72%) in variceal bleeding.

Table 1 Demographic characteristics of our patients cohort

	Total (N=187)	Variceal (N=61)	Non-variceal (N=102)	P-value
Age	49	52 (5,75)	47 (6,90)	0,095
Male n (%)	113 (60,4%)	32 (52%)	69 (67,6%)	0,053
Sex ratio	1,52	1,1	2,09	

Medical history:				
Cirrhosis	44(23,5%)	43(72%)	1 (1%)	<0,001
History of UGIB	37(20%)	29 (47%)	8 (7,8)	<0,001
Smoking	47(25,3%)	4 (6%)	38(37,2%)	<0,001
Typical ulcer syndrome	6(3%)	0	6 (3%)	
Gastrotoxic drugs:	35(18,7%)	3(4,9%)	32(31,3%)	<0,001
- NSAIDs	- 19(10%)	- 1(1,6%)	- 18(17%)	- <0,001
- Aspirin	- 12(6%)	- 1(1,6%)	- 11(10%)	- 0,031
- Anticoagulant	- 4(2,1%)	- 1(1,6%)	- 3(3%)	- 0,603
Hypertension	42 (22,6%)	10 (16%)	25 (24,5%)	0,210
Diabetes	40 (21,4%)	12 (19%)	24 (23,5%)	0,566
Cardiopathy	21 (11,3%)	2 (3%)	14 (13,7%)	0,032
Nephropathy	6 (3,6%)	1 (1%)	4 (3,9%)	0,414

Clinico-biological presentation:

The results of the clinico-biological presentation are shown in Table 2. The most frequent mode of presentation was hematemesis associated with melaenas in 106 patients (56.7%). The number of patients with isolated melena was 43 (23%) patients had isolated melena and 28 (15%) had isolated hematemesis. Ten patients (5.3%) were admitted with a massive rectal discharge.

On clinical examination, 159 patients (85%) were hemodynamically stable, 15 had a heart rate >100 (8%), and 13 had hypotension (7%). Epigastric sensitivity on abdominal examination was observed in 69 (36.7 %) patients.

On biological examination, the median hemoglobin level was 8.5 [7.3-10], the median blood urea level was 0.6 [0.43-0.86], and that of patients with thrombocytopenia was 56 (30%). The median GBS score was 10 [7-11]

Table 2 Clinico-biological presentation in our patients cohort

	Total (N=187)	Variceal (N=61)	Non-variceal (N=102)	P-value
Hematemesis (H)	28 (15%)	4(6%)	17 (16%)	
Melena (M)	43 (23%)	1(1%)	29 (28%)	
H + M	106(56,7%)	54(88%)	50 (49%)	<0,001
Hematochezia	10 (5,3%)	2 (3%)	6 (6%)	
Epigastric tenderness	69 (36,7%)	3 (4,9%)	62 (61%)	<0,001
Hemoglobin (g/dl)	8,5[7,3 ;10]	8,5[7-9,85]	8,5[7,35-10]	0,468
Blood urea (mmol/l)	0,6 [0,43 ;0,86]	0,54[0,38-0,7]	0,65[0,45-0,87]	0,020
Platelets:				
- >150k	- 131 (70%)	- 20(33%)	- 87(85%)	<0,001
- <150k	- 56 (30%)	- 41(67%)	- 15(14,7%)	
HD status:				
FC<100 and PAS>100	159 (85%)	52 (85%)	85 (83%)	
FC>100 and PAS >100	15 (8%)	5 (8%)	9 (9%)	0,942
PAS<100	13 (7%)	4 (7%)	8 (8%)	
Glasgow-Blatchford score (GBS)	10 [7-11]	11[8-13]	10 [7,75-11]	0,03

Etiology:

All patients underwent oesogastroduodenal endoscopy (figure 1), which was conclusive in 163 cases (87.2%). Delay in performing endoscopy in our study was as follows:

- The number of patients receiving an exploration between 24 and 72 hours after the consultation was 10 (58%), >72h was 46 (24%), <24h was 33 (18%).

At exploration, 61 patients had a variceal etiology (33%) and 102 patients a non-variceal etiology dominated by hemorrhagic ulcer in 87 cases (85%), 9 cases had a severe esophagitis (figure 2) (9%) and a gastric tumor was reported in 5 patients (5%) (figure 3) and one patient with Dieulafoy ulcer.

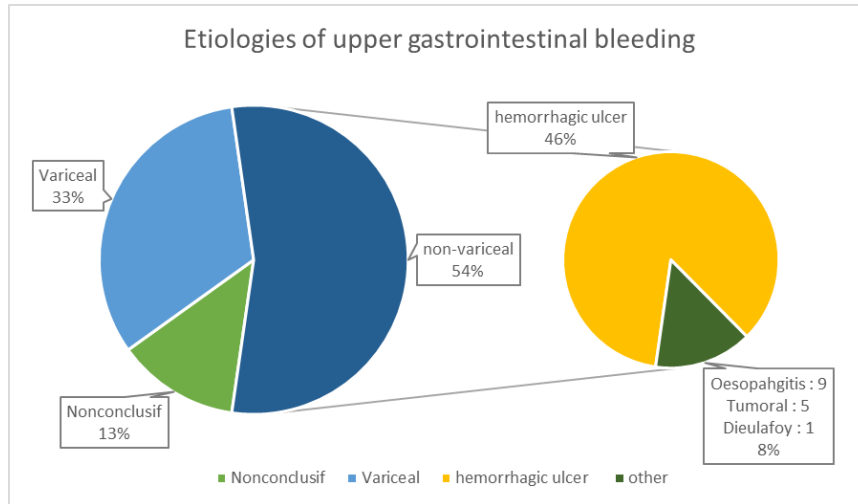


Figure 1 Etiologies of upper gastrointestinal bleeding

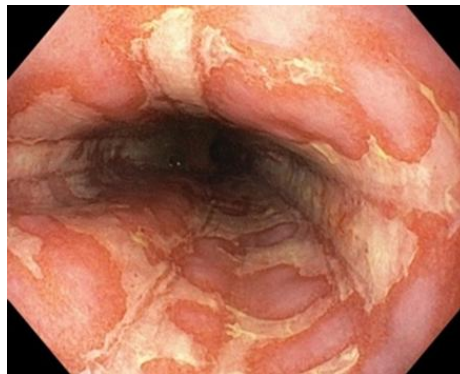


Figure 2 Image of severe oesophagitis



Figure 3 Image of a gastric ulcerative process

Other baseline characteristics of non-variceal bleeding:

Concerning non-variceal bleeding, hemorrhagic ulcer was the most frequent (85%), Table 1 shows the different staging and localization of the ulcer, Figure 5 illustrates the different endoscopic findings

Table 3 Different staging and localization of hemorrhagic ulcer

Forrest classification	
• Ia	3
• Ib	4
• IIa	3
• IIb	5
• IIc	6
• III	66 (75%)
Localization	
• Duodenal ulcer	53 (61%)
• Gastric ulcer	34 (39%)

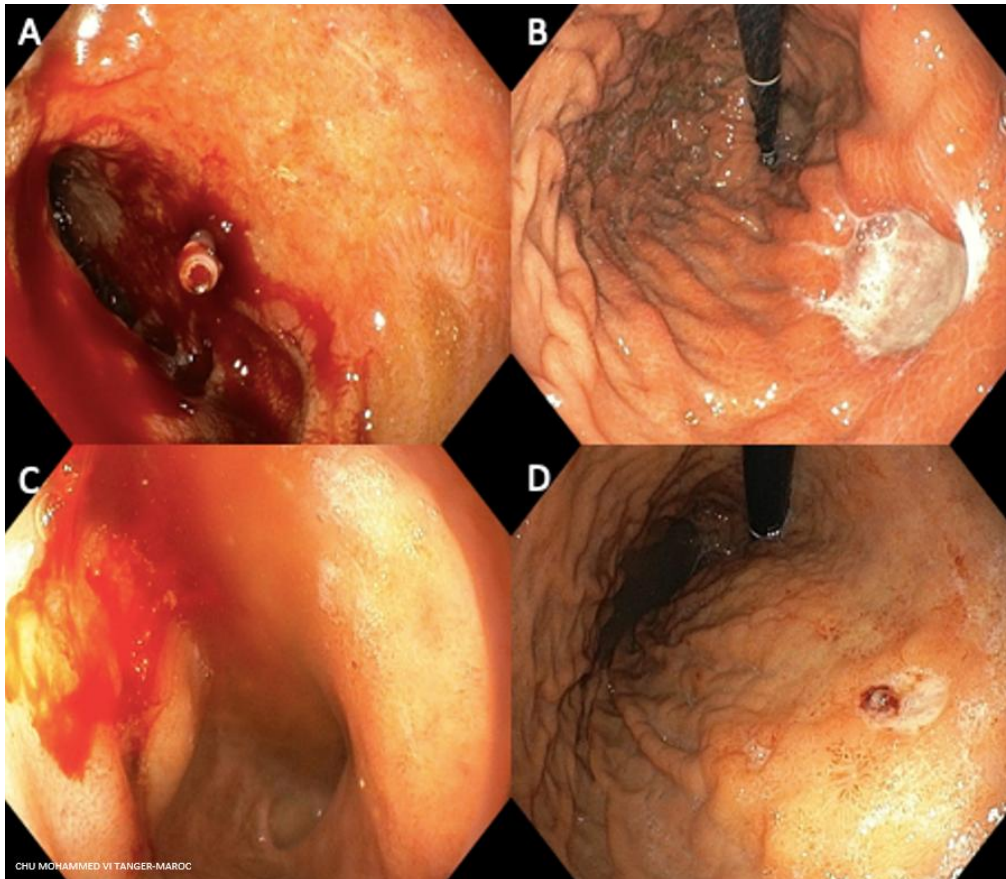


Figure 4 Findings of a duodenal ulcer F1a with placement of a clip (A), a clean ulcer crater (B), an ulcer with sheet bleeding (C), and an ulcer visible vessel (D),

Other baseline characteristics of variceal bleeding:

Regarding varicose hemorrhage, the origin of the bleeding in 60 patients was a rupture of esophageal varices with predominance of grade III in 80%, the grade II was noted in 19%. Only one patient a rupture of GOV2 was involved. At the exploration, other associated varices without stigmata of blood were objective according to the classification of Sarin such as: GOV1 (11 patients) GOV2 (8 patients) and IGV1 (only one). An associated congestive gastropathy was reported in 54% of patients. The child-pugh score calculated in patients respectively stage B, C and A (67%, 23% and 10%). Figure 5 demonstrates two examples of the different endoscopic findings

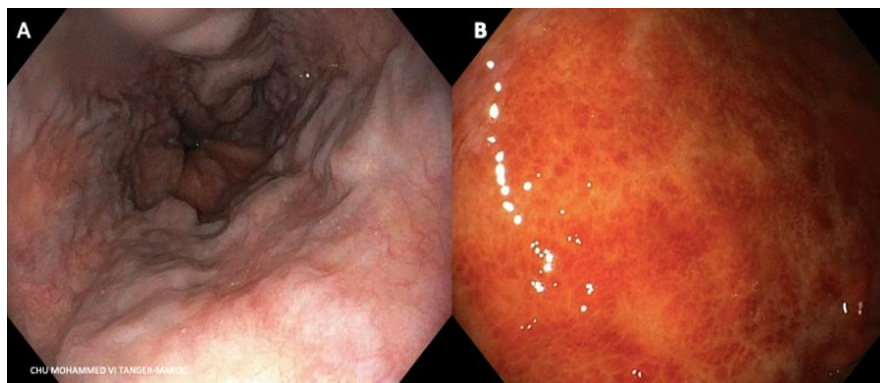


Figure 5 A: Stade II esophageal varices, B: Hypertensive gastropathy (mosaic aspect)

Management:

Hospitalization in our department after initial stabilization in the emergency room was indicated in 132 patients (70%). Any patient with a varicose etiology or active clinical and/or endoscopic bleeding was hospitalized.

The indication for hospitalization was significantly different between the variceal and non-variceal groups (group A vs B) ($p < 0.001$); half of the patients in group A were hospitalized (58%), whereas hospitalization was almost constant in group B (93%).

In our series, 48 patients (25.7%) received transfusion.

For medical treatment, PPIs were administered to 132 (70 %) patients. All patients with ulcers or severe esophagitis on endoscopy underwent PPI-based medical treatment. An indication for Sandostatin was given in the case of hemorrhage related to PH

Among the 61 patients with varicose veins, 32 (52 %) received Sandostatin.

Antibiotic prophylaxis with Ceftriaxon 1 g/day for 7 days was systematically administered in the event of hemorrhage related to PH.

Out of 187 patients, 65 (34.7%) benefited from an endoscopic hemostatic procedure. 9 (10%) patients out of 87 hemorrhagic ulcers benefited from a hemostatic procedure (a hemostatic injection alone in 8 patients and a combination of hemostatic injection with the insertion of clips in only one patient)

Of the 61 patients, elastic ligation was performed in 55 (86 %), and only one patient received an injection of biological glue.

The use of surgical hemostasis was exceptional in the present study. Indeed, it was performed in 3 patients, including a stage Ia hemorrhagic ulcer and two gastric tumors.

The evolution was marked in 5 patients by hemorrhagic recurrence (2.6%), including 3 with a hemorrhagic ulcer classified as Ib, IIa, IIb and two with VO rupture.

The deaths studied in our study were 3 or 1.6% of which two ruptures of VO and ulcer were classified as FIa.

Table 4 Comparative management strategies in the two groups

	Total (N=187)	Variceal (N=61)	Non-variceal (N=102)	P-value
Hospitalization	132 (70%)	57 (93,5%)	60 (58,8%)	<0,001
Tranfusion	48(25,7%)	16 (26%)	29 (28,4%)	0,382
Endoscopic treatment	65 (34,7%)	56 (91,8%)	9 (8,8%)	<0,001
Need of surgery	3 (1,6%)	0 (0%)	3 (2,9%)	0,176
Recurrent bleeding	5 (2,6%)	2 (3,3%)	3 (2,9%)	0,904
Mortality	3 (1,6%)	2 (3,3%)	1 (1%)	0,291

IV. Discussion:

In the study population, the overall average age was 49 years, and the most represented age group was between 41 and 60 years. Both findings are consistent with several Moroccan and African studies[2][4][5][6]. In Western countries, the series shows a higher average age, which is explained by the aging of the population as well as differences in dietary habits, drug allergies, and drug intake [7][8][9].

The women in our series were older than the men, with an average age of 52 years versus 46 years, which is in line with the results of the literature. This can be explained by the frequency of ulcer disease (occurring at a young age) in men, exposure to NSAIDs in elderly women, and a decrease in the prevalence of upper GI bleeding in the population (this decrease is more important in men than in women)[10].

According to several studies [11][4][12], the use of gastrotoxic drugs is positively associated with ulcer origin. The use of these drugs was noted in 20.4% of the patients in our study. According to several studies, smoking is a risk factor for ulcerative bleeding[13], which contrasts with our results. Endocrine and metabolic pathologies (diabetes and hypertension), renal insufficiency, cardiopathy, and coagulation disorders are the main pathologies associated with the occurrence of HDH or aggravation of preexisting digestive lesions.[2]

The etiologies were dominated by bleeding ulcers, which occupied the first place (46.5%), followed by bleeding related to PH (32%). This observation is shared by several national and international series, but with varying percentages [9][14][12]

The duodenal ulcer location (61%) was more frequent than the gastric ulcer (39%), which is more important in other national studies with a clear predominance of the bulbar location explained by the destruction of somatostatin-producing D cells, which leads to an increase in gastrin and acid load in the duodenum secondary to PH [15].

Concerning Forrest's classification, we noted the predominance of stage III in our series, which is perhaps explained by the benefit of PPI-based drug treatment at an early stage, which acts by inhibiting proteolytic activation of the gastric juice (which requires maintaining the pH above 5) in order to avoid lysis of the clot and to promote hemostasis by protecting the altered platelet activities at acidic pH[16]. This result has been reported by several authors who have used the endoscopic unit in their studies, but also by the delay in performing the endoscopy, given the absence of an endoscopy unit in the emergency room, from which spontaneous hemostasis has already been performed. This result has also been reported by several national studies[2].

All patients with bleeding ulcers in our study received PPI-based drug treatment. The 66% of the ulcer patients had a clean crater (Forrest III) without endoscopic hemostasis, and 8% had active bleeding (F1a, F1b). A combination of hemoclip with hemostatic injection was performed in one patient with jet bleeding (F1a), and hemostatic injection alone was performed in 8 patients. The limited use of clips and thermal methods in our study can be explained by the lack of availability of necessary equipment.

The main indication and benefit of octreotide are the management of variceal hemorrhage. Studies on the use of octreotide in nonvariceal bleeding have shown no benefits. However, octreotide can be used if the source of bleeding is unknown [17].

Of all the patients with PH-related bleeding, 52% received vasoactive drug infusion. Our infusion strategy followed European society of gastroenterology recommendations [18], and 86% of patients with esophageal varices received endoscopic hemostasis, such as ligation. Biological glue was injected in a patient presenting with recurrent digestive hemorrhage with bleeding GOV2 and VO without red signs [18].

Our study also has certain limitations. Firstly, the retrospective nature of the study could be a source of selection bias, limiting also the study of long-term outcomes. Thus, the lack of a basic technical platform and the necessary staffing to ensure adequate care in regional hospitals may explain the low percentage of endoscopic hemostasis procedures, particularly in cases of bleeding ulcers.

V. Conclusion:

In conclusion, our study showed a clear male predominance especially in bleeding ulcers with a relatively young age of the patients. The use of gastrototoxic drugs and smoking are risk factors in the occurrence of bleeding ulcers.

The two etiologies most responsible for hemorrhage: peptic ulcer disease with a predominance of the duodenal location as the first cause of hemorrhage and portal hypertension in second place. Proton pump inhibitors remain the mainstay of treatment for bleeding ulcers, and vasoactive drugs are recommended for variceal bleeding.

The evolution of the patients was generally good without complications with a successful hemostasis.

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