

## Upper Gastrointestinal Bleeding in Senegal: Preliminary Results of a Single-Centre Prospective Study

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Received: 20 Mar 2021

Accepted: 08 Apr 2021

Published: 14 Apr 2021

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### Citation:

Gueye MN. Upper Gastrointestinal Bleeding in Senegal: Preliminary Results of a Single-Centre Prospective Study. Japanese J Gastro Hepato. 2021; V6(9): 1-4

### Keywords:

Upper GI bleeding; Portal hypertension; Ulcer

## 1. Abstract

**1.1. Introduction:** The aim of this study was to describe the epidemiological, diagnostic, therapeutic and evolutionary characteristics of upper gastrointestinal haemorrhage in a sub-Saharan African country, namely Senegal.

**1.2. Patients and Methods:** Between January 1 and June 30, 2020, patients admitted to the emergency department of the IDRISSE POUYE General Hospital (Dakar, Senegal) for upper GI bleeding were included. Clinical, biological, endoscopic, and evolutionary data were collected prospectively on survey forms and analysed using SPSS version 18 software.

**1.3. Results:** As of 30 June 2020, 30 patients were included. They were 21 men and 9 women, with a mean age of 38 years (range 18-72 years). Haematemesis was the circumstance of discovery in 96.7% of cases. The bleeding episode occurred between 6 pm and 6 am in 30% of cases.

NSAID use in the 7 days preceding the bleeding episode was reported in 10% of cases. Cardiovascular collapse was noted in 13.3% of cases. The haemoglobin level was below 10 g/dL in 73.3% of cases and the Glasgow Blatchford score was above 8 in 53% of cases. The average time to perform GI endoscopy was 62 hours (extremes: 9 hours and 10 days). Bleeding was attributed to portal hypertension (oesophageal varices and/or gastric varices and/or gastropathy) in 76.7% of cases and to peptic ulcer in 10% of cases. Blood transfusion was performed in 36.7% of patients. PPIs were administered in 93.3% of patients. Esophageal varices were ligated in 53.3% of cases.

No patient received vasoactive treatment.

The outcome at 1 month was favourable in 73.3% of cases. Recurrence of bleeding was noted in 16.7% of cases, mainly during the first week. The mortality at 1 month was 10%.

In multivariate analysis, Glasgow Blatchford score > 8 and Child C cirrhosis were the individualised predictors of death.

**1.4. Conclusion:** Upper GI bleeding in our centre is characterised by the young age of the patients, the high frequency of portal hypertension and a significant mortality.

The improvement of pre-endoscopic medical treatment (vasoactive treatments) and the reduction of the delay in performing endoscopy and any haemostasis procedures could improve the prognosis of this complication.

## 2. Introduction

Upper GI haemorrhage (UGI) is related to bleeding from a lesion located upstream of the duodenal-jejunal angle or Treitz angle. It is one of the main digestive emergencies [1, 2].

The incidence of upper GI haemorrhage is estimated at 143 cases per 100,000 inhabitants in France and 150 cases per 100,000 inhabitants in the USA [3]. In Africa, several studies have reported a hospital prevalence ranging from 2 to 17.7% [4]. Worldwide, ulcerative disease and portal hypertension are by far the most important etiologies of HDH.

Despite recent therapeutic advances in the field of digestive endoscopy, mortality from these haemorrhages remains high, ranging from

5 to 30% depending on the underlying cause [5].

In sub-Saharan Africa, particularly in Senegal, there are very few publications on upper GI bleeding. It is in this context that we decided to undertake this prospective study in order to contribute to a better knowledge of upper GI bleeding in Senegal by evaluating its epidemiological, diagnostic, and therapeutic aspects in one of the country's largest hospitals.

### 3. Patients and Method

This was a prospective, descriptive and analytical study conducted at the Hospital General Idrissa Pouye (HOGIP) between 1 January 2020 and 30 June 2020. All patients admitted to the emergency department for externalized upper gastrointestinal bleeding in the form of hematemesis, melena and/or profuse rectal bleeding were included. Patients admitted for externalized upper GI bleeding, who for various reasons did not receive an EOGD and those in whom the GI bleeding occurred in the hospital setting, were not included in our study.

Data collection was based on a questionnaire to collect the parameters to be studied. These data were entered using sphynx software version 5.1.0.2. Data analysis was carried out using SPSS (Statistical Package for Social Sciences) version 18. The analytical study was done with cross-tabulations. To compare frequencies, we used Pearson's chi-square test or Fisher's two-interval exact test, depending on their applicability, and the comparison of means was done with the analysis of variance test with a significance level of  $p < 0.05$ .

### 4. Results

Of the 2904 patients seen in consultation or admitted to intensive care, 33 had acute upper GI bleeding, a prevalence of 1.13%. Three patients were not included because they died within hours of admission before oeso-gastroduodenal endoscopy could be performed. The mean age was 38 years and the median 34 years, with extremes of 18 and 72 years. The age group 20-40 years was the most represented (63.4%). There was a male predominance with a sex ratio of 2.3 (21 men).

Haematemesis was the most frequent circumstance of occurrence. It was present in 29 patients, or 96.7% of cases. Haematemesis was isolated in 63.34% of cases and associated with melena in 30% of cases. Gastrointestinal bleeding occurred between 6 pm and 6 am in 30% of cases.

Patients were referred from another health facility in 36.7% of cases. Only 18.2% of referred patients had a venous line on arrival at the emergency department. The urban taxi was the means of transport used to bring patients to the emergency department in 20 cases (66.7%).

The average consultation time was 25 hours with extremes of 1 hour to 8 days and a median of 5 hours.

Thirteen patients (43%) were known to be cirrhotic and in 3 patients (10%) recent use of non-steroidal anti-inflammatory drugs

(NSAIDs) was noted.

Clinical examination showed disturbances of consciousness in 13.3% of cases. The haemodynamic status was unstable in 40% of patients with arterial hypotension in 33.3% and cardiovascular collapse in 6.7%; the mean systolic blood pressure was 107.57 mm Hg.

Physical examination revealed hepatomegaly in 8 cases (26.67%), collateral venous circulation in 5 cases (16.67%), ascites in 3 cases (10%), splenomegaly in 2 cases (6.67%).

The mean haemoglobin level was 7.55 g/dL.

The mean Glasgow-Blatchford score was 8.32. The mean time to endoscopy was 62.4 hours with extremes of 12 hours and 10 days.

Digestive endoscopy showed lesions in 96.7% of cases. In 1 patient (3.7%), the endoscopy was normal. The lesions found at endoscopy are presented in (Table 1).

**Table 1:** lesions seen at endoscopy (number and percentage).

Lesions observed at endoscopy	Numbers	Percentages
Esophageal varices	23	76,7%
-Grade 3	17	56,6%
-Grade 2	6	20%
Gastric varices	13	43,3%
-GOV 1	8	26,6%
-GOV 2	4	13,3%
-IGV 1	1	3,3%
Portal hypertension gastropathy	14	46,7%
Peptic ulcer	3	10%
-Forrest IIc	1	3,3%
-Forrest III	2	6,7%
Malory Weiss	1	3,3%
Tumeur gastrique	2	6,7%
Erosive bulbitis	1	3,3%
Gastritis antrales	2	6,7%
Candidiasis oesophagitis	1	3,3%

Therapeutically, crystalloids and macromolecules were used in 80% and 30% of patients, respectively. 11 patients (36.7%) received a blood transfusion and the average number of blood bags transfused was 2.

Patients were treated with antisecretory drugs, antibiotics, and lactulose. As part of the instrumental treatment, esophageal varicose vein ligation was performed in 53.3% of patients.

The outcome at 1 month was favourable in 22 patients (73.3%). Recurrent bleeding was observed in 5 patients (16.7%) and 3 cirrhotic patients died (10%) following recurrent bleeding with shock.

In multivariate analysis, Glasgow Blatchford score  $> 8$  and Child C cirrhosis were the predictive factors for death.

### 5. Discussion

A hospital prevalence of 1.13% was observed in our study. In Senegal, a multicentre study conducted by Diouf [6] in 2002 reported a much higher hospital prevalence than ours: 12.5%.

This difference could be explained by the decentralisation of the management of digestive haemorrhage over the last decade in Sene-

gal. Indeed, the increase in the number of specialists in gastroenterology at the national level and consequently the increase in digestive endoscopy units means that patients are no longer obliged to converge on hospitals in the capital (Dakar) for their care.

The prevalence found in our series was close to those observed in certain African studies: 1.2% in Burkina Faso [7], 3% in Chad [8], 3.13% in Madagascar [9] and 3.64% in Morocco [10].

The mean age of the patients was 38 years with a median of 34 years and extremes of 18 and 72 years. The age group 20-40 years was the most represented (63.4%).

Our results are similar to those of the African literature. Indeed, the series by Okon et al [11] in Ivory Coast and Katile et al [12] in Mali had respectively shown a mean age of 47, 45 and 45.5 years.

This average age in most African studies is lower than in the West where it varies between 61 and 78.2 years [13]. In France, Nahon et al [14] reported a mean age of 63.3 years, in the USA, Cooper et al [15] observed a mean age of 66 years and in the UK, Chatten et al [16], observed a mean age of 59.9 years.

This difference could be explained by the ageing population in the West. Indeed, there is a frequent use of potentially gastrotoxic drugs in the elderly in the West due to the presence of numerous co-morbidities, hence the greater frequency of upper GI bleeding in this age group.

In contrast, in sub-Saharan Africa, upper GI bleeding is more often a complication of cirrhosis. The latter is due to chronic HBV infection, which is transmitted early in endemic areas, most often from mother to child at birth (perinatal transmission).

Physical examination revealed a high frequency of signs of portal hypertension. Similar results have been reported in other series in sub-Saharan Africa, notably in Tchad [8] and Côte d'Ivoire [11].

These results show the frequency of portal hypertension in sub-Saharan Africa. The particularity of portal hypertension in this geographical area is its occurrence in young subjects with chronic viral hepatopathy, whereas in the West portal hypertension is more frequent in subjects over fifty years of age.

Anemia was noted in 73.3% of the patients; the hemoglobin level was less than 10 g/dL in 73.3% of the cases with a mean of 7.55 g/dL. Similarly, the mean Glasgow Blatchford score was 8.32.

Our results are similar to those of Sombie et al [17] who noted a mean haemoglobin level on admission of  $7.81 \pm 3$  g/dL (extremes 2-18 g/dL), and of Rakotondrainibe et al in Madagascar who reported a mean Glasgow Blatchford score of 9 [18].

In France, Nahon et al [14], reported a mean haemoglobin level of  $9.2 \pm 3$  g/dL and in the UK, Chatten et al [16] reported a mean Glasgow Blatchford score of 5.

Thus, it is noted that the haemodynamic status of patients with upper GI bleeding is generally more unstable in sub-Saharan Africa than in

the West on admission to the emergency department. This is due to the fact that pre-hospital care, provided by the Emergency Medical Service (SAMU) and the Mobile Emergency and Resuscitation Structures (SMUR), occupies an important place in the organisation of the Western health system. Thus, most patients are stabilised before their arrival at the hospital. Moreover, the delay in consultation observed in our countries contributes to the worsening of the haemodynamic state of patients. The average time to perform endoscopy was 2.6 days.

Our results are like those of other African series: Sombie et al [17] in Burkina Faso found an average delay of 3.6 days; Okon et al [11] and Ouattara et al [19], in Ivory Coast, reported an average delay of 3 days.

In France, the time taken to perform endoscopy was much shorter than ours by Nahon et al [14] and Zarhouni [20] who reported that more than 70% of patients had an endoscopy within 12 to 24 hours of the haemorrhagic episode.

This delay in exploration and endoscopic management in Africa can be explained by the inadequacy of the technical platform and the lack of gastroenterologists in our hospitals. Finally, in the absence of effective universal health coverage in our countries, financial reasons may delay the performance of certain medical procedures such as endoscopy.

In our series, upper GI haemorrhage was related to portal hypertension was the main cause in 76.7% of patients, the second cause being peptic ulcers (10% of cases). In France, Czernichow et al [3] reported 36.6% of UGD and 13.7% of oesophageal varices.

These results show that the aetiology of HDH varies from one continent to another. This is related to the specific epidemiological context of each country. However, it is clear from these studies that the two main causes of HDH are portal hypertension and peptic ulcer disease. Eighty percent (80%) of the patients received solution infusion and 30% of the cases received macromolecular infusion.

In our study, the initial management of patients consisted mainly of antisecretory drugs and packed red blood cells. Endoscopic treatment was performed in 53.3% of patients.

In France, Nahon et al [14] noted that 87.8% of patients received PPI-based treatment and that vasoactive treatment (somatostatin or octreotide or glypressin) was prescribed in 86.4% of patients with a history of cirrhosis.

From these results, we can see that vasoactive therapy is often not used in many African countries in patients with GI bleeding due to ruptured oesophageal varices. This is due to the high cost of these drugs, which results in an increase in the morbidity-mortality of digestive haemorrhage with recurrence of bleeding in 16.7% of cases and a mortality of 10%. The risk factors for mortality were a Glasgow-Blatchford score >8 and Child C cirrhosis. Indeed, all 3 deaths occurred in the context of hepatic encephalopathy in Child

C cirrhosis.

## 6. Conclusion

Upper GI bleeding in our centre is characterised by the young age of the patients, the high frequency of portal hypertension and a relatively high mortality. The improvement of the pre-endoscopic medical treatment (vasoactive treatments) and the reduction of the delay of the endoscopy and of the possible hemostasis gestures could allow to improve the prognosis of this complication. The continuation of this study will provide a better understanding of the factors that predict haemorrhagic recurrence and mortality and will contribute to improving the management of patients with acute upper gastrointestinal haemorrhage in Senegal and beyond in Sub-Saharan Africa.

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