

Causes of Upper Gastrointestinal Bleeding on Endoscopy in Tertiary Care Hospital

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ABSTRACT

Background: There are multiple causes of upper gastrointestinal bleeding including portal hypertension, peptic ulcers, Mallory-Weiss tear, vascular anomalies, gastric neoplasms, erosive gastritis and erosive esophagitis. **Objectives:** To study the common causes of upper gastrointestinal bleeding on endoscopy in patients presenting in Tertiary Care Hospital. **Study Design:** Descriptive, cross-sectional study. **Settings:** Department of Medicine, Allied Hospital, Faisalabad Pakistan. **Duration:** 4th April 2018 to 3rd October 2018. **Methodology:** Patients with hematemesis and/ or melena of any age or gender, with single or multiple episodes of upper gastrointestinal bleeding were included. Enrolled patients were advised to stay NPO for 6 hours and then were brought to endoscopy room of Allied Hospital, Faisalabad. After sterilization endoscope was introduced via oral cavity of the patient and the cause of bleed was diagnosed. All the data was entered in the study proforma. **Results:** Total 352 patients were enrolled and their mean age was 43.76±13.93 years. Majority of the patients i.e. 204 (57.95%) were between 20 to 45 years of age. Out of 352 patients, 239 (67.90%) were males and 113 (32.10%) were females. The common causes of upper gastrointestinal bleeding were found to be variceal bleeding in 183 (51.99%), peptic ulcer in 84 (23.86%), Mallory-Weiss tear in 41 (11.65%), vascular anomalies in 11 (3.13%) and gastro-duodenal erosions in 33 (9.38%) patients. **Conclusion:** This study concluded that variceal cause is the most common cause of upper gastrointestinal bleeding followed by peptic ulcer and Mallory Weiss tear.

Keywords: Upper gastrointestinal bleeding, Variceal bleeding, Peptic ulcer.

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INTRODUCTION

Upper gastrointestinal bleeding is one of the most common causes of hospitalization in medical emergencies worldwide and has a high mortality and morbidity rate. Upper gastrointestinal bleeding refers to gastrointestinal blood loss whose origin is proximal to the ligament of Treitz.^{1,2}

According to estimates from U.S. studies, nonvariceal upper gastrointestinal bleeding results in 400,000 hospital admissions per year, costing more than \$2 billion annually. It has been associated with increasing nonsteroidal anti-inflammatory drug (NSAID) use and the high prevalence (64 percent) of *Helicobacter pylori* infection in patients with peptic ulcer bleeding.³ Upper gastrointestinal bleeding is twice as common in men as in women and increases in prevalence with age.⁴ Despite advances in therapy, the in-hospital mortality rate remains high (13 percent) and rebleeding is common (15 percent).^{5,6}

Commonly it presents with hematemesis (40% to 50%) and melena (70% to 80%) while hematochezia (which mostly has colonic origin) can present with fresh blood loss of up to 1000 ml which accounts for up to 10% of cases.⁷ Although upper gastrointestinal bleeding is self-limiting in majority of the cases yet every patient with upper gastrointestinal bleeding must be properly evaluated and undergo endoscopy for diagnostic

purposes as well as therapeutic endoscopy if needed. There are multiple causes of upper gastrointestinal bleeding including portal hypertension, peptic ulcers, Mallory-Weiss tear, vascular anomalies, gastric neoplasms, erosive gastritis and erosive esophagitis. Peptic ulcers remain one of the leading cause of upper gastrointestinal bleeding in West accounting up to 40% while portal hypertension being second leading cause with 10-20% incidence.⁸

While according to a study conducted in Egypt, variceal causes of bleeding were the most common representing 70.1% followed by non-variceal causes 26.1% and obscure causes 3.8%.⁹ According to various other studies the 1 year rate of variceal bleeding is 12%. Frequently Upper GI Bleed is caused by gastro-duodenal ulcers (gastric ulcers in 24.4% and duodenal ulcers 20.6%, portal gastropathy in 14.4%, Mallory Weiss tear in 11.3% and gastro-duodenal erosions in 10.6%.¹ But, there has been a change in trend due to excessive use of proton pump inhibitors with portal hypertension emerging as a major cause of upper gastrointestinal bleeding.^{10,11}

Endoscopy is the preferred diagnostic tool in all the cases of upper gastrointestinal bleeding. The initial assessment includes measurement of the blood pressure and heart rate, as well as blood tests to determine hemoglobin concentration. In significant bleeding, fluid replacement is often required, as well as blood transfusion, before the source of bleeding can be

determined by endoscopy of the upper digestive tract with an esophagogastroduodenoscopy. Depending on the source, endoscopic therapy can be applied to reduce rebleeding risk. Specific medical treatments (such as proton pump inhibitors for peptic ulcer disease) or procedures (such as TIPS for variceal hemorrhage) may be used. Recurrent or refractory bleeding may lead to need for surgery, although this has become uncommon as a result of improved endoscopic and medical treatment.¹² As there is a discrepancy among studies and literature so the rationale of conducting this study is to find out the most common causes of upper gastrointestinal bleeding so as to make a better use of hospital resources and take further preventive measures to reduce morbidity and mortality of these patients.

METHODOLOGY

Study Design: Descriptive, Cross-sectional study.

Settings: Department of Medicine, Allied Hospital, Faisalabad Pakistan.

Duration: 4th April 2018 to 3rd October 2018.

Sample Technique: Non-probability, consecutive sampling.

Sample Size: 352 patients.

Inclusion Criteria: Patients presenting with hematemesis and/or melena of any age or gender, having single or multiple episodes of GI bleed who had undergone endoscopy for these complaints were included.

Exclusion Criteria: Patients presenting with hematemesis and/or melena but cannot undergo endoscopy due to Shock, Acute ischemic event, Peritonitis, Acute perforation, Fulminant colitis, Trauma to head and neck, Un-cooperative patients and Terminally ill were excluded.

Data Collection Procedure: After approval by ethical review committee and after taking informed consent from all the participants of study, patients who had undergone upper GI endoscopy due to upper gastro-intestinal bleeding were enrolled from emergency in the study who fulfilled the inclusion criteria. Endoscopy was performed by the senior gastroenterologists having minimum experience more than 5 years. Endoscopy was performed on fixed days during the study period of six months. Enrolled patients were advised to stay NPO for 6 hours and then were brought to endoscopy room of Allied Hospital, Faisalabad. After sterilization endoscope was introduced via oral cavity of the patient and the cause of bleed was diagnosed. All the data was entered in the proforma by the primary investigator immediately after endoscopy and then enlisted according to frequency of all causes.

Data Analysis Procedure: The data was analyzed by computer software SPSS version 21.0. Mean and standard deviation for age were calculated. The qualitative data like gender and peptic ulcer, varices, Mallory Weiss tear, vascular anomalies and gastro-duodenal erosions were labeled as frequency and percentage. Stratification was done to control effect modifiers. Post stratification chi-square test was applied to see the effect of these on outcome variable. P value ≤ 0.05 was considered as significant.

RESULTS

Mean age was 43.76 ± 13.93 years. Majority of the patients i.e. 204 (57.95%) were between 20 to 45 years of age. Out of 352 patients, 239 (67.90%) were males and 113 (32.10%) were females with male to female ratio of 2.1:1 (Table 1).

Table 1: Distribution of patients according to age and gender (n=352)

Variables	No. of Patients	%age
Age (groups)		
20-45	204	57.95
46-70	148	42.05
Total	352	100.0
Gender		
Males	239	67.90
Females	113	32.10
Total	352	100.0

Mean \pm SD = 43.76 ± 13.93 years

The common causes of upper gastrointestinal bleeding in my study were found to be variceal bleeding in 183 (51.99%), peptic ulcer in 84 (23.86%), mallory-weiss tear in 41 (11.65%), vascular anomalies in 11 (3.13%) and gastro-duodenal erosions in 33 (9.38%) patients (Fig 1).

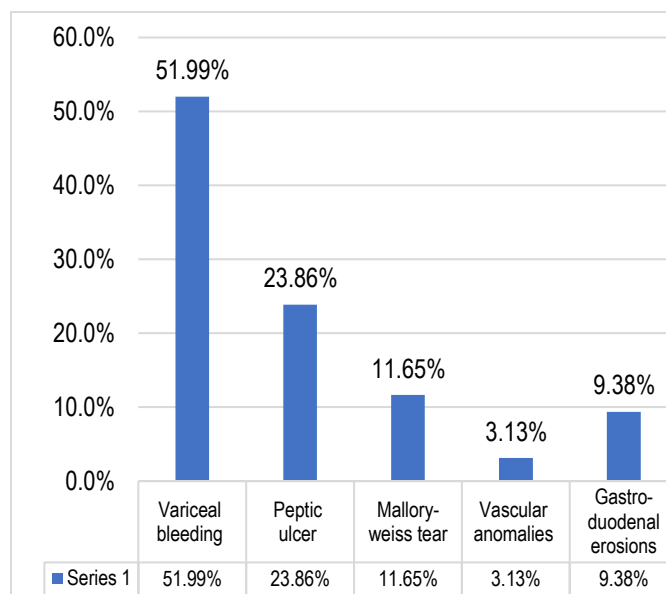


Figure 1: Common causes of upper gastrointestinal bleeding (n=352)

According to the stratification with respect to age, peptic ulcer and vascular anomalies were significantly associated with age >45 years, while gastro-duodenal erosions were significantly linked to the age of <45 years p-values were quite significant. Table 2

Table 2: Stratification of Presentation with respect to age groups (n=352)

Causes of upper gastrointestinal bleeding		20-45 years (n=204)	46-70 years (n=148)	P-value
Variceal bleeding	Yes	115	68	0.053
	No	89	80	
Peptic ulcer	Yes	34	50	0.0001
	No	170	98	
Mallory-weiss tear	Yes	25	16	0.677
	No	179	132	
Vascular anomalies	Yes	02	09	0.007
	No	202	139	
Gastro-duodenal erosions	Yes	28	05	0.001
	No	176	143	

According to the stratification with respect to the gender, variceal bleeding, ulcer and vascular anomalies were significantly associated with male gender (P=0.002 and 0.007) respectively. However, gastro-deudenal erosions were significantly associated with females (p=0.004). Table.3

Table 3: Stratification of Presentation with respect to gender (n=352)

Causes of upper gastrointestinal bleeding		Male (n=239)	Female (n=113)	P-value
Variceal bleeding	Yes	138	45	0.002
	No	101	68	
Peptic ulcer	Yes	47	37	0.007
	No	192	76	
Mallory-weiss tear	Yes	29	12	0.679
	No	210	101	
Vascular anomalies	Yes	10	01	0.097
	No	229	112	
Gastro-duodenal erosions	Yes	15	18	0.004
	No	224	95	

DISCUSSION

Upper gastrointestinal (GI) bleeding refers to blood loss within the intraluminal GI tract proximal to the ligament of Treitz.¹³ Upper GI bleeding is a medical emergency that remains a common cause of morbidity and mortality worldwide.^{14,15} The incidence of upper GI bleeding increases with age and is twice as common in males as in females.^{16,17} Bleeding from the upper GI tract is approximately four times more common as bleeding from the lower GI tract.¹⁸ The etiology of upper GI bleeding varies significantly with geographic regions depending on the demographics and socioeconomic characteristics.¹⁹ Causes of upper GI bleeding could be variceal such as esophageal and gastric varices and nonvariceal such as peptic ulcer disease (PUD), erosive gastroduodenitis, reflux esophagitis, tumors and vascular ectasia. Identification of the cause of bleeding is

important in effective management of the patient. Endoscopy of the upper GI tract is indeed the diagnostic modality of choice for acute upper GI bleeding with more sophisticated investigation such as angiography and computed tomography being rarely indicated where endoscopy is inconclusive.²⁰

Previous studies in the northern part of Nigeria reported esophageal varices as the most common cause of upper GI bleeding,^{21,22} while studies from Ekiti (Nigeria)²³ and Ilorin (Nigeria)²⁴ reported gastric erosions and multiple sources of bleeding, respectively, as their most common endoscopic findings. In developed countries, studies reported peptic ulcer as the most common cause of upper GI bleeding.²⁵⁻²⁷ Peptic ulcers remain one of the leading cause of upper gastrointestinal bleeding in West accounting up to 40% while portal hypertension being second leading cause with 10-20% incidence.⁸ While according to a study conducted in Egypt variceal causes of bleeding were the most common representing 70.1% followed by non-variceal causes 26.1% and obscure causes 3.8%.⁹ According to various other studies the 1 year rate of variceal bleeding is 12%. Frequently Upper GI bleed is caused by gastro-duodenal ulcers (gastric ulcers in 24.4% and duodenal ulcers 20.6%, portal gastropathy in 14.4%, Mallory Weiss tear in 11.3% and gastro-duodenal erosions in 10.6%.¹

The common causes of upper gastrointestinal bleeding in my study were found to be variceal bleeding in 183 (51.99%), peptic ulcer in 84 (23.86%), Mallory-Weiss tear in 41 (11.65%), vascular anomalies in 11 (3.13%) and gastro-duodenal erosions in 33 (9.38%) patients. In a study²⁸ on 1084 patients, the most common cause of upper GI bleeding was peptic ulcer disease (PUD), found in 102 (32.8%) cases, followed by gastritis in 88 (28.3%) cases. Esophageal varices accounted for 47 (15.1%) cases whereas duodenitis was found in 16 (5.1%) cases. Carcinoma of the stomach occurred in 13 (4.2%) cases while 12 (3.9%) patients had esophagitis. Gastroesophageal reflux disease accounted for 11 (3.5%) cases whereas esophageal ulcers occurred in 3 (1.0%) cases. Carcinoma of the esophagus and esophageal candidiasis each constituted 2 (0.6%) cases. The cause of bleeding was not found in 15 (4.8%) patients.²⁸

In a local study,²⁹ there were 174 males (71.3%) and 70 females (28.7%). The age of the patients ranged from 15 years to 75 years, mean age was 52.23 years (SD = 14.78). The most common cause of upper GI bleed was varices in 176 (72.1%) patients; followed by gastric ulcer in 24 (9.8%) patients. Other causes in order of decreasing frequency included gastritis 16 (6.55%), duodenal ulcer 14(5.73%), esophagitis 6 (2.45%), Mallory Weiss tear 2 (0.81%) and miscellaneous 6 (2.45%). In a study conducted by Barkun et al in most settings, the vast majority of acute episodes of upper gastrointestinal bleeding (80 to 90%) have non-variceal causes, with peptic ulcer accounting for the majority of lesions.³⁰ In another study conducted by Laine, varices accounts for 10 to 30 percent of all cases of bleeding from the upper gastrointestinal tract.³¹

In another local study,³² out of 100 patients selected, 51 (51%) were males and 49 (49%) females. Majority of patients were between 30-60 years with mean age of 43.97 years \pm SD 7.8.

Variceal bleed was the most common cause n=54 (54%) followed by peptic ulcer disease (PUD) n=20 (20%). Esophagitis was noted in ten (10%) patients, gastric erosions in nine (9%), tumors of upper gastrointestinal tract in six (6%) and Mallory-Weiss tear was responsible in only one (1%) cases.³²

In another study,³³ the records of 106 patients who underwent endoscopy for upper GI bleeding over a period of 6 years (2003-2008) were retrospectively analyzed. A total of 106 patients were studied. Seventy-four (69.8%) were males while 32 (30.2%) were females. Their ages ranged from 14 to 75 years with a mean of 41.2 (± 15.1 SD) years. Oesophageal varices were the most frequent cause of bleeding (45.3%) followed by erosive mucosal disease (23.7%) and peptic ulcer disease (16.9%). Gastric cancer and Mallory-Weiss syndrome were rare with each accounting for 1.9% of the cases. In 11 (10.4%) patients no source of bleeding could be identified.³³

CONCLUSION

This study concluded that the variceal cause is the most common cause of upper gastrointestinal bleeding followed by peptic ulcer and Mallory-Weiss tear. So, we recommend that clinicians should take great care of the upper gastrointestinal bleeding patients and take early management for saving these patients life.

LIMITATIONS

As Endoscopic diagnosis is operator dependent, this may be considered as a limitation of this study.

SUGGESTIONS / RECOMMENDATIONS

As variceal bleeding is the most common cause of Upper GI Bleed in majority of studies, we recommend health authorities to implement Upper GI endoscopy in all cirrhotic patients as this is a diagnostic and therapeutic procedure that may reduced mortality and morbidity.

CONFLICT OF INTEREST / DISCLOSURE

There is no conflict of interest in this study.

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Dr. Hafiz Mughees Ather Associate Professor, Gastroenterology Faisalabad Medical University, Faisalabad Pakistan	Comparison of Results with Other Studies, Final Editing