

Endoscopic Profile of the Patients with Upper Gastrointestinal Bleeding in a North–Eastern State of India - A Hospital-Based Cross-Sectional Study

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ABSTRACT

BACKGROUND

Upper gastrointestinal bleeding (UGIB) is one of the common medical emergencies throughout the world that may require hospital admission and results in high patient morbidity and mortality. The presentation of UGI bleeding depends on the amount and location of haemorrhage. Upper gastrointestinal endoscopy (UGIE) is the preferred investigative procedure for UGIB because of its accuracy, low rate of complication, and its potential for therapeutic interventions. The present study has been carried out to evaluate the different aetiological causes of UGIB in a tertiary care centre in the North Eastern part of India and compare the same with other studies done globally.

METHODS

This was a hospital based observational study with cross sectional design carried out in the Department of Medicine at Tripura Medical College & DR BRAM Teaching Hospital, Agartala. Total 376 patients were selected for this study for over a period of 2 years from January 2017 to December 2018. Upper GI endoscopy was performed in all patients after hemodynamic stabilisation. Rockall scoring system was used in non-variceal cases to predict the mortality in patients with upper GI bleeding.

RESULTS

A total of 376 patients had endoscopy for UGIB which included 260 (69.1 %) males and 116 (30.9 %) females, and the mean age was 47.9 (\pm 17.0) years. The most common cause of UGIB was peptic ulcer disease (duodenal ulcer and gastric ulcer) consisting of 31.38 %, followed by erosive gastritis (23.94 %), oesophageal varix (11.17 %), portal hypertensive gastropathy (10.64 %), duodenitis (8.51 %). Gastrointestinal malignancy (gastric and oesophageal cancers) was reported in 3.98 % and rare causes of UGIB were Mallory-Weiss syndrome (1.86 %), and esophagitis (1.60 %). Among them 4.26 % of the patients had normal endoscopy findings.

CONCLUSIONS

In the present study, peptic ulcer disease was the most common cause of upper gastrointestinal bleeding, followed by erosive gastritis. Rockall score of more than 4 was numerically associated with increased incidence of mortality.

KEYWORDS

Upper Gastrointestinal Bleeding (UGIB), Upper Gastrointestinal Endoscopy (UGIE)

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BACKGROUND

Upper gastrointestinal bleeding refers to blood loss from any part of the gastrointestinal tract proximal to the ligament of Treitz.^{1,2} Most of the patients with UGIB usually present with hematemesis or melena.³ The annual incidence of UGIB is approximately 100 cases per 100,000 populations.⁴ Endoscopy has become one of the readily accessible tool to investigate the patients presenting with acute UGI bleeding.⁵ The present study has been carried out to evaluate the different aetiological causes of UGIB in tertiary care centre in the North Eastern part of India and thus, make a comparison with other studies done globally.

Objectives

1. To evaluate the different causes of upper gastrointestinal bleeding attending the Tripura Medical College (TMC) & DR BRAM Teaching Hospital, Agartala.
2. To find out the proportion of patients with variceal and non-variceal bleeding, undergoing upper GI endoscopy for UGI bleeding
3. To evaluate the Rockall score with incidence of re-bleed and mortality.

METHODS

This was a hospital based observational study with cross sectional design comprising of 376 adult patients of more than 14 years with upper GI bleeding attending the outpatient department or indoor admission in the Department of Medicine, Tripura Medical College & DR BRAM Teaching Hospital, Agartala from January 2017 to December 2018. Convenience sampling method was used in the study. All the patients underwent UGI endoscopy for evaluation of different aetiological causes of UGIB. UGIB cases were first divided into variceal and non-variceal causes. Variceal cases of UGIB were further classified into oesophageal varix, gastro-oesophageal varix (GOV1 and GOV2) and isolated gastric varix. Non-variceal cases like duodenal and gastric ulcer were classified as per Forrest classification and other cases of non-variceal UGIB were enumerated as per the findings.

Inclusion Criteria

All the patients above 14 years presenting with upper gastrointestinal bleeding at Tripura Medical College & DR. BRAM Teaching Hospital.

Exclusion Criteria

1. Patients with history of epistaxis and bleeding gums and subsequently developed spurious hematemesis.
2. Bleeding and clotting disorders.
3. Critically ill and hemodynamically unstable patients.
4. Severe cervical spondylosis and 5. Inability to open mouth due to any cause.

The study was carried out after obtaining clearance from the institutional ethical committee of TMC & DR BRAM Teaching Hospital, Agartala. Various causes of UGI bleeding depending upon the endoscopic findings were recorded.

Statistical Analysis

Data were analysed by using IBM SPSS software version 20. Descriptive variables are represented as percentage and frequencies. Continuous variables are represented as mean and standard deviation. A chi-square test was done to find the difference between the Rockall score and outcomes.

RESULTS

Totally 376 patients were selected for upper GI endoscopy. Among them male patients were 260 (69.1 %) and females were 116 (30.9 %). The mean age of the study was 47.9 (\pm 17.0 %) years and male to female ratio was 2.2:1. Most number of patients were seen in the age group of 41 - 50 years. This age group was further divided into different groups; < 20, 20 - 30, 31 - 40, 41 - 50, 51 - 60, 61 - 70 and > 70 years. (Table 1).

The commonest cause of UGIB was peptic ulcer disease (31.38 %) which included duodenal (26.06 %) and gastric ulcers (5.32 %), followed by erosive gastritis (23.94 %), oesophageal varix (11.17 %), portal hypertensive gastropathy (10.64 %), duodenitis (8.51 %). Gastrointestinal malignancies (3.98 %) consisting of gastric and oesophageal cancer were 2.39 %, and 1.59 % respectively. Normal endoscopic findings were reported in 4.26 % and less frequent causes of UGIB were Mallory-Weiss syndrome (1.86 %), esophagitis (1.60 %) and dieulafoy's lesion (0.53 %) (Table 2).

Out of total 118 cases presented with peptic ulcer having upper gastrointestinal bleeding, 59.32 % of cases were having clean ulcer without clot or visible vessel (Forrest III), 15.25 % of cases were having non bleeding ulcer with overlying fresh clot (Forrest IIb), 10.16 % cases were having visible vessel without active bleeding (Forrest IIa), 6.78 % cases were found to be non-spurting bleeding (Forrest Ib), 6.80 % cases were ulcer with haematin covered base (Forrest IIc) and 1.69 % cases were spurting bleeding (Forrest Ia) respectively (Table 3).

Total 376 patients were admitted in our hospital with upper gastrointestinal bleeding and out of them 310 patients were found to have non-variceal bleeding and 50 patients with variceal bleeding. Sixteen patients with UGI bleeding were found to have normal UGI endoscopy study. The most common causes of non-variceal bleeding were peptic ulcer (31.38 %), gastric erosions (23.94 %), duodenitis (8.51 %), malignancy (3.98 %) and Mallory weiss syndrome (1.86 %) respectively (Table 4).

We compared each of the Rockall score (Table 5) to the predefined outcomes of the study, which were re-bleeding and mortality rate after 7 days of hospitalization (Table 6). We then chose a cut-off point of 4 based on the study by Lahiff et al.⁶ Based on the cut-off point of 4, 12 (3.68 %)

patients had re-bleed, 311 (95.40 %) patients were discharged, and 3 (0.92 %) patients died.

| Age Group (in years) | Frequency | Total (%) |
|----------------------|-----------|-----------|
| < 20 | 12 | 3.2 % |
| 20 - 30 | 60 | 15.96 % |
| 31 - 40 | 66 | 17.55 % |
| 41 - 50 | 79 | 21.01 % |
| 51 - 60 | 72 | 19.15 % |
| 61 - 70 | 51 | 13.56 % |
| > 70 | 36 | 9.57 % |

Table 1. Frequency of Patients in Different Age Groups

| Endoscopic Findings | Number | Total (%) |
|---------------------------------|--------|-----------|
| Peptic ulcer disease | 98 | 26.06 % |
| Duodenal ulcer | 20 | 5.32 % |
| Gastric ulcer | 90 | 23.94 % |
| Erosive gastritis | 42 | 11.17 % |
| Varix | 08 | 2.13 % |
| Oesophageal varix | 40 | 10.64 % |
| Gastric varix | 32 | 8.51 % |
| Portal hypertensive gastropathy | 16 | 4.26 % |
| Duodenitis | 15 | 3.98 % |
| Normal study | 7 | 1.86 % |
| Malignancy | 6 | 1.60 % |
| Mallory-Weiss syndrome | 2 | 0.53 % |
| Esophagitis | | |
| Dieulafoy's lesion | | |

Table 2. Frequency of Endoscopic Findings in Patients with UGIB

| Grade | Forrest Classification | No of Cases | % of Cases |
|-------|---|-------------|------------|
| Ia | Spurting bleeding | 2 | 1.70 % |
| Ib | Non-spurting bleeding (oozing) | 08 | 6.78 % |
| IIa | Visible vessel (no active bleeding) | 12 | 10.17 % |
| IIb | Non bleeding ulcer with overlying clot (non-visible vessel) | 18 | 15.25 % |
| IIc | Ulcer with haematin covered base (dark base) | 08 | 6.78 % |
| III | Clean ulcer round (no clot, no vessel) | 70 | 59.32 % |

Table 3. Bleeding Peptic Ulcer Classified as Per Forrest Classification

| Upper Gastrointestinal Bleeding (UGIB) | | | |
|--|-------------------|-----------|---------|
| Types of Bleeding | Number of Cases | Total (%) | |
| Variceal bleeding | Oesophageal varix | 42 | 11.17 % |
| | Gastric varix | 07 | 1.86 % |
| | GOV2 | 01 | 0.27 % |
| Non-variceal bleeding | 326 | 86.70 % | |

Table 4. Frequency of Variceal and Non-Variceal Bleeding in Patients with UGIB

| Variable | Points | | | |
|---|---------------------------------|---------------------------------|--|---|
| | 0 | 1 | 2 | 3 |
| Age (years) | < 60 | 60 - 79 | > 80 | |
| Shock | SBP > 100 mmHg, Pulse < 100 bpm | SBP > 100 mmHg, Pulse > 100 bpm | SBP < 100 mmHg, Pulse > 100 bpm | |
| | Comorbid illness | None | Ischaemic heart disease (IHD), Congestive heart failure(CHF) | Liver failure, renal failure, metastatic cancer |
| | | Endoscopic diagnosis | Mallory-Weiss tear | All other diagnoses |
| Endoscopic stigmata of recent haemorrhage | Clean based ulcer or none | | Blood, adherent clot, spurting vessel | |

Table 5. Rockall Scoring System

| Score | Patients (326) | Re-Bleed (12) | Mortality (3) |
|-------|----------------|---------------|---------------|
| 0 | 4 (1.23 %) | 0 | 0 |
| 1 | 198 (60.74 %) | 0 | 0 |
| 2 | 50 (15.34 %) | 2 | 0 |
| 3 | 45 (13.80 %) | 3 | 0 |
| 4 | 25 (7.67 %) | 5 | 2 |
| 5 | 4 (1.22 %) | 2 | 1 |

Table 6. Rockall Score, Patients Number, Re-Bleed and Mortality Rate within 7 Days of Hospitalisation

| Outcome | Rockall Score ≥ 4 | < 4 | Total | P Value |
|-----------|-------------------|-----|-------|---------|
| Re-bleed | 7 | 5 | 12 | 0.5 |
| Mortality | 3 | 0 | 3 | |

Table 7. Outcome of the Patient

| | Rathi P. et al. | Kashyap R. et al. ⁷ | Krishnakumar R. et al. | Lakhani K. et al. ⁸ | Gajendra O. et al. | Singh S.P. et al. | Present Study |
|-----------------------------|-----------------|--------------------------------|------------------------|--------------------------------|--------------------|-------------------|---------------|
| Year of study | 2001 | 2005 | 2007 | 2008 | 2009 | 2013 | 2017-18 |
| Study population | 398 | 111 | 408 | 100 | 1582 | 608 | 376 |
| Sex ratio (M:F) | 3.5:1 | 3.6:1 | 2.2:1 | 2.4:1 | NA | 6:1 | 2.2:1 |
| Duodenal ulcer (%) | 10.8 | 43.9 | 9.8 | 14 | 17.5 | 57.57 | 26.06 |
| Gastric ulcer (%) | 4.5 | 17.1 | 8.08 | NA | 17.5 | 1.18 | 5.32 |
| Erosive gastritis (%) | 8.5 | 11.7 | 43.6 | 14 | 13 | 1.18 | 23.94 |
| Oesophageal varices (%) | 45.5 | 10.8 | 33.33 | 37 | 30.97 | 12.83 | 11.17 |
| Malignancy (%) | 0.75 | 7.2 | 2.4 | 9 | 2 | 7.89 | 3.98 |
| Mallory-Weiss tear syndrome | NA | NA | NA | NA | NA | 1.8 | 1.86 |

Table 8. Comparison of Aetiological Spectrum of UGIB in Different Study Series

Rockall score of more than 4 was numerically associated with increased incidence of re-bleeding and mortality within 7 days of hospitalization. The distribution among the groups was not found to be statistically significant (P = 0.5). Though it was not statistically significant, but it was found that proportion of mortality and re-bleed was higher among the individuals having Rockall score more than four (Table 7).

DISCUSSION

Among 376 patients involved in the study, 260 were males and 116 patients females which suggest a male preponderance in UGIB in this study. The male to with female ratio was 2.2:1. The findings were similar studies of Kashyap R et al. (2005)⁷ where M:F ratio was 3.63:1, Lakhani K et al. (2008)⁸ with M:F ratio of 2.44:1, Anand C. S et al. (1983)⁹ - 3 : 1 and Rathi P et al. (2001)¹⁰ - 3.5:1 respectively.

The minimum age of the patient was 15 years and the maximum age was 95 years, with mean age of 47.9 (± 17.0) years. It was commonly seen between 41 – 50-year age group. These findings were similar to other studies of Kashyap R et al. (2005)⁷, Lakhani K et al. (2008)⁸ and Singh SP et al. (2013)¹¹ having mean age of 47.7 years, 42.44 years and 42. 2 years, respectively.

Peptic ulcer was found to be the major cause (31.38 %) of upper gastrointestinal bleeding in this study. This was reciprocated in other studies of Rathi P et al. (2001)¹⁰ - 15.3 %, Krishnakumar R et al. (2007)¹² - 17. 88 %, Enestvedt BK et al. (2000 - 2004)¹³ - 32.7 %, Gajendra O et al. (2009)¹⁴ - 35 %, Dolmans WM. et al (1983)¹⁵ - 40.9 % and Kaviani MJ et al. (2010)¹⁶ - 44 %.

Out of peptic ulcer cases, duodenal ulcer (26.06 %) was the commonest cause of UGI bleeding. Present study attained a closer figure of incidence of duodenal ulcer with study series like Krishnakumar R et al. (2007)¹² - 9.8 %, Rathi P et al. (2001)¹⁰ - 10.8 %, Lakhani K et al. (2008)⁸ - 14 %, Kaviani MJ et al. (2010)¹⁶ - 16 %, Gajendra O et al. (2009)¹⁴ - 17.5 %, Akhtar AJ et al. (2001)¹⁷ - 21 %, and Anand C.S et al. (1983)⁹ - 25 % but higher incidence of duodenal ulcer found compared to our study was found in the studies done by Enestvedt B K et al. (2000 - 2004)¹³ - 37.1 %, Singh SP et al. (2013)¹¹ - 57.6 %, Kashyap R et al.

(2005)⁷ - 43.9 %, Kelley HG et al. (1963)¹⁸ - 56.6 % and Puchner R et al. (1995)¹⁹ - 41 %.

Total gastric ulcer cases were (5.32 %) in our present study and was comparable with Rathi P et al. (2001)¹⁰ - 4.5 %, Anand C.S. et al. (1983)⁹ - 5 %, Krishnakumar R et al (2007)¹² - 8.1 %, Singh SP et al. (2013)¹¹ - 11.8 %, and Kashyap R et al. (2005)⁷ - 17.1 %. But more cases of gastric ulcers were found in the studies of western world by Akhtar AJ et al. (2001)¹⁷ - 24 %, Kelley HG et al. (1963)¹⁸ - 23 %, Puchner R et al. (1995)¹⁹ - 27 %, Kaviani MJ et al. (2010)¹⁶ - 30 % and Enestvedt B K et al. (2000 - 2004)¹³ - 54.4 % respectively. Total 90 (23.94 %) number of cases had gastric erosion causing UGIB. This finding was similar to study series of Kashyap R et al (2005)⁷ - 11.7 %, Gajendra O et al. (2009)¹⁴ - 13 %, Lakhani K et al. (2008)⁸ - 14 %, Enestvedt B.K. et al. (2000 - 2004)¹³ - 18.8 %, Akhtar AJ et al. (2001)¹⁷ - 20 % respectively but more incidence of gastric erosion was found in Krishnakumar R et al. (2007)¹² - 43.6 %.

Oesophageal varices accounted for 11.17 % of the cases of UGI bleeding which was comparable to other studies by Kashyap R et al. (2005)⁷ - 10.8 %, Kaviani MJ et al. (2010)¹⁶ - 11 %, Singh SP et al. (2013)¹¹ - 12.83 %, Akhtar AJ et al. (2001)¹⁷ - 15 % and Dolmans WM. et al. (1983)¹⁵ - 16.4 %. High incidence of Oesophageal varix were found in some studies like Gajendra O et al. (2009)¹⁴ - 30.9 %, Krishnakumar R et al. (2007)¹² - 33.3 %, Lakhani K et al. (2008)⁸ - 37 %, Anand C.S. et al. (1983)⁹ - 45.5 % and Rathi P et al. (2001)¹⁰ - 56 %.

GI malignancies comprised 3.98 % of cases of UGIE in our study in comparison to other studies like Rathi P et al. (2001)¹⁰ - 0.75 %, Gajendra O et al. (2009)¹⁴ - 2 %, Krishnakumar R et al. (2007)¹² - 2.4 %, Kelley HG et al. (1963)¹⁸ - 4 %, Akhtar AJ et al. (2001)¹⁷ - 5.8 %, Kashyap R et al (2005)⁷ - 7.2 % Singh SP et al. (2013)¹¹ - 7.73 % and Lakhani K et al. (2008)⁸ - 9 %.

In the present study, Mallory-Weiss tear syndrome accounted for 1.86 % of cases which was similar with study of Singh SP et al. (2013)¹¹ - 1.8 %, Ahmed et al. (2012)²⁰ - 2 %, and Tommaro et al (2008)²¹ - 2 % but not with the study of Webb WA et al (1981)²² - 9.8 %, Puchner R et al. (1995)¹⁹ - 9 % and Akhtar AJ et al. (2001)¹⁷ - 10 %.

"In this study, only 0.53 % cases of Dieulafoy's lesion were found which was less compared to studies by Mohga A et al. (2015)²³ - 2 % and Akhtar AJ et al. (2001)¹⁷ - 5 %.

CONCLUSIONS

In our study non-variceal bleeding was far commoner than variceal bleeding as a cause of UGI bleeding. Among non-variceal bleeding, duodenal ulcers followed by erosive gastritis were the commonest causes. Rockall score of more than 4 was numerically associated with increased incidence of re-bleeding and mortality. Upper gastrointestinal endoscopy was the chief investigative modality and provided a good knowledge about the aetiological pattern of variceal and non-variceal upper GI bleeding.

Data sharing statement provided by the authors is available with the full text of this article at jebmh.com.

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