



## Original article

### Aetiology of Upper Gastrointestinal Bleeding in Patients Presenting at St. Dominic Hospital, Akwatia, Ghana

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#### ABSTRACT

**Background:** Upper gastrointestinal bleeding (UGIB) is one of the commonest medical emergencies worldwide associated with significant morbidity and mortality and high medical care cost. Worldwide morbidity and mortality associated with UGIB ranges from 6-13%. There are scanty data available about the causes of UGIB from peripheral hospitals in Ghana. **Aim and Objectives:** The study was to determine the common causes of upper GI bleeding in Saint Dominic Hospital, Akwatia a district hospital in Ghana. **Materials and Methods:** A hospital-based cross-sectional study conducted at endoscopy unit of St. Dominic Hospital. Patients with symptoms of UGIB referred for Gastroscopy were selected and endoscopic findings recorded. **Results:** Out of the 400 patients who underwent gastroscopy during the study period, 107 (26.8%) had upper GI bleeding. 65 (60.8%) of them were males and the median age was 54 years. Approximately 50% of the patients (57, 53.3%) had only haematemesis. The commonest cause of bleeding was peptic ulcer disease, 40 (37.4%). **Conclusion:** Peptic ulcer disease was the common cause of UGIB at the St. Dominic Hospital, Akwatia, Ghana.

**KEYWORDS:** Aetiology, upper gastrointestinal bleeding, Gastroscopy, Ghana.

#### INTRODUCTION

Upper gastrointestinal bleeding (UGIB) is one of the most common medical emergencies worldwide associated with not only significant morbidity and mortality but also higher medical care cost. [1] Worldwide morbidity and mortality associated with UGIB ranges from 6-13%. [2] UGIB is about four times more common than lower gastrointestinal tract bleeding. [3] The incidence of UGIB increases with age and is more common in males than in females. [4,5] Aetiology of UGIB can be classified as variceal or non-variceal. [6] Causes of non-variceal bleeding include peptic ulcer disease (PUD), oesophagitis, Mallory-Weiss tear, vascular anomalies, gastric and oesophageal malignancy etc. [7]

Portal hypertension leads to the formation of splenomegaly and the development of portosystemic collaterals at various sites: the distal oesophagus and gastric cardia, the anal

canal, the falciform ligament, and varices in the abdominal wall and retroperitoneum. Gastroesophageal varices (GOV) are the most relevant portosystemic collaterals because their rupture results in variceal bleeding, the most common lethal complication of cirrhosis and portal hypertension. [8]

Peptic ulcer bleeding has been reported to be the most common cause of UGIB worldwide responsible for about 50% of all cases. [9] In some sub-Saharan Africa countries, studies indicate oesophageal varices as being the most common cause [10] Previous study conducted at the endoscopic unit of Korle-Bu Teaching Hospital (KBTH) in Ghana between 1981 -1983 identified duodenal ulcer as the commonest cause of UGIB contributing 31.4%, with gastric ulcer and GOV causing 8.1% and 4.7% respectively. [11] Another study conducted in the same hospital between June

2007 and August 2010 however saw more GOVs (22%) than duodenal ulcers (17.0%) and gastric ulcer (13.2%). [12]

This pattern was also demonstrated in a review of the clinical epidemiology of acute UGIB in KBTH where there was a significant prevalence of bleeding GOVs amounting to 30%, almost equal to that for duodenal ulcer and gastric ulcer cases (39.1%).[13]

Identification of the cause of bleeding is important in the effective management of the patients. Upper GI endoscopy is the diagnostic modality of choice for acute upper GI bleeding better than angiography and computed tomography.[14]There are scanty data available about the causes of UGIB from peripheral hospitals in Ghana. The aim of this study was to determine the common causes of upper GI bleeding in Saint Dominic Hospital, Akwatia, a district hospital in Ghana, with a view to bridging the existing knowledge gap on this subject and as a basis for its effective management.

## MATERIALS AND METHODS

### Ethical Approval

A formal approval of this study was obtained from the Ethical and Protocol Committee of the University of Ghana School of Medicine and Dentistry. This study was conducted in accordance with the Helsinki Declaration.

### Participants recruitment

The study used a cross-sectional design to consecutively recruit medical in-patients and clinic out-patients referred to the Endoscopy Unit of the St. Dominic Hospital (SDH) with UGI symptoms including symptoms of UGIB for endoscopy, from 14<sup>th</sup> January, 2018 to 14<sup>th</sup> February, 2019.

### Study site

SDH was founded in 1960 and has 339 beds and is the district hospital of Denkyembour district, Akwatia in Eastern region of Ghana. It is the main referral centre for other surrounding district hospitals. It offers a breadth of medical and surgical services including gastroenterology and endoscopy. The Endoscopy Unit is manned by a medical gastroenterologist with the support of trained nurses and auxiliary staff. It uses Olympus and video endoscopy equipment for endoscopic procedures. It runs endoscopy sessions twice per week and offers both upper and lower GI endoscopy services. Each session performs approximately 5 upper endoscopies and 1 lower GI endoscopy. Procedures

performed are both diagnostic and interventional. The latter include variceal band ligation

### Procedures

Study participant recruitment and data collection was performed at the Endoscopy Unit, SDH, between January 2018 and February 2019. Medical in-patients and clinic out-patients with gastrointestinal symptoms referred to the Endoscopy Unit, SDH were enrolled into the study. Study participants were consecutively recruited each week from endoscopy unit. All patients were given explanatory statements of the project and consented prior to endoscopy.

Non- consenting patients were excluded from the analysis. Demographic data of patients taken included age, sex, occupation etc. Indications for the UGIE were also recorded. UGIE was performed using the Olympus CV-160 videoscope. Study participants were given the option of sedation with (intravenous midazolam 2mg) and/ or 10% lidocaine (xylocaine) throat spray. *H. pylori* infection was determined by the rapid-urease-*campylobacter* like-organism (CLO) test on gastric antral and body biopsies at UGIE (specificity 98%, sensitivity >93%; Cambridge Life Sciences Ltd, Cambridge, UK. Endoscopic findings per each participant were recorded.

### Data Analysis

Statistical analysis was performed using Stata 15<sup>®</sup> statistical software package. Results were expressed as median and interquartile range for continuous variables and proportions for nominal variables.

## RESULTS

### Demographic characteristics

A total of 400 patients had upper GI endoscopy during the study, of those 107 (26.8%) had upper GI bleeding. 65 (60.8%) patients were males while 42 (39.2%) were females, giving a male to female ratio of 1.5:1. (Table 1) Their ages ranged from age 4 to 88 years, with a median age of 54. The modal age group was 50–59 years (19.6%). Most of the patients were below 60 years of age as shown in Table 2. A little over half of the patients (57, 53.3%) presented with only haematemesis and about a third 36(33.6%) with Melaena stools. 13 (14.1%) of the cases presented with both haematemesis and melaena stools. Table 1.

**Table 1: Socio-demographic and clinical Presentations of Patients**

Socio-demographic and clinical Presentations	Frequency (%)
<b>Sex (n=107)</b>	
Male	65 (60.8)
Female	42 (39.2)
<b>Age (yrs.)</b>	
Overall	* 54 (39,68)
Males	*57 (44,70)
Females	*50 (28,65)
<b>Clinical presentation</b>	

Haematemesis	57(53.3)
Melaena stools	36 (33.6)
Haematemesis+ Malaena stools	13 (14.1)

\*Median (interquartile range)

### Endoscopic diagnosis

The most common cause of bleeding was PUD as shown in Table 2.; gastric ulcers 18 (16.8%) and duodenal ulcers 21 (19.6%), giving a total of 40 (37.4%) cases. This was followed by gastro-duodenitis, ie, gastritis 32 (29.9%) and duodenitis 6 (5.6%), given a total of 38 (35.5%). Esophageal

varices were found in 13 (12.2%) cases whereas carcinoma of the stomach occurred in 5 (4.7%). Oesophageal cancer accounted for 2 (1.9%) of the participants while Mallory-Weiss tear was seen in only 1 (0.9%) patient. The cause of bleeding was not found in 4 (3.7%) participants. Table 3.

**Table 2: Age and sex distribution of patients**

Age group (years)	Sex		Total (%)
	Male (%)	Female (%)	
< 10	1(0.9)	0(0.0)	1 (0.9)
10-19	1(0.9)	3(2.8)	4 (3.7)
20-29	4(3.8)	9(8.4)	13 (12.2)
30-39	7(6.5)	2(1.9)	9 (8.4)
40-49	12(11.3)	5(4.7)	17 (15.9)
50-59	12(11.3)	9(8.3)	21 (19.6)
60-69	10(9.3)	8(7.5)	18 (16.8)
70-79	13(12.2)	3(2.8)	16 (15.0)
80-89	5(4.7)	3(2.8)	8 (7.5)
	65(60.8)	42(39.2)	107 (100)

**Table 3: Endoscopic findings in patients with upper gastrointestinal bleeding**

FINDINGS	Frequency (%)
Normal	4 (3.7)
Esophageal varices	13 (12.2)
Mallory-Weiss tear	1 (0.9)
<b>Gastro-duodenitis</b>	<b>38 (35.5)</b>
Gastritis	32 (29.9)
Duodenitis	6 (5.6)
<b>Peptic Ulcer disease</b>	<b>40 (37.4)</b>
Gastric ulcer	18 (16.8)
Duodenal ulcer	21 (19.6)
<b>Cancer</b>	<b>11(10.3)</b>
Gastric cancer	5 (4.7)
Esophageal cancer	4 (3.7)
Oesophageal ulcer	2 (1.9)
Total	107 (100)

### DISCUSSION

Upper gastrointestinal bleeding (UGIB) is one of the most common medical emergencies worldwide associated with significant morbidity and mortality and higher medical care cost. [1] Identification of the cause of bleeding is therefore essential in management and prognostication of the patients. This study aimed to document the causes of UGIB in

patients presenting at St. Dominic hospital, Akwatia, Ghana with clinical features of UGIB. The first of its kind from a district hospital in Ghana. PUD was the commonest cause of UGIB in our participants, this may be due to the high prevalence of H. pylori infection in Ghana and the fact that this study was conducted in a farming community where NSAIDS use and misuse are common and thus contributing

to this finding. This pattern is similar to previous studies conducted in the biggest teaching hospital in Ghana, Korle-Bu Teaching Hospital, with PUD being the commonest cause of UGIB.[11,12,13]

This is also comparable to reports from Europe, United States and Kenya[15-22] but differ from other studies conducted from northern part of Nigeria, [23-24] Egypt, [26] Northern Uganda [27]and Tanzania [28] where esophageal varices were reported as the commonest cause of UGIB. The high prevalence of chronic hepatitis B and Schistosomiasis in Northern Nigeria and other parts of North African countries leading to chronic liver disease may account for the difference in the etiology of UGIB among these countries.[23,24,26,27,28] Chronic liver disease reportedly is the most common cause of portal hypertension and this in turn predisposes to oesophageal varices.

Gastro-duodenitis mainly gastritis was the second common cause of UGIB in this study occurring in 35.5%. Just as for bleeding PUD, high prevalence of *H. pylori* and NSAIDs intake have also been implicated in Gastro-duodenitis. This compares well with other studies conducted in Northeastern Nigeria, Europe, South America, and India, [15,17,24,29] but differ with reports from other study from Nigeria, [30] where gastritis ranked first and PUD second.

The third most common cause of bleeding is esophageal varices accounting for 12.2% of cases. This is similar to studies conducted in Nigeria, [30] where varices ranked third in their review, but contrast sharply with reports from northern part of Nigeria, Egypt, and Tanzania, where esophageal varices were their most common finding. [23,24,26,27,28]Previous study done at KBTH in this country identified bleeding oesophageal varices as the second commonest cause of UGIB. Oesophageal varices develop as a result of portal hypertension, [31] and portal hypertension is one of the most significant complications of chronic liver diseases.

Other causes of UGIB in this study include carcinoma of the stomach and oesophagus, esophageal ulcers and Mallory-Weiss tear. No cause of bleeding was found in 3.7% of patients in this study, which means that the cause of bleeding was detected in 96.3% of the cases. This finding is similar to previous studies from other countries [17,21] and agrees with the report that upper GI endoscopy can localize the cause of bleeding in 85-90% of patients.[32] Mucosal lesions are well known to heal quickly and so the time interval between the bleeding episode and endoscopy influences endoscopic diagnosis. [24] Majority of patients in this study had endoscopy 24 hours after bleeding. This may account for the normal cases in this study. This explains the need for well-trained endoscopy teams and facilities for performing emergency endoscopy.

Majority of the patient in this study presented with haematemesis, this is comparable with other studies[33,34] but differ from others that reported both haematemesis and melaena stools [35,36] as the common presentation. Other studies also reported melaena stools as the most common presentation.[17,37] These differences in clinical presentation may be due to the difference in the pattern and severity of the disease from one study to another.

The median age of our participants was 54.0, which is lower than one from studies from the western world [17,38] but

slightly higher than studies from Nigeria [24] and Tanzania. [29] Another study from Nigeria [39] reported similar median age group comparable to this study. The differences in the age group may reflect the younger age population in Africa including Ghana or the predominant causes of UGIB in the studied population.

Since in African bleeding oesophageal varices from chronic liver disease is one of the predominant cause of UGIB and CLD normally occur in the younger age group in African due to high prevalence of chronic hepatitis B infection and schistosomiasis. This study showed male predominance with UGIB compared to females as has been previously reported.[5,24,28] The reason for male predominance in this study is not clear.

## CONCLUSION

From this study, PUD was the commonest cause of UGIB in the St. Dominic Hospital, Akwatia, Ghana. The provision of therapeutic endoscopy facilities and drugs for upper GI bleeding should be tailored toward the common causes and made widely available.

## Acknowledgments

Adwoa Agyei-Nkansah would like to acknowledge Dr. Rafiq Okine, for his assistance during analysis of project data. I am grateful to Serthina, Georgina and Bertha, endoscopy nurses of Saint Dominic Endoscopy Unit, for their assistance during patient recruitment. Special appreciation also goes to Dr. med. Hans-Georg Jester and Dr. med. Sergiou for their immense contribution in the setting up of the SDH endoscopy unit and their continuous support in its operation.

**Competing interest:** The authors declare that they have no competing interests.

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