



## Acute Upper Gastrointestinal Bleeding in a Tertiary Care Centre of Nepal

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### ABSTRACT

**Introduction:** AUGIB is characterized by hematemesis or melena or both. Peptic ulcers and variceal bleed account for majority of cases. Use of proton pump inhibitors in current era is associated with a gradual reduction in burden of peptic ulcer disease. We conducted this study to look into the cause of AUGIB in our community.

**Methods:** We studied 100 patients in one year period who presented to us with hematemesis or melena. The study was conducted in department of Gastroenterology, Bir hospital, Kathmandu. We identified the culprit lesions by upper gastrointestinal endoscopy.

**Results:** The average age of patients with AUGIB was 51.6 years with 59 (59%) males. Duodenal ulcers are most common 29 (29%), followed by varices 23 (23%) and gastric ulcers 14 (14%). More than one lesion was identified in 38 (38%) patients. Patients with variceal bleed were more likely to present with hematemesis alone as compared to those with ulcer bleed ( $P=0.005$ ). Variceal bleed patients presented earlier to the hospital ( $P=0.005$ ), had lower MAP at presentation ( $P=0.0002$ ), had lower hemoglobin level ( $P=0.0001$ ) and higher serum creatinine level at presentation ( $P=0.001$ ). Patients with variceal bleed were more likely to have consumed alcohol 20 (86.9%) and patients with ulcer bleed were more likely to be smokers 29 (67.4%) or consume tobacco 14 (32.5%) ( $P=0.006$ ).

**Conclusions:** Ulcer related bleeding is still the most common cause of AUGIB. Many patients with AUGIB have more than one lesions identified during upper gastrointestinal endoscopy.

**Keywords:** *bleeding; endoscopy; peptic ulcer; upper gastrointestinal; varices.*

### INTRODUCTION

Upper gastrointestinal tract is the area encompassing oral cavity to ligament of treitz. Acute upper gastrointestinal bleeding (AUGIB) presents either as passage of fresh blood/ coffee coloured vomitus (hematemesis) or as black tarry stools (melena).<sup>1</sup> Patients with massive AUGIB can also have bright red coloured stools (hematochezia). Factors that are associated with AUGIB are: helicobacter pylori infection, non steroidal anti-inflammatory drugs (NSAIDs) and liver disease.<sup>2</sup>

Peptic ulcer diseases account for majority of AUGIB followed by varices.<sup>3</sup> However, 16-20% of patients

may have more than one endoscopically identifiable lesion as a cause of bleeding.<sup>4</sup>

Some studies have also observed that variceal bleed may be a more common cause of AUGIB than non-variceal bleeding. The easy availability of proton pump inhibitors (PPIs) has been cited as the cause for this changing trend. Because of paucity of data in our country, we

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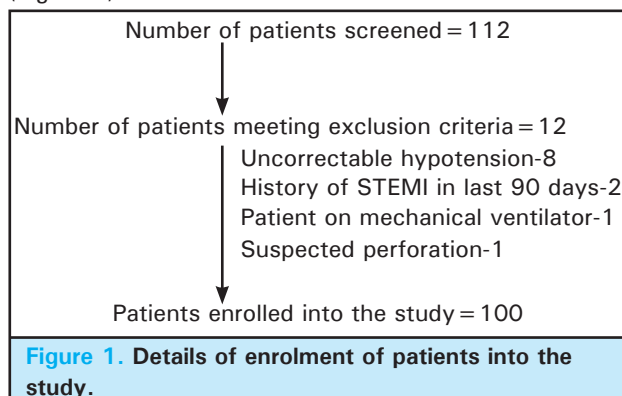
conducted this study to look into the causes of AUGIB.

## METHODS

A cross sectional study was conducted in adult patients admitted in gastroenterology ward or intensive care unit (ICU) at National Academy of Medical Sciences (NAMS), Bir hospital, Kathmandu from May 2016 to April 2017. This study was approved by institutional review board of NAMS. We included patients who gave written consent for study and presented with either hematemesis or melena. We excluded patients who had absolute or relative contraindications for UGI endoscopy: uncorrectable hypotension, hypoxia ( $\text{SpO}_2 < 90\%$ ) or patient on mechanical ventilation, acute myocardial infarction, peritonitis or hollow viscus perforation. We also excluded patients who didn't give consent for the study. Patients with hypotension (systolic blood pressure less than 90 mm Hg) were hemodynamically stabilized; blood transfusions were given when required. Patients fulfilling these criteria within the study period were enrolled into the study.

Complete hemogram, renal function tests, liver function tests, chest roentgenogram and ultrasonography of abdomen were done in all patients. Following the informed consent, all patients fulfilling the inclusion criteria underwent endoscopy by FUJINON gastroscope at department of Gastroenterology. The endoscopist had more than 5 years of experience in doing upper gastrointestinal endoscopy (UGIE). Findings at UGIE were recorded. In patients who have more than one finding at UGIE, the presence of stigmata of recent bleed or the decision of the endoscopist was used to determine the cause of AUGIB.

Data were entered into Microsoft EXCEL and analyzed using SPSS version 22 software. Continuous data were expressed as mean and standard deviation, and categorical data as number (%). In case of continuous variables, unpaired t-test was used to compare the difference between means. Chi-square/Fischer's exact test was used to compare the categorical variables (Figure 1).



## RESULTS

A total of 112 patients presented with AUGIB during the study period. Twelve patients met the exclusion criteria and 100 patients were available for the study.

The average age of patients was 51.6 years (Table 1). Males were more than females 59 (59%) vs. 41 (41%). The average BMI was 23.4 kg/m<sup>2</sup>. Majority of patients were smokers 53 (53%). Forty eight (48%) patients were regular alcohol consumers while 28 (28%) were tobacco chewers.

**Table 1. Clinical parameters of all patients.**

Particulars	n (%) or mean $\pm$ SD
BMI (kg/sq.m)	23.47 $\pm$ 3.53
Alcohol	48
Smoking	53
Tobacco chewer	28
Symptom at presentation	
Hematemesis only	48
Melena only	37
Both	15
Duration of symptoms (days)	2.57 $\pm$ 1.40
Mean arterial blood pressure (mm Hg)	73.71 $\pm$ 10.95
Hemoglobin (g/dl)	9.27 $\pm$ 1.42
Serum creatinine (mg/dl)	1.12 $\pm$ 0.51
Co morbidities	
DM	3
IHD	5
Cirrhosis	22
NCPH	3
Kidney disease	7

DM = Diabetes mellitus, IHD = Ischemic heart disease, NCPH = Non cirrhotic portal hypertension

Hematemesis was the most common presentation 48 (48%) followed by melena 37 (37%). Fifteen patients had hematemesis as well as melena. Ten patients had history of NSAIDs use; five of them were on low dose aspirin therapy.

Two patients did not have any findings on UGIE (Table 2).

**Table 2. Lesions identified at Upper gastrointestinal endoscopy.**

number of lesions n (%)	Number of patients n (%)
No lesions	2
Single lesion	60
> 1 lesion	38

A single lesion was detected in 60 patients and more than one lesion was seen in 38 patients.

Table 3 shows the various types of lesions detected at UGIE in all the patients.

<b>Table 3. Endoscopic profile of all patients.</b>	
<b>Particulars</b>	<b>Total number of patients (n = 100)</b>
Esophagus	
Esophagitis	8
Esophageal ulcer	1
Esophageal cancer	2
Mallory weiss tear	3
Post –EVL ulcer bleed	2
Varices	23
Stomach	
Gastric ulcer	
Gastric carcinoma	15
Erosive mucosal disease of stomach	5
Gastric polyp	31
Portal hypertensive gastropathy	2
Gastric antral vascular ectasia	7
Duodenum	
Erosive mucosal disease of duodenum	8
Carcinoma of ampulla of vater	1
Duodenal ulcer	33
Normal	2

EVL= endoscopic variceal ligation

Duodenal ulcers were seen in 33 (33%) followed by erosive mucosal disease of stomach in 31 (31%) and varices in 23 (23%).

Of the causes that were attributed to AUGIB, duodenal ulcers were the most common lesion identified 29 (29%), followed by varices 23 (23%) and gastric ulcers in 14 (14%) (Table 4).

<b>Table 4. Endoscopic findings based on the cause attributed to UGI bleed.</b>	
<b>Variables</b>	<b>n</b>
Esophagitis	3
Esophageal ulcer	1
Esophageal cancer	2
Mallory weiss tear	3
Post –EVL ulcer bleed	2
Varices	23
Gastric ulcer	14
Gastric carcinoma	4
Erosive mucosal disease of stomach	8

Gastric polyp	2
Portal hypertensive gastropathy	-
Gastric antral vascular ectasia	-
Erosive mucosal disease of duodenum	6
Carcinoma of ampulla of vater	1
Duodenal ulcer	29

EVL= Endoscopic variceal ligation

We used unpaired t-test to compare the difference between means of continuous variables between patients with ulcer bleed and variceal bleed (Table 5).

<b>Table 5. Comparison of patients with ulcer bleeding and variceal bleeding.</b>			
<b>Variables</b>	<b>Patients with ulcer bleed (n = 43); mean <math>\pm</math> SD or n (%)</b>	<b>Patients with variceal bleed (n = 23); mean <math>\pm</math> SD or n (%)</b>	<b>P value</b>
Age (years)	51.81 $\pm$ 16.57	46.69 $\pm$ 13.55	0.20
Sex			
Male	28 (65.1)	12 (52.1)	0.42
Female	15 (34.8)	11 (47.8)	
BMI (kg/sq.m)	23.41 $\pm$ 3.07	22.70 $\pm$ 4.09	0.42
Alcohol	18 (41.8)	20 (86.9)	0.006
Smoking	29 (67.4)	6 (26.0)	
Tobacco chewer	14 (32.5)	7 (30.4)	
Clinical presentation			
Hematemesis only	18 (41.8)	19 (82.6)	0.005
Melena only	16 (37.2)	2 (8.6)	
Both	9 (20.9)	2 (8.6)	
Duration of symptoms (days)	2.88 $\pm$ 1.41	1.91 $\pm$ 1.04	0.005
Mean arterial blood pressure (mm Hg)	76.11 $\pm$ 8.82	66.39 $\pm$ 10.36	0.0002
Hemoglobin (g/dl)	9.83 $\pm$ 1.20	8.04 $\pm$ 1.33	0.0001
Serum creatinine (mg/dl)	0.96 $\pm$ 0.16	1.40 $\pm$ 0.64	0.0001
Co morbidities			
DM	-	-	-
IHD	2 (4.6)	-	
Cirrhosis	-	20 (86.9)	
NCPH	-	3 (13.0)	-
Kidney disease	1 (2.3)	4 (17.3)	

DM= Diabetes mellitus, IHD= Ischaemic heart disease, NCPH= Non cirrhotic portal hypertension

No statistical difference was seen in age distribution or body mass index between the two groups. Variceal bleed patients presented earlier to the hospital ( $P=0.005$ ), had lower MAP at presentation ( $P=0.0002$ ), had lower hemoglobin level ( $P=0.0001$ ) and higher serum creatinine level at presentation ( $P=0.001$ ). Fischer's exact test was used to compare the difference in sex distribution between the two groups and the difference was not significant ( $P=0.42$ ). Chi square test was used to compare the categorical variables. Patients with variceal bleed were more likely to have consumed alcohol 20 (86.9%) and patients with ulcer bleed were more likely to be smokers 29 (67.4%) or consume tobacco 14 (32.5%) ( $P=0.006$ ). Patients with variceal bleed were also more likely to present with hematemesis alone as compared to those with ulcer bleed ( $P=0.005$ ).

## DISCUSSION

The aim of this study was to identify the cause of AUGIB in our hospital. AUGIB was more common among males and occurred in patients in their sixth decade of life. Non variceal causes of AUGIB were more common than variceal bleeding. Duodenal ulcer was more common than gastric ulcer. Other less common causes as Mallory-Weiss tears, esophagitis, erosive mucosal diseases and GI malignancies were also observed in this study. Patients with variceal bleeding presented earlier to hospital, had lower MAP and lower hemoglobin level at presentation.

The mean age of patients in our study was 51.6 years which is similar to the observation made by Kim et al in their study which enrolled 1929 patients (mean age 52 years).<sup>5</sup> A previous study from Nepal which looked into the endoscopic findings in patients with UGI bleed showed that the mean age of patients was 49.6 years.<sup>6</sup> Males were more likely to have AUGIB in our study as compared to females (males-59%, females 41%). A prospective study published in 2013 also had results similar to ours in which males were commonly afflicted by AUGIB than females (58% vs. 42%;  $P=0.05$ ).<sup>7</sup> Alcohol and smoking in association with helicobacter pylori infection have been found as the risk factors for causing peptic ulcer disease.<sup>8</sup> Alcohol can be a contributory risk factor in almost one third of patients with AUGIB.<sup>9</sup> In our study we observed alcohol and smoking to be associated with almost half of patients with AUGIB. Higher number of alcohol related cirrhotics in our study can be one of the causes of this difference in observation. Although only 10% of our patients were taking NSAIDs, monotherapy with NSAIDs has been shown to increase the risk of AUGIB {incidence rate ratio (IRR) = 4.3}. Monotherapy with low dose aspirin is also associated with increased UGI bleed (IRR=3.1).<sup>10</sup> Only 5 (5%) of our patients were on low dose aspirin. The presence of non-gastrointestinal comorbidity has been

shown to be an important risk factor by AUGIB.<sup>11</sup> We identified chronic liver disease to be the most common comorbidity associated with AUGIB. This observation is similar to a retrospective study from India, in which chronic liver disease was shown to be present in 35% of patients.<sup>12</sup>

In our study, we observed that more than one endoscopically identifiable lesion were present in 38 (38%) of patients. This observation is higher than the 10% simultaneous occurrence of multiple lesions seen in the study by Rao et al.<sup>13</sup> The ESGE guidelines published in 2015 suggest that in 16-20% of cases with UGI bleed, patients may have more than one cause identified at endoscopy.<sup>4</sup> Higher proportion of patients as having multiple lesions in our study may be due to higher occurrence of erosive mucosal disease among the lesions that were identified as compared to a previous prospective study in which the occurrence of erosive mucosal disease was in 11.6%.<sup>14</sup>

Our study shows that peptic ulcer disease is the major cause of AUGIB. Duodenal ulcer and gastric ulcer accounted for 43 (43%) of patients. This was followed by variceal bleeding which occurred in 23 (23%) patients. This observation is similar to various recently published studies.<sup>12,13</sup> Esophageal varices were also the second most common cause of UGI bleed seen in a study published in 2010 from Nepal.<sup>15</sup> Although it has been suggested that there is a decline in occurrence of duodenal ulcers in past 20 years,<sup>5</sup> in our study duodenal ulcers still account for the majority of patients with AUGIB. This may be attributed to adaptation of modern life style and unhealthy food practices.

A study has compared the clinical parameters between clinically significant and clinically insignificant UGI bleed.<sup>7</sup> In that study, all patients with variceal bleeding had clinically significant bleeding. Hemoglobin level at presentation was found to be lower in patients with clinically significant bleeding ( $P=0.0001$ ). In our study patients with variceal bleed had lower hemoglobin at presentation as compared to those with ulcer bleeding ( $P=0.0001$ ). Another study showed that higher proportions of patients with ulcer disease are likely to present with melena alone (45%) as compared to presenting with hematemesis with or without melena.<sup>5</sup> In the same study, patients with varices were more likely to present with hematemesis than melena alone. We observed a statistically significant difference in presentation of patients with varices as compared to those with ulcers. More patients with varices were likely to present with hematemesis alone ( $P=0.005$ ). This can also account for the earlier presentation to hospital of patients with variceal bleed in our study ( $P=0.005$ ).

Cirrhosis was the major cause of variceal bleed in our

study. It has been shown that around 50% of patients with cirrhosis develop acute kidney injury (AKI).<sup>16</sup> Chronic kidney disease occurs in 1-13% of patients with cirrhosis.<sup>17,18</sup> The causes of AKI in cirrhosis include hepatorenal syndrome, pre-renal azotemia, nephrotoxic drug use and acute tubular necrosis.<sup>18</sup> Lower MAP, lower level of hemoglobin and higher level of serum creatinine observed in our patients with variceal bleed can be explained by excessive blood loss causing pre renal azotemia. Prerenal azotemia has been shown to account for 69% of all AKI in cirrhotics.<sup>16,18</sup> Underlying kidney disease was also seen in more of our patients with variceal bleed in four (17%) as compared to those with ulcer bleed in one (2.3%).

In our study we could not localize the source of AUGIB by UGIE alone in two (2%) patients. This may be due to small lesions that healed spontaneously. The cause of UGI bleed was not identified in 6.4% of patients in one study.<sup>7</sup>

Our study has a few limitations. The sample size was small. It was done in a single centre and biopsies were not taken from the lesions for ascertainment of helicobacter pylori infection.

## CONCLUSIONS

Our study shows that peptic ulcer disease is the most common cause of AUGIB in our hospital. Many patients with AUGIB have more than one lesion seen during UGI endoscopy whereas few patients will also have a normal endoscopic examination. We recommend looking for other lesions during UGI endoscopy in patients with one attributable cause of AUGIB.

**Conflict of Interest: None.**

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