Open Access
Upper GI Bleed

Original Article
Pak Armed Forces Med J 2020; 70 (1): 112-17

ENDOSCOPIC FINDINGS IN PATIENTS PRESENTING WITH UPPER GI BLEED IN A TERTIARY CARE FACILITY

Jehangir Ahmed, Laima Alam, Khawar Shabbir, Mehdi Naqvi, Ehtesham Haider, Asif Farooque

Pak Emirates Military Hospital/National University of Medical Sciences (NUMS) Rawalpindi Pakistan

ABSTRACT

Objective: To determine the frequency of different causes of upper gastrointestinal bleed in patients presenting to emergency department.

Study Design: Prospective observational study.

Place and Duration of Study: Department of Gastroenterology, Pak Emirates Military Hospital Rawalpindi, from Jan 2017 to Dec 2017.

Methodology: Patients with age 14-80 years presenting to emergency department with upper gastrointestinal bleed either in form of hematemesis, melena or hematochezia were offered endoscopic study after resuscitation and the findings noted and segregated according to age, gender and etiology.

Results: A total of 367 patients were enrolled, of which 77.1% were males and 22.9% females with a mean age of 54.7 ± 16. The most common endoscopic finding was esophageal varices (36.5%), followed by duodenal ulcers (7.3%), non-specific findings (5.2%), reflux esophagitis (4.1%), portal hypertensive gastropathy with gastric antral-vascular ectasia (3.2%), fundal varices (2.7%) and gastric ulcers (2.4%). Negative endoscopy with normal findings accounted to about 22.6%, making it the second most common finding in the study.

Conclusion: Portal hypertension secondary to decompensated cirrhosis by hepatitis C is the most common cause of upper gastrointestinal bleed followed by duodenal ulcers, non-specific findings, reflux esophagitis and gastric ulcers.

Keywords: Endoscopy, Peptic ulcer, Portal hypertension.

INTRODUCTION

Upper gastrointestinal bleed (UGIB) is a common and clinically significant medical emergency that requires prompt resuscitation and endoscopic intervention and may result in substantial mortality and morbidity[1]. UGIB is defined as bleeding from gut proximal to the ligament of Treitz that may manifest as hematemesis, melena or hematochezia[2]. The incidence of upper GI bleed is between 50 to 150 patients per 100,000 population annually that accounts to about 1% of all emergency department admissions[3,4]. Upper GI bleed is four times more common than lower GI bleed and the mortality rate is as high as 6-10%[5].

Upper gastrointestinal endoscopic studies are gold standard for the diagnosis, evaluation and management of such catastrophic events, resulting in a total cost of one billion dollars annually in the United States (US)[6,7]. Endoscopic therapy has been shown to decrease mortality and morbidity in patients presenting with gastrointestinal bleeding. Endoscopy localizes bleeding in majority of cases and offers a variety of treatment modalities, including clips, argon plasma coagulation, injection of epinephrine or sclerosants, electrocoagulation, band ligation, and laser therapy. Ideal efficacy is achieved when a combination of endoscopic methods are used instead of a solitary treatment. Current guidelines on upper GI bleeding suggest utilization of endoscopic clips or thermal therapy for high risk lesions, for example, currently bleeding ulcers. There are many patients who present in ER with UGIB routinely in Pakistan. Apart from major cities, even basic endoscopic facilities are non existent there by causing hindrance in timely and optimal management of UGIB.

Correspondence: Dr Jehangir Ahmed, Dept of Gastroenterology, PEMH, Rawalpindi Pakistan (*Email: jehangirahmed277@gmail.com)*
Received: 13 Jun 2018; revised received: 14 Nov 2018; accepted: 27 Nov 2018

The commonest cause of upper GI bleed as documented from developed countries is secondary to peptic ulcers, followed by varices, mallory weiss tears, reflux esophagitis and erosive gastropathy[8]. Varices are dilated submucosal veins that develop in patients with underlying portal hypertension. Esophageal varices are much more common than gastric varices. Variceal bleed is by far the most common etiology of UGIB in developing countries. Ulcer bleeds are mild in majority of the cases and don't usually require endoscopic management. On the contrary variceal bleed is comparatively more severe and require timely endoscopic intervention for hemorrhage control. Westernization of lifestyle, better sanitation, vaccination programs, increasing life expectancy as a result of increased utility of NSAIDs for degenerative joint diseases and prophylaxis for cardiovascular and central nervous system diseases have changed the trends for developing and underdeveloped countries[9,10].

Only a few local studies have been published despite the importance of epidemiological studies regarding this prevalent medical emergency. Considering the discrepancy in the data and the huge burden of DCLD in Pakistan owing to a high prevalence of Hepatitis B and C, we decided to conduct this study with the principal objective of determining the relative frequencies of various causes of UGIB and segregation in relation to age and sex. This would also help to sensitize the treating physicians regarding the most prevalent causes of UGIB in our setup.

METHODOLOGY

This prospective observational study was conducted at Gastroenterology Department of Pak Emirates Military Hospital Rawalpindi from July 1st 2017 to December 31st 2017. Non probability consecutive sampling technique was used to enroll the patients. The sample size was calculated using Open EPI calculator with the statistical assumptions of 5% alpha error and 95% confidence interval taking frequency of commonest cause i.e variceal bleed to be 72.1% and comes out to be at least 215 patients for this study.

Patients of age 14-80 years presenting to the emergency department with hematemesis, melena or hematochezia were offered upper gastrointestinal endoscopy after initial resuscitation and obtaining written informed consent. Patients in shock, previous history of gastrointestinal carcinoma or surgery, those with a known lower gastrointestinal cause for melena or hematochezia and those not willing for the procedure were excluded. In case where patient was admitted with history of multiple admissions due to upper GI bleed, the first endoscopic study was considered index study. In those cases where the first endoscopic finding didn't reveal the source of bleeding or was incomplete or abandoned and subsequent endoscopies were required, the endoscopic study with definite source of bleed was considered index examination.

A detailed history of the enrolled patients including gender, age, previous co-morbids, drugs and surgical history, previous endoscopic studies and hospital admissions was taken. The severity of reflux esophagitis was assessed using Los Angeles classification. Superficial mucosal defects of <5mm in diameter with flat edges that could be red, yellow or white were termed as erosions. Mucosal breaks of >5mm in diameter were termed as ulcers and were classified according to Forrest classification. Gastropathy and doudenopathy were used to define hyperemia or erythema of gastric and duodenal mucosa respectively. Hiatal hernia was classified as small when the size was less than 10 cm and large when greater than 10cm. Varices were defined as enlarged submucosal collateral vessels secondary to portal hypertension and endoscopic signs of portal hypertensive gastropathy as proposed at the Baveno Consensus Conference[11-15].

Table-I: Demographics of the patients.

Variable	Frequency n(%) (n=367)
Males	283 (77.1)
Females	82 (22.9)
Mean age (years ± SD)	54.7 ± 16

SPSS version 21.0 was used to analyze data. Mean and standard deviation was calculated for all quantitative variables like age etc. Frequency and percentage was calculated for all qualitative variables like gender and the various causes of UGIB etc.

RESULTS

A total of 367 patients with presenting complaint as UGIB, fulfilling the inclusion criteria were enrolled over a period of 6 months. Of these, 77.1% were males and 22.9% females with a mean age of 54.7 ± 16 (table-I).

Table-II: Frequency of endoscopic findings in patients with upper gastrointestinal bleed.

Findings	Frequency n(%)	Intervention required
Normal	83 (22.6%)	
Hiatal Hernia	6 (1.6)	
Reflux esophagitis	15 (4.1)	Adrenaline spray 3 (20%, n=15)
LA-A	2 (0.5)	
LA-B	3 (0.8)	
LA-C	3 (0.8)	
LA-D	7 (1.9)	
Esophageal ulcer	4 (1)	
Gastroesophageal junction ulcer	6 (1.6)	Adrenaline injection and Electrocautry 3 (50%, n=6)
Mallory Weiss tear	5 (1.3)	Adrenaline injection 2 (40%, n=5)
Cameron lesion	4 (1)	Adrenaline injection and Electrocautry 1 (25%, n=4)
Esophageal candidiasis	2 (0.5)	
Esophageal varices	134 (36.5)	EVBL 130 (97%, n=134)
Esophageal + Fundal varices	7 (1.9)	EVBL and Sclerotherapy 100%
Fundal varices	10 (2.7)	Sclerotherapy 100%
Portal Hypertensive Gastropathy	12 (3.2)	Argon Plasma Coagulation 2 (16.7%, n=12)
Gastric ulcer	9 (2.4)	Adrenaline injection and Electrocautry 4 (44%, n=9)
Forest IIb	4 (1)	
Forest IIc	1 (0.3)	
Forest III	4 (1)	
Gastric growth	8 (2.1)	
Gastrodoudenal ulcer	4 (1)	
Forest IIc	2 (0.5)	
Forest III	2 (0.5)	
Duodenal ulcer	27 (7.3)	Adrenaline injection and Electrocautry 13 (48%, n=27)
Forest Ib	5 (1.3)	
Forest IIa	6 (1.6)	
Forest IIb	2 (0.5)	
Forest IIc	1 (0.3)	
Forest III	13 (3.5)	
Duodenal growth	5 (1.4)	
Non-specific	19 (5.2)	
Gastric erosions	4 (1)	
Gastropathy	9 (2.4)	
Gastrodoudenopathy	4 (1)	
Duodenal erosions	1 (0.3)	
Others	7 (1.9)	Electrocautry
Gastric angiodysplasia	2 (0.5)	
Hemoptysis	2 (0.5)	
Warfarin induced coagulopathy	1 (0.3)	
Pancytopenia	1 (0.3)	
Esophageal nevus	1 (0.3)	

EVBL: Endoscopic Variceal Band Ligation

The most common endoscopic finding in UGIB was esophageal varices, accounting to 36.5%, of which 97% needed endoscopic variceal band ligation. Negative endoscopy with normal findings accounted to about 22.6%, making it the second most common finding in the study. Duodenal ulcers (7.3%) of which 42% needed adrenaline injection and electrocautery, non-specific findings (5.2%), reflux esophagitis (4.1%) of which 20% needed adrenaline spray to stop bleeding, portal hypertensive gastropathy with gastric antral vascular ectasia (3.2%); 16.7% of which needed argon plasma coagulation, fundal varices (2.7%) all of which underwent injection sclerotherapy and gastric ulcers (2.4%) of which 44% needed adrenaline injection and electrocautery were some of the common findings in the following order (table-II).

Table-III: Etiology of upper gastrointestinal bleed in patients presenting with portal hypertension n=163).

Etiology	Frequency n (%)
Esophageal varices	(n=134)
Cirrhosis secondary to Hepatitis C	128 (78.5)
Cirrhosis secondary to Hepatitis B	2 (1.2)
Non-cirrhotic portal hypertension	2 (1.2)
Portal vein thrombosis	1 (0.6)
Idiopathic cirrhosis	1 (0.6)
Esophageal and fundal varices	(n=7)
Cirrhosis secondary to Hepatitis C	6 (3.7)
Cirrhosis secondary to Hepatitis B	1 (0.6)
Fundal varices	(n=10)
Cirrhosis secondary to Hepatitis C	9 (5.5)
Cirrhosis secondary to Hepatitis B	1 (0.6)
Portal hypertensive gastropathy and GAVE	(n=12)
Cirrhosis secondary to Hepatitis C	10 (6.1)
Portal vein thrombosis	1 (0.6)
Non-cirrhotic portal hypertension	1 (0.6)

GAVE: Gastric Antral Vascular Ectasia

The distribution of duodenal ulcers versus gastric ulcers was found to be 3.4:1 with males to females ratio of 9:1 and 2.5:1 for duodenal and gastric ulcers respectively. Five duodenal ulcers out of 13 that needed emergency hemostasis required re-endoscopy after 48 hours. Gastric growths to duodenal growths ratio was observed to be 1.6:1 with males to female ratio of 1.6:1 and 4:1 for gastric and duodenal growths respectively.

Decompensated cirrhosis secondary to hepatitis C was the most common etiology in patients presenting with UGIB due to portal hypertension, the second being hepatitis B (table-III).

Normal endoscopic findings were seen commonly in younger patients with age <50 years. Esophageal ulcers and severe reflux esophagitis was common in patients with age ≥60 years. Growths involving gastric or duodenal region and gastroduodenal ulcers were seen in age group of ≤56 years. Gastric angiodysplasias were common at age 74 years and above (fig-1).

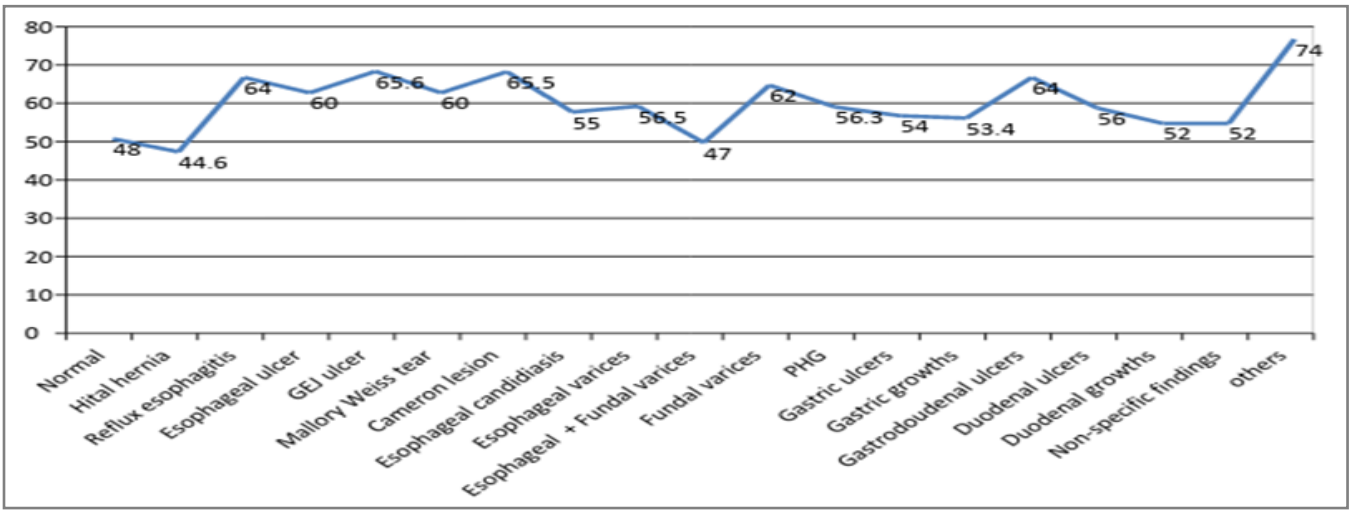

Figure: Endoscopic findings in relation to mean age of the patients.

DISCUSSION

Upper gastrointestinal (GI) bleeding remains one of the most common reasons for emergency hospital admission with a GI problem. It is defined as bleeding derived from a source proximal to the ligament of treitz. It has an incidence of 50-150 per 100,000 people per year. UGIB commonly presents with hematemesis (vomiting of blood or coffee ground-like material) and/or melena (black, tarry stools). It becomes more important in clinical practice due to its high mortality rates ranging between 4-14%. Rapid evaluation, hemodynamic resuscitation, and appropriate pharmacologic and endoscopic interventions are the basic principles of management. Patients with upper GI bleeding alongside significant comorbidities (such as cerebrovascular or cardiovascular disease, diabetes, coronary artery disease, chronic kidney disease, lung disease, or liver disease), history of coagulopathy, and/or unstable vital signs require emergent clinical assessment and management.

Sher *et al* reported variceal bleed to be the leading cause of UGIB responsible for 72.1% of the cases[11]. Another local study identified variceal bleed as the commonest cause of UGIB accounting for up to 54% of the patients[12]. However other studies revealed peptic ulcer as the commonest cause[13,14].

Our study showed that the male population was in abundance as compared to female which was in accordance to many Western and African studies[16-20]. The mean age for the study was observed to be 54.7 ± 16 years which was in accordance to many studies[18,20] but in contrast to studies from United States[19,21] which showed a relative trend towards older age group and Uganda that showed a younger mean age[22].

Endoscopies with normal findings were seen in 22.6% of the cases and was higher than similar studies[19,21]. The most common cause for UGIB was esophageal varices (36.5%), followed by duodenal ulcers (7.3%), non-specific findings (5.2%), reflux esophagitis (4.1%), portal hypertensive gastropathy with gastric antral vascular ectasia (3.2%), fundal varices (2.7%) and gastric ulcers (2.4%). These were comparable to results of Sher *et al,* who also showed variceal bleeding as the commonest cause of UGIB. The findings were also in accordance with a study from Uganda 20 and other developing countries[23,24] but in contrast to similar studies from United States, United Kingdom, Africa and Iran[18,19,21,22] that showed predominantly gastric and/or duodenal ulcers as the commonest cause of UGIB. A few local studies also reported peptic ulcer to be the leading cause of UGIB[13,14].

This study showed the distribution of duodenal ulcers versus gastric ulcers to be 3.4:1. This was in accordance to a multicenter study from United States of America[18] and studies from developing countries[22-24] but in contrast to local studies[11,14] many Western, African and Iranian studies[2,19-21,25]. The frequency of tumors causing UGIB was recorded to be 2.4% with gastric growths to duodenal growths ratio of 1.6:1 which was comparable to the findings of Bhutta *et al,* but lower than similar studies from Africa and America[2,22]. Esophageal carcinoma has been regarded as the commonest cause of UGIB in Afghanistan probably because of the high incidence of esophageal carcinoma in China-Iran belt.

The most common cause of UGIB in patients with portal hypertension was esophageal varices followed by gastric varices alone, portal hypertensive gastropathy, Gastric Antral Vascular Ectasia (GAVE) and concomitant esophageal plus gastric varices which is in accordance to similar studies[2,22].

There are certain limitations of our study. The factors such as convenience sampling, unicenter study and the non-incorporation of histological diagnosis in the study are the lacunae that need to be rectified for future analytical studies.

CONCLUSION

Portal hypertension secondary to decompensated cirrhosis by hepatitis C is the most common cause of UGIB followed by duodenal ulcers, non-specific findings, reflux esophagitis and gastric ulcers. A prompt upper GI endoscopy

with appropriate intervention is associated with a lower mortality and morbidity in terms of reduced re-bleeding and ICU stay. Negative endoscopy, though not uncommon, should lead to other endoscopic studies (including both upper and lower) and radiological interventions for localization and treatment.

CONFLICT OF INTEREST

This study has no conflict of interest to be declared by any author.

REFERENCES

1. Manno M, Mangiafico S, Caruso A, Barbera C, Bertani H, Mirante VG, et al. First-line endoscopic treatment with OTSC in patients with high-risk non-variceal upper gastrointestinal bleeding: preliminary experience in 40 cases. Surg Endosc 2016; 30(5): 2026-29.
2. Kim JJ, Sheibani S, Park S, Buxbaum J, Laine L. Causes of bleeding and outcomes in patients hospitalized with upper gastrointestinal bleeding. J Clin Gastroenterol 2014; 48(2): 113-18.
3. Tandon P, Gralnek IM, Lo GH, Aabakken L. Management of Acute Variceal Bleeding in Patients with Cirrhosis: General Management, Drug Therapy, and Endoscopic Treatment. In Portal Hypertension VI 2016 (pp. 241-259). Springer, Cham.
4. Cerini F, Gonzalez JM, Torres F, Puente Á, Casas M, Vinaixa C, et al. Impact of anticoagulation on upper gastrointestinal bleeding in cirrhosis. A retrospective multicenter study. Hepatol 2015; 62(2): 575-83.
5. Flor N, Maconi G, Cornalba G, Pickhardt PJ. The current role of radiologic and endoscopic imaging in the diagnosis and follow-up of colonic diverticular disease. AJR Am J Roentgenol 2016; 207(1): 15-24.
6. Camus M, Jensen DM, Kovacs TO, Jensen ME, Markovic D, Gornbein J. Independent risk factors of 30 day outcomes in 1264 patients with peptic ulcer bleeding in the USA: large ulcers do worse. Aliment Pharmacol Ther 2016; 43(10): 1080-09.
7. Scully BF, Cooper RC, Lee-Kong SA. Complete clinical response in rectal adenocarcinoma: review of treatment options. J Clin Gastroenterol Hepatol 2016; 1(1):1-7.
8. Kim SB, Lee SH, Kim KO, Jang BI, Kim TN, Jeon SW, et al. Risk factors associated with rebleeding in patients with high risk peptic ulcer bleeding: focusing on the role of second look endoscopy. Dig Dis Sci 2016; 61(2): 517-22.
9. Wehbeh A, Tamim HM, Daya HA, Mrad RA, Badreddine RJ, Eloubeidi MA, et al. Aspirin has a protective effect against adverse outcomes in patients with nonvariceal upper gastrointestinal bleeding. Dig Dis Sci 2015; 60(7): 2077-87.
10. Anglin R, Yuan Y, Moayyedi P, Tse F, Armstrong D, Leontiadis GI. Risk of upper gastrointestinal bleeding with selective serotonin reuptake inhibitors with or without concurrent nonsteroidal anti-inflammatory use: a systematic review and meta-analysis. Am J Gastroenterol 2014; 109(6): 811-19.
11. Sher F, Ullah RS, Khan J, Mansoor SN, Ahmed N. Frequency of different causes of upper gastrointestinal bleeding using endoscopic procedure at a tertiary care hospital. Pak Armed Forces Med J 2014; 64(3): 410-13.
12. Ghouri A, Kumar S, Bano S, Aslam S, Ghani MH. Endoscopic Evaluation of Upper Gastrointestinal Bleeding in Patients Presenting with Hematemesis within 24 Hours of Admission. J Liaquat Uni Med Health Sci 2016; 15(04): 174-78.
13. Bilal A, Nagra H, Shahid M. Upper GIT bleed, prevalence of peptic ulcer. Professional Med J 2004; 11(4): 14–15.
14. Bhutta S, Jamil M, Aziz K, Uddin W. An Etiological Study of Upper Gastrointestinal Bleeding. J Rawalpindi Med Coll 2012; 16(1): 31-33.
15. Genco A, Soricelli E, Casella G, Maselli R, Castagneto-Gissey L, Di Lorenzo N, et al. Gastroesophageal reflux disease and Barrett's esophagus after laparoscopic sleeve gastrectomy: a possible, underestimated long-term complication. Surg Obes Relat Dis 2017; 13(4): 568-74.
16. Jensen DM, Eklund S, Persson T, Ahlbom H, Stuart R, Barkun AN, et al. Reassessment of rebleeding risk of Forrest IB (oozing) peptic ulcer bleeding in a large international randomized trial. Am J Gastroenterol 2017; 112(3): 441-46.
17. De Franchis R. Expanding consensus in portal hypertension: Report of the Baveno VI Consensus Workshop: Stratifying risk and individualizing care for portal hypertension. J Hepatol 2015; 63(3): 743-52.
18. Laine L. Upper gastrointestinal bleeding due to a peptic ulcer. N Engl J Med 2016; 374(24): 2367-76.
19. Lu Y, Loffroy R, Lau JY, Barkun A. Multidisciplinary management strategies for acute non variceal upper gastrointestinal bleeding. Br J Surg 2014; 101(1): e34-50.
20. Gabr MA, Tawfik MA, El-Sawy AA. Non-variceal upper gastrointestinal bleeding in cirrhotic patients in Nile Delta. Indian J Gastroenterol 2016; 35(1): 25-32.
21. Yamaguchi D, Sakata Y, Yoshida H, Furukawa NE. Effectiveness of endoscopic hemostasis with soft coagulation for non-variceal upper gastrointestinal bleeding over a 12-year period. Digestion 2017; 95(4): 319-26.
22. Alema ON, Martin DO, Okello TR. Endoscopic findings in upper gastrointestinal bleeding patients at Lacor hospital, northern Uganda. Afr Health Sci 2012; 12(4): 518-21.
23. Rotondano G. Epidemiology and diagnosis of acute nonvariceal upper gastrointestinal bleeding. Gastroenterol Clin North Am 2014; 43(4): 643-63.
24. Moledina SM, Komba E. Risk factors for mortality among patients admitted with upper gastrointestinal bleeding at a tertiary hospital: a prospective cohort study. Bio Med Centre Gastroenterol 2017; 17(1): 165-75.
25. Minakari M, Badihian S, Jalalpour P, Sebghatollahi V. Etiology and outcome in patients with upper gastrointestinal bleeding: Study on 4747 patients in the central region of Iran. Iran. J Gastroenterol Hepatol 2017; 32(4): 789-96.