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CLINICAL CO-RELATION OF PROGNOSTIC FACTORS WITH MORTALITY AND OESOPHAGO-GASTRO-DOUDENOSCOPY FINDINGS IN PATIENTS OF UPPER GASTRO-INTESTINAL BLEEDING

Aasim Maldar²,*Parul Bhatt¹ and Vismay Naik¹

¹*Department of Medicine, GMERS Medical College and Hospital, Gandhinagar, Gujarat*

²*Consulting Physician, Soalpur, Maharashtra*

**Author for Correspondence*

ABSTRACT

Hemorrhage from gastrointestinal tract proximal to ligament of Trietz is known as Upper Gastrointestinal Bleeding. Upper gastrointestinal bleeding is five times more common than lower gastrointestinal bleeding. Acute upper gastro-intestinal hemorrhage is a clinically significant condition with important implications for health-care costs worldwide. Negative outcomes include re-bleeding and death; and many of the deaths are associated with decompensation of co-existing medical conditions precipitated by acute bleeding event. Our study included 100 patients presenting with hematemesis and/or melena. The commonest etiology on Oesophago-Gastro-Doudenoscopy was found to be esophageal varices; followed by gastritis, duodenal ulcers and esophagitis. Alcoholism is a common risk factor and is associated with all of these etiologies. Decreased serum albumin levels (<3.5 gr/dl) and deranged PT-INR (>1.3), i.e. presence of liver failure had a statistically proven co-relation to unfavourable outcome and mortality. The association between presence of co-morbidity and mortality was found to be statistically significant. Also, blood transfusion and number of units of blood transfused are suggestive of severity of upper gastrointestinal haemorrhage and poor prognosis.

Keywords: *Upper Gastrointestinal Bleeding, Hematemesis, Malena, Varices, Oesophagogastroduodenoscopy*

INTRODUCTION

Hemorrhage from gastrointestinal tract proximal to ligament of Trietz is known as Upper Gastrointestinal Bleeding. Upper gastrointestinal bleeding is five times more common than lower gastrointestinal bleeding (Dan *et al.*, 2012). The common causes of upper gastrointestinal bleeding include peptic ulcer disease, gastroesophageal varices, gastric ulcers and erosive mucosal disease. The less common causes include upper gastroesophageal neoplasms, esophagitis and angiodysplasia (Harrison's Principles of Internal Medicine, 18th edition, 2012).

Acute upper gastro-intestinal hemorrhage is a clinically significant condition with important implications for health-care costs worldwide. Negative outcomes include re-bleeding and death; and many of the deaths are associated with decompensation of co-existing medical conditions precipitated by acute bleeding event (Lim *et al.*, 2006).

The diagnosis and therapy for upper gastrointestinal bleeding has evolved over the past three decades from passive diagnostic esophago-gastroduodenoscopy with medical intervention until surgical intervention was indicated, to active intervention with endoscopic techniques followed by angiographic and surgical approaches if endoscopic therapy fails.

The underlying mechanisms of non-variceal bleeding involve either arterial hemorrhage (ulcer disease or deep mucosal tears) or low pressure venous hemorrhage (telangiectasias and angiodysplasias). In variceal hemorrhage, the underlying pathophysiology is due to elevated portal pressure transmitted to esophageal and gastric varices, leading to portal gastropathy.

Our study was aimed at diagnosing the etiology of upper gastrointestinal bleeding in as many patients as possible and the co-relation of different parameters, clinical as well as laboratory, to morbidity and mortality.

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MATERIALS AND METHODS

Our study included 100 patients presenting with hematemesis and/or melena.

Selection of Subject

The inclusion and exclusion criteria were defined as follows:

Inclusion criteria: 1. Age > 18 years.

2. Of any gender (male/female).

3. Presenting with hematemesis and/or melena.

Exclusion criteria: 1. Age < 18 years.

2. Patients presenting as upper gastrointestinal hemorrhage due to bleeding disorders.

3. Cases of hemoptysis.

4. Cases of local oral cavity bleeding.

5. Cases where endoscopy was not possible (due to any reason).

6. Pregnant patients.

Methodology

Study of 100 patients having hematemesis and/or melena of age > 18 years. Patients fulfilling above inclusion criteria were enrolled and were examined thoroughly and all the necessary investigations carried out after written informed consent.

RESULTS AND DISCUSSION

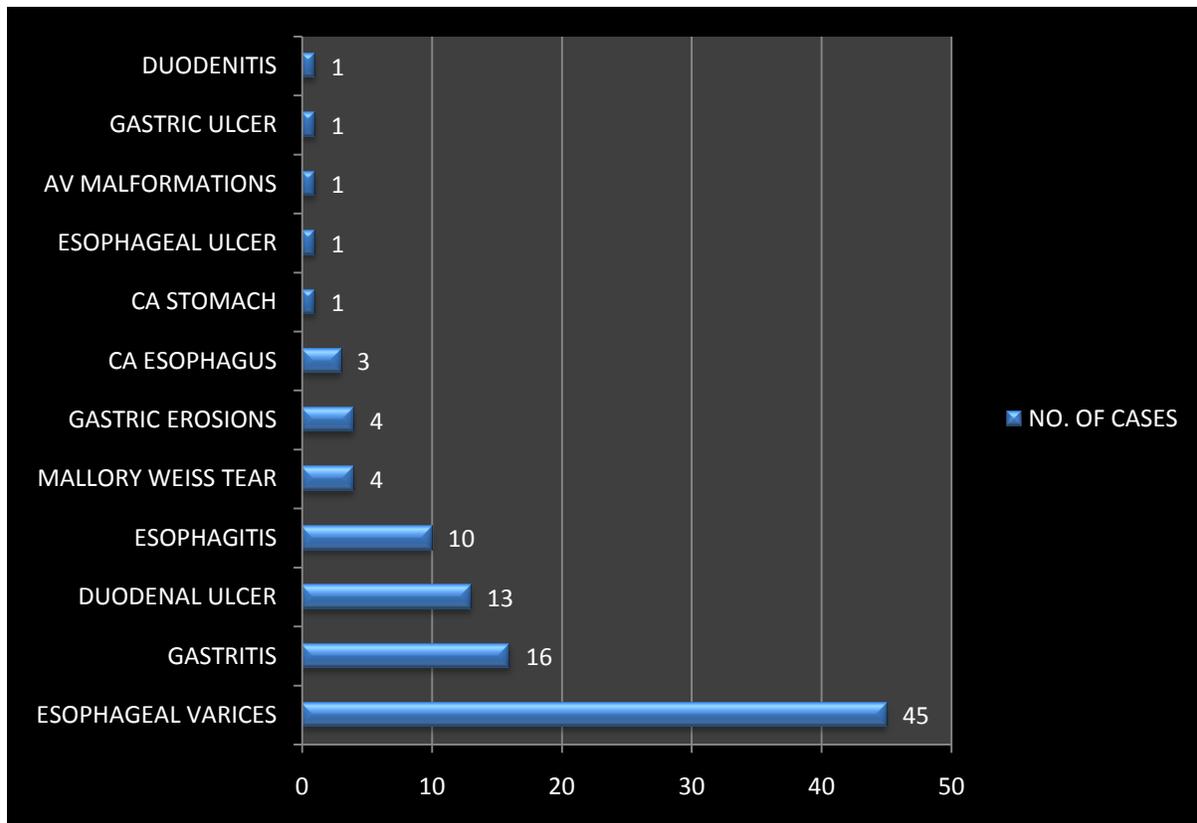


Figure 1: OGD scopy findings

In our study, esophageal varices is the most common finding on OGD scopy; seen in 45% of cases; followed by gastritis (16%), duodenal ulcer (13%) and esophagitis (10%). Less common findings were Mallory-Weiss tear and Gastric erosions seen in 4% cases each, Ca esophagus in 3% cases and 1% case of each of Ca stomach, Esophageal ulcer, Arterio-venous malformations, Gastric ulcer and Duodenitis.

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Table 1: Oesophago Gastro Doudenoscopy (OGD) findings

Ogd findings	No. Of cases	Percentage
Esophageal varices	45	45
Gastritis	16	16
Duodenal ulcer	13	13
Esophagitis	10	10
Mallory weiss tear	4	4
Gastric erosions	4	4
Ca esophagus	3	3
Ca stomach	1	1
Esophageal ulcer	1	1
Av malformations	1	1
Gastric ulcer	1	1
Duodenitis	1	1
Total	100	100

These results are comparable with study done at AIIMS by Anand *et al.*, (1983) which show commonest cause of upper gastrointestinal bleeding to be esophageal varices (55%). Also, study by Gupta *et al.* (2007) at Asian Institute of Gastroenterology shows that esophageal varices are the commonest cause (57.5%). Also studies by Bhutta *et al.*, (2012) and Mustapha *et al.*, (2008) show variceal bleeding to be the most common etiology of upper gastrointestinal bleeding. (19.7% and 49.3% respectively)

Variceal bleeding is the commonest finding in our study; followed by gastritis, duodenal ulcer and esophagitis; all of which have common predisposing factor- alcoholism, which is the most common risk factor in our study.

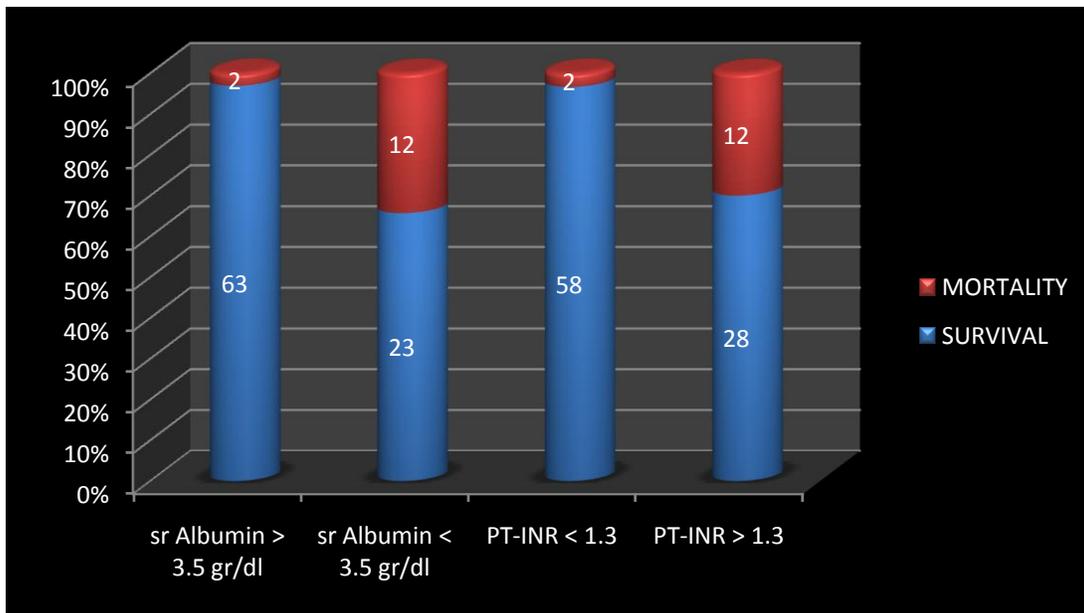


Figure 2: Relation of sr. albumin and pt-inr values with outcome

Also, a referral bias may contribute; i.e. more patients with liver disease and gastroesophageal varices are referred to our tertiary care centre, all of whom had massive bleeding and needed urgent hospitalization. Above table shows comparison of outcome in patients of upper gastrointestinal bleeding with sr. Albumin levels and PT-INR, on admission.

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Table 2: Sr. Albumin and PT-INR on admission and Outcome

	Total	Expired	Survived
Sr. ALBUMIN	100	14	86
>3.5 gr/dl	65 (100%)	2 (3.08%)	63 (96.92%)
<3.5 gr/dl	35 (100%)	12 (34.29%)	23 (65.71%)
PT-INR	100	14	86
<1.3	60 (100%)	2 (3.33%)	58 (96.67%)
>1.3	40 (100%)	12 (30%)	28 (70%)

Our study shows that out of 35 patients with sr. Albumin level less than 3.5 gr/dl, 12(34.29%) patients expired; while only 2(3.08%) patients expired of the rest 65 patients having sr. Albumin level of more than 3.5 gr/dl. By applying Chi Square test, $\chi^2 = 18.404$, degree of freedom = 1, p value <0.0001; the association between Sr. Albumin and mortality is significant.

In this study, out of 40 patients with INR of more than 1.3, 12(30%) patients expired; while only 2(3.33%) patients expired of the rest 60 patients having INR less than 1.3. By applying Chi Square test, $\chi^2 = 14.175$, degree of freedom = 1, p value <0.001; the association between INR and mortality is also found to be significant.

Study by Provenzale *et al.*, (1987) and Hamid *et al.*, (2000) also co-relate to our findings and state that sr. Albumin level and PT-INR are important prognostic indicators.

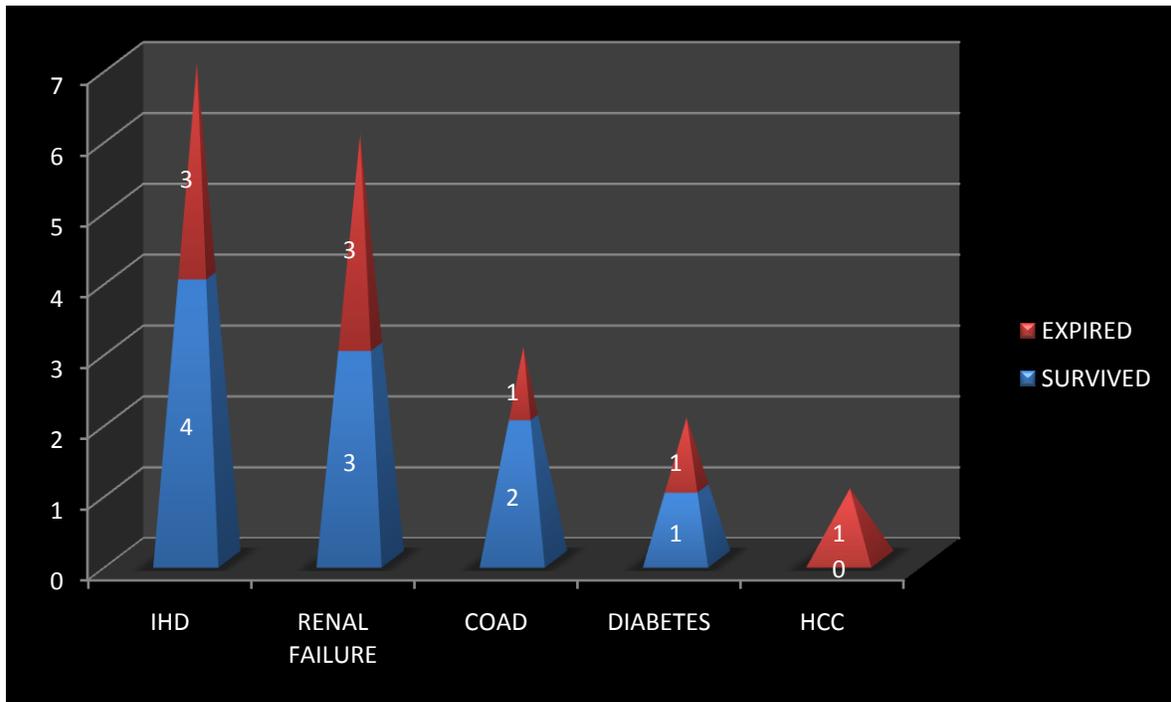


Figure 3: Relation of co-morbidities with outcome

Both, sr. Albumin levels and PT-INR are a measure of synthetic function of the liver and their derangement signifies liver failure; which is also associated with deranged coagulation profile, profuse bleeding, shock and can also cause cerebral edema, renal failure, systemic inflammatory response syndrome, hyponatremia, hypokalemia, lactic acidosis, pulmonary complications, adrenal insufficiency etc leading to MODS and is therefore associated with higher mortality. Alcoholism, alcoholic liver disease and gastroesophageal varices are associations of liver failure.

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Table 3: Co-morbid Conditions and Outcome

Co-morbidity	No. of cases	Expired	Survived
Ishaemic heart disease	7	3	4
Renal failure	6	3	3
Chronic obstructive airway disease	3	1	2
Diabetes mellitus	2	1	1
Hepatocellular carcinoma	1	1	0
Total	19	9	10

Above table shows various co-morbidities present in patients of upper gastrointestinal bleeding in our study, and their relation to outcome.

This study shows that IHD was the most common co-morbidity, present in 7% cases, followed by renal failure and chronic obstructive airway disease, present in 6% cases each. There were 2 patients with diabetes and 1 with HCC. Of these 19 patients with co-morbidities, mortality was associated with 9 patients; and of the remaining 81 patients without co-morbidities, 5 patients expired. By applying Chi Square test (with Yates' correction for continuity) to check for significant relation between co-morbidity and mortality, $\chi^2 = 18.406$, degree of freedom = 1, p value <0.0001. Thus the association between co-morbidity and mortality is significant.

This observation is consistent with the studies of Hamid *et al.*, (2000), Romagnuolo *et al.*, (2007), Burroughs *et al.*, (1992); all of these studies found that co-existing illnesses and co-morbidities imply poor prognosis. Also, co-morbidities are considered in various risk scoring systems like Blatchford Scale (Blatchford *et al.*, 2000) and Rockall Scoring System (Rockall *et al.*, 1996) for risk calculation.

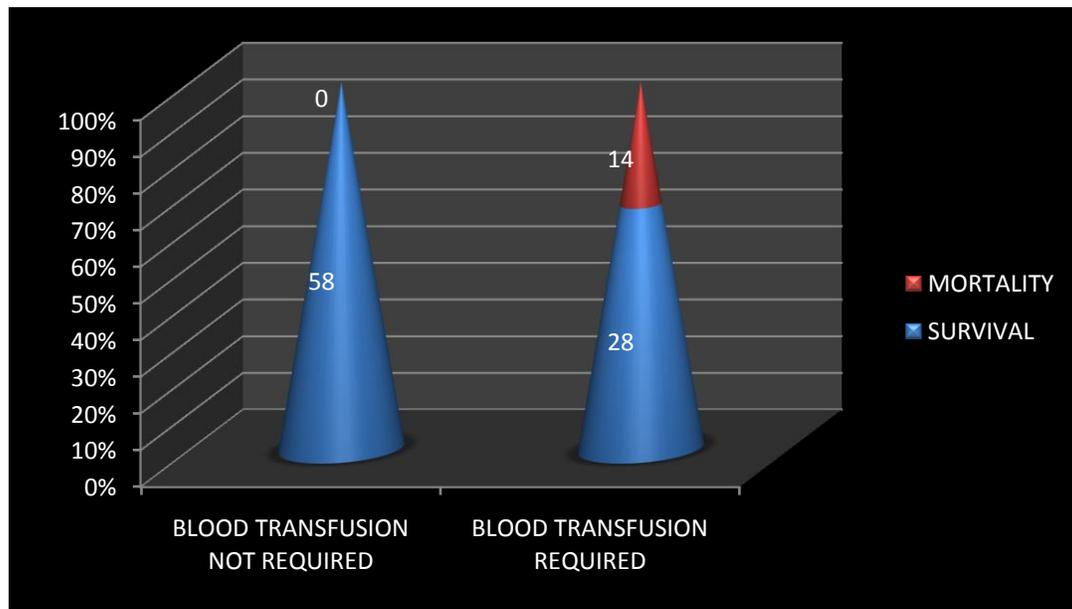


Figure 4: Relation of blood transfusion with outcome

Patients of IHD already have a compromised heart (especially, decreased contractility) and it becomes more difficult to cope-up during states of acute blood loss. Also, the patients being on anti-platelets (aspirin or clopidogrel) /anti-coagulation (heparin/warfarin) have increased tendency to bleed. Altered liver function leading to deranged coagulation factors further prevents coagulation and hemostasis in patients of liver disorders. Renal failure also leads to functional platelet disorders and increased bleeding. Presence of IHD and renal failure also lead to guarded resuscitative measures like watchful fluid therapy and blood transfusions.

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Table 4: Blood Transfusion and Outcome

Blood Transfusion	Total	Expired	Survived
Not required	58	0 (0%)	58 (100%)
Required	42	14 (33.33%)	28 (66.67%)
Total	100	14	86

Our study shows that out of 100 patients, 42% needed blood transfusion. All the 14 patients which expired needed blood transfusion. By applying Chi Square test to check for significant relation between blood transfusion and mortality, $\chi^2 = 22.481$, degree of freedom = 1, p value <0.00001; showing a statistical co-relation between blood transfusion and mortality.

Studies by Hamid *et al.*, (2000) (37.1%) and Sugawa *et al.*, (1990) (31.9%) also state that the patients requiring blood transfusion (especially more than 5 units) have poor prognosis, increased risk of re-bleeding and higher mortality rates.

Blood was transfused to patients with haemoglobin < 7 gr/dl and clinically indicated patients of hypovolemic shock. Need for blood transfusion signifies rapid and massive blood loss from a high risk lesion leading to hypotension and shock. More aggressive the resuscitative measures, more the units of blood transfused and critical the condition of the patient. Blood transfusion is also needed in patients undergoing surgical procedures. Fresh frozen plasma is transfused in patients of liver failure with coagulopathy. As a result, blood transfusion and units of blood transfused are usually taken as markers of severity of upper gastrointestinal hemorrhage and is an indirect marker of prognostic significance of haemoglobin value.

Conclusion

Oesophago-Gastro-Doudenoscopy is an indispensable tool in patients of upper gastrointestinal bleeding and is a must for diagnosis of anatomical lesion and etiology. The commonest etiology on Oesophago-Gastro-Doudenoscopy was found to be esophageal varices; followed by gastritis, duodenal ulcers and esophagitis. Alcoholism is a common risk factor and is associated with all of these etiologies.

Majority of the patients had normal serum albumin levels and PT-INR values. However, decreased serum albumin levels (<3.5 gr/dl) and deranged PT-INR (>1.3), i.e. presence of liver failure had a statistically proven co-relation to unfavourable outcome and mortality.

Ischaemic heart disease, renal failure and chronic obstructive airway disease were most common associated co-morbid conditions; while diabetes and hepatocellular carcinoma were less commonly associated. But the association between presence of co-morbidity and mortality was found to be statistically significant.

Majority of the patients with upper gastrointestinal hemorrhage did not have the need for blood transfusion, i.e. haemoglobin was > 7gr/dl and there was no hypovolemic shock. All the patients which expired needed blood transfusion. Blood transfusion and number of units of blood transfused are suggestive of severity of upper gastrointestinal haemorrhage and poor prognosis.

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