



Original Work

A clinical study on etiology, prognosis, outcome and role of endoscopy in upper gastrointestinal bleed in a tertiary care center

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ABSTRACT: Upper gastrointestinal bleed is defined as bleeding proximal to the ligament of Treitz. The aim of this study was to know the cause of upper GI bleed, prognosis of the patients and role of upper gastrointestinal endoscopy (UGIE) in the management of upper gastrointestinal bleed (UGIB). A study of 140 cases was carried out in the Shree Krishna Hospital and Pramukh Swami Medical College, Karamsad in India between January 2014 and June 2015. All patients were selected by the detailed history and physical examination. Patients with signs and symptoms suggestive of upper GI bleeding such as hematemesis, melena, blood in the nasogastric tubes, and profuse hematochezia were included in the study. Endoscopy was performed in all patients. Rockall scoring system was used to predict the mortality in patients with upper GI bleeding. We use descriptive statistics for analysis. It was found that upper GI bleed was more common in males than females, and was more prevalent in elderly individuals. The most common symptom was found to be hematemesis followed by abdominal pain. The most common cause was portal hypertension, which has a direct correlation with alcohol addiction. UGIE has both diagnostic as well as therapeutic role in UGIB. This study showed that upper GI bleeding was more common in male patients with the most common cause being portal hypertension. We observed that Mallory-Weiss tear had a particular association with NSAIDs. In our study, the Rockall scoring system was seen to predict the mortality in patients with upper GI bleeding. Endoscopy was both diagnostic and therapeutic and endoscopic variceal ligation (EVL/Glue) was performed for esophageal and/fundic varices and adrenaline injection for peptic ulcer bleeding and Mallory-Weiss tear.

KEY WORDS: *Upper GI bleeding; Endoscopy; Endoscopic variceal ligation; Mallory-Weiss tear*

INTRODUCTION

No aspect of abdominal surgery has undergone a greater change in the past ten years than the management of acute upper GI bleeding. It is a potentially life-threatening emergency that remains one of the leading causes of hospitalization. It is

defined as bleeding proximal to the ligament of Treitz.

The earliest description of UGIB was found to be Ebers Papyrus (1550 BC) describing a "blood nest" in a patient who turned pale and later expired¹.

The incidence of UGIB is approximately 100 cases per 100,000 populations per year². It accounts for 1-2% of all annual United States hospital admissions³. The overall mortality of all UGIB is 5%⁴.

Hematemesis usually signifies an UGIB whereas hematochezia usually indicates either lower gastrointestinal bleeding or massive UGIB.

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The methods used to determine the source of gastrointestinal bleeding are endoscopy- upper gastrointestinal or colonoscopy, small bowel enteroscopy, capsule endoscopy, radio nucleotide scanning, and triple vessel angiography. UGIE is the procedure of choice in most patients with UGIB, with diagnostic accuracy of 80-95 percent.

The diagnosis and treatment of UGIB have changed dramatically with the introduction of fiberoptic endoscopes and the introduction of various hemostatic techniques like banding, glue, sclerotherapy, hemoclip, and diathermy including argon plasma coagulation.

The aims of this study are to diagnose the cause of UGIB, to determine the utility of UGIE in UGIB, and to know the prognosis of the patients.

MATERIALS AND METHODS

A retrospective and descriptive study of 140 cases was carried out in the Shree Krishna Hospital and Pramukh Swami Medical College, Karamsad, India, between January 2014 and June 2015. All patients admitted to emergency ward were included in the study. The hospital ethics committee approved this study. Data was collected from the medical record department. All patients were selected by a detailed history and physical examination. Patients with signs and symptoms suggestive of UGIB such as hematemesis, melena, blood in the nasogastric tubes and profuse hematochezia were included in the study.

We follow the American Society of Gastroenterology guidelines for initial resuscitation that includes giving crystalloids to maintain adequate blood pressure and blood products to meet the demand of ongoing blood loss, significant hemorrhage or cardiac ischemia. UGIE was performed in all patients depending upon the urgency of the condition using an Olympus forward viewing flexible video endoscope. Endoscopy was carried out by placing the patients in the left lateral position. UGIE findings were noted. Laboratory investigations were performed including liver function test, renal function test, PT with INR, Hepatitis C antigen and hepatitis B antigen.

RESULTS

Upper GI bleed was more commonly seen in 51-60 years age group. The youngest patient was 17 years of age, and oldest was 83 years. Out of 140 cases, 104 were males, and 36 were females.

The most common symptom was hematemesis (79.28 %) followed by abdominal pain (67.85%) and melena (46.62%). The most common sign observed was abdominal distension (12.14%) followed by abdominal lump (5.71%). Dysphagia

was seen in 4.28% cases. Abdominal pain which was mainly located in the epigastric region was associated with retching and vomiting.

Seventy-one patients (50.71%) had a major comorbidity like diabetes mellitus, hypertension, chronic obstructive pulmonary disease, and chronic kidney disease and 40(28.57%) patients had a history of UGIE.

A hundred and four cases (74.28%) had history of alcoholism while 16(11.42%) were smokers. 18 (12.85%) patients had a history of taking medications (NSAIDs).

Fifty-nine (patients 42.14%) were found to have moderate to severe iron deficiency anemia. Altered liver function test was observed in 77(55%) cases. Hepatitis B and hepatitis C viruses were detected in 3 (2.14%) and six (4.28%) respectively.

Fifty patients (36%) had to undergo immediate endoscopy due to severe and persistent bleeding from the upper GI tract, while 90 (64%) patients underwent endoscopy within 24 hours.

Fifty (36%) patients underwent diagnostic endoscopy while 90 (64%) underwent therapeutic endoscopy.

Endoscopic variceal ligation (EVL/Glue) was performed for esophageal and fundic varices in 87 patients, adrenaline injection for peptic ulcer bleeding and Mallory-Weiss tear was given in 3 cases (2 cases of peptic ulcer and 1 case of Mallory-Weiss tear).

Ninety percent of patients had ultrasonography as a part of the investigation: the commonest abnormality detected was altered echotexture of liver followed by splenomegaly (19.04%) and dilated portal vein (11.11%).

In this study, we found that the commonest cause of UGIB was portal hypertension (68.57%), followed by erosive gastritis (12.85%) and peptic ulcer (5%). Carcinoma of the esophagus (n=4) and Mallory-Weiss tear (n=4) were rare causes of UGIB (**Table 1**).

All the causes of UGIB were associated with alcohol consumption, and smoking was most commonly related to portal hypertension (n=11) followed by gastritis (n=2) and peptic ulcer (n=2). Drugs were usually associated with gastritis (n=6) and peptic ulcer (n=6). Out of 18 patients with drug history, 6 were females while 12 were males (**Table 1**).

Table 2 and **3** summarize the Rockall scoring system. Mortality was seen in Rockall score 5 or more.

Out of total 140 patients, 109 were discharged without any complaints. 4 expired, and 27 patients took discharge against medical advice (**Table 4**). All expired patients were cases of portal hypertension.

Table 1: The relationship between personal history and disease

| Cause | Number | Alcoholic | Non-alcoholic | Smoking | NSAIDs |
|----------------------------|--------|-----------|---------------|---------|--------|
| Portal Hypertension | 96 | 78 | 18 | 11 | 3 |
| Gastritis | 18 | 12 | 6 | 2 | 6 |
| Peptic Ulcer | 7 | 5 | 2 | 2 | 6 |
| Carcinoma of the Esophagus | 4 | 3 | 1 | 0 | 0 |
| Mallory-Weiss tear | 4 | 1 | 3 | 0 | 2 |
| Other | 11 | 5 | 6 | 1 | 1 |

Table 2: Rockall scoring system

| Variable | Points | | | |
|--|--|---|---------------------------------------|---|
| | 0 | 1 | 2 | 3 |
| Age (yrs) | <60 | 60-79 | >80 | |
| Shock | No shock; SBP \geq 100 mmHg; pulse < 100 bpm | SBP \geq 100 mmHg; Pulse \geq 100 bpm | SBP < 100 mmHg; Pulse \geq 100 bpm | |
| Comorbid illness | No major | | CHF, IHD, major morbidity | Renal failure, liver failure, metastatic cancer |
| Endoscopic diagnosis | Mallory-Weiss tear | All other diagnoses except GI malignancy | GI malignancy | |
| Endoscopic stigmata of recent hemorrhage | Clean based ulcer or none | | Blood, adherent clot, spurting vessel | |

Table 3: Rockall scoring system

| Score | Patients (n=140) | Discharge (n=109) | Mortality (n=4) |
|-------|------------------|-------------------|-----------------|
| 0 | 1(0.71%) | 1 | 0 |
| 1 | 27(19.28%) | 27 | 0 |
| 2 | 14(10%) | 4 | 0 |
| 3 | 32(22.85%) | 25 | 0 |
| 4 | 43(30.71%) | 33 | 0 |
| 5 | 10(7.14%) | 9 | 1 |
| 6 | 7(5%) | 6 | 1 |
| 7 | 6(4.28%) | 4 | 2 |

Table 4: Outcome of the patient

| | Number | Percentage |
|--|--------|------------|
| Discharge | 109 | 77.85% |
| Discharged against medical advice | 27 | 19.28% |
| Expired | 4 | 2.85% |

DISCUSSION

Age and sex

Out of 140 cases, 104 were males, and 36 were females, which suggest a male preponderance in UGIB. Their ages ranged from 17 to 83 years. It was commonly seen between 30–60 year age group. A study of 1070 patients of UGIB conducted by Gasim B *et al*⁵ in 2002 in Sudan showed that 904 (84.5%) patients were males which suggest a male preponderance.

Clinical features

The most common symptom was hematemesis (79.28%) followed by abdominal pain (67.85%) and melena (46.62%). The most common sign observed was abdominal distension (12.14%) followed abdominal lump (5.71%). Dysphagia was seen in 4.28% cases. Abdominal pain, which was mainly located in the epigastric region, was associated with retching and vomiting.

Out of 140 patients, 104 patients had a history of alcoholism while 16 were smokers. 40 patients had a history of upper gastrointestinal endoscopy. 18 patients were on non-steroidal anti-inflammatory drugs (NSAIDs). Wilcox *et al*⁶ found that majority of patients who presented with UGIB had used aspirin or non-aspirin NSAIDs in the weeks before presentation and surprisingly 44% patients had a non-prescription use. The history of UGIE was present in 28.57% cases in this study. The history should inquire about prior UGIB since up to 60% of the UGIB are from the same lesion identified previously⁷. A study by Smith *et al*⁸ showed that aspirin and alcohol increase the permeability of the human gastric mucosa to hydrogen ions and increases the chances of UGIB.

We follow the American Society of Gastroenterology guideline for initial resuscitation that includes giving crystalloids to maintain adequate blood pressure and blood products to meet the demand of ongoing blood loss, significant hemorrhage or cardiac ischemia⁹. Two large bore IV lines and central venous access was instituted if the use of vasoactive drugs was anticipated. After initial resuscitation of the patient, blood investigations were sent which showed 59

(42.14%) patients with moderate to severe iron deficiency anemia. Altered liver function test was observed in 77 (55%) cases. This severe anemia might be due to either acute or chronic blood loss. Blood transfusion was carried out in these cases due to hemodynamic instability. Altered liver function test was corrected with vitamin Hepatitis B virus, and hepatitis C was detected in 3 (2.14%) and 6 (4.28%) respectively.

All 140 patients underwent UGIE, of whom 50 patients were treated conservatively, and 90 patients underwent therapeutic endoscopy to control bleeding.

The previous history of endoscopy was present in 40 cases for hematemesis, out of which 4 cases had an ulcer and 36 cases had portal hypertension. This indicates that recurrent bleeding was common in patients with portal hypertension.

UGIB was associated with drugs in 18 cases (12 male, 6 female). A male preponderance was because of the high incidence of cardiac problems. All the women in drugs groups had either erosive gastritis or ulcer. Among male patients, 3 cases of varices were because of associated alcohol consumption. Acute erosive gastritis/ulcer was seen in 12 patients. Daily NSAID use causes a 40-fold increase in gastric ulcer and a 8-fold increase in duodenal ulcer¹⁰. In this study, Mallory-Weiss tear was more commonly associated with NSAIDs rather than alcohol. It has been associated with alcoholic binges, diabetic ketoacidosis, hiatus hernia, and NSAIDs use¹¹. Heavy alcohol consumption associated with vomiting has been noted in up to 75% of Mallory-Weiss tear¹².

We routinely performed lavage in all patients. Lavage serves not only as a tool to empty the stomach but also as a diagnostic tool for UGIB¹³.

The study by Tait *et al*¹⁴ in 1999 found endoscopic variceal ligation (EVL) was as useful as endoscopic injection sclerotherapy (EIS) for control and eradication of esophageal varices. Initial control of bleeding was similar, but eradication was achieved in fewer sessions with EVL. It was associated with lower re-bleeding rates and fewer procedure-related complications; it was also more useful for control of active bleeding at initial endoscopy. Combination therapy (Endoscopic sclerotherapy plus EVL) confers no advantage over EVL alone.

In our study out of 90 cases, 87 underwent EVL/glue.

In this study, we found that the commonest cause of upper GI bleeding was portal hypertension (68.57%), followed by erosive gastritis (12.85%) and peptic ulcer disease (5%). A study by Kinet *al*¹⁵ in 2014 in the US showed most common causes were ulcers in 654 patients (34%), varices in 633 (33%), and erosive esophagitis in 156 (8%) out of 1073 cases, which are not consistent with our study.

Portal hypertension with Rockall score of 5 or more was the only cause of mortality in this study. In this study mortality rate was 2.85%. The mortality rate was significantly less as compared to other studies⁴. Jakaet *al*¹⁶ found death rate of 11.7%. Gado *et al*¹⁷ reported 8% mortality in patient with UGIB associated with varices. It was significantly higher in patients with variceal bleeding, shock, hepatic decompensation, comorbidities, Malignancy, and age > 60 years¹⁶.

Rockall scoring system is most widely used post endoscopy. It includes age, hemodynamics, endoscopic findings, endoscopic diagnosis and comorbidity to assess the risk of death amongst the patients with UGIB¹⁸. Among those with Rockall score 1 or less, risk of re-bleeding is 3.8%, and mortality was 0%. We were unable to judge the prognosis and outcome of 27 patients as they took discharge against medical advice. A large number of patients took discharge against medical advice because of personal and family reasons.

This study provides new information in that the most common cause of UGIB was portal hypertension instead of peptic ulcer. We observed that Mallory-Weiss tear was commonly associated with NSAIDs instead of alcohol, and repeat endoscopy was more common in portal hypertension.

CONCLUSION

The most common cause of UGIB in the present study was portal hypertension. UGIB has a particular role in diagnosis as well as in therapeutic management of UGIB. It is minimally invasive and the safest method of controlling bleeding. By using endoscopic hemostatic techniques, it is possible to avoid major surgery and the associated mortality and morbidity. This study showed that upper GI bleeding is more common in male patients with the most common cause being portal hypertension. EVL is the best modality for hemostasis in variceal bleeding. Upper GI endoscopy is the best diagnostic as well as therapeutic tool. We observed that Mallory-Weiss tear has a particular association with NSAIDs. In our study, the Rockall scoring system was seen to predict mortality in patients with upper GI bleeding.

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