Study of effectiveness of the triage system in predicting the outcome of the patients presenting with acute Upper Gastrointestinal Bleed

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ABSTRACT

Background: Upper gastrointestinal bleeding (UGIB) is one of the common medical emergency known to contribute to significant number of morbidity and mortality. A number of scoring systems have been designed to help ascertain risk factors to predict poor outcome in patients with UGIB. Present study is aimed to assess the effectiveness of these five variables from the BLEED criteria and their ability to promptly predict the complications from acute upper gastrointestinal haemorrhage. **Material and Methods:** Present study is a prospective, observational study, conducted in patients > 18 years, either gender, presenting with acute upper gastrointestinal haemorrhage. **Results:** In this study out of total 100 cases maximum number of cases are >60years that is 30 cases (30.00%) with mean age of 51 yrs. Male patients are more compared to female patients with male to female ratio of 4.26:1.Etiological analysis suggests Oesophageal varices as the commonest cause for acute Upper GI bleed. Hematemesis (100 %) & melena (74 %) are common presenting complaints. 47% are alcoholics and 20% of patients are smokers. 27% of patients have previous history of liver disease, 31% patient have hypertension and 24% had diabetes mellitus. There are totally 88 patients under the high-risk category and 12 patients under the low risk category. Statistical analysis while associating risk status with BLEED criteria showed significant association between on-going bleed, low systolic blood pressure, elevated PT time, and associated co-morbidities. **Conclusion:** BLEED clinical criteria available at the time of triage determination can be used to stratify patients with Acute gastrointestinal haemorrhage into high risk and low risk groups.
Keywords: BLEED criteria, triage, acute gastrointestinal haemorrhage, risk stratification

INTRODUCTION

Upper gastrointestinal bleeding (UGIB) is one of the common medical emergency known to contribute to significant number of morbidity and mortality. Over the past 45 years, the contribution for the mortality from upper GI bleeding has remained stable at approximately

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10%.[1]

Mortality from acute GI bleeding is noted to be much greater than that for chronic bleeding. An initial hemodynamic assessment of these patients helps in planning resuscitation, forms the basis of further investigations and management. It also helps predict the prognosis of the patient.[2] Analysis of the various clinical and endoscopic factors permits us for better accurate risk assessment, rational treatment planning and improved outcome.[2,3,4]

Early endoscopy helps in prompt diagnosis, treatment and risk stratification. Therapeutic endoscopy is now considered as a safe and effective treatment modality at present.[3,4] A number of scoring systems[5] have been designed to help ascertain risk factors to predict poor outcome and to improve patient management and to efficiently utilise hospital resources in patients with UGIB. The five predictors were represented by the acronym "BLEED": which stood for ongoing bleeding, low blood pressure, elevated prothrombin time (PT), erratic mental status, and unstable co-morbid disease.[6,7] Present study was aimed to assess the effectiveness of these five variables from the BLEED criteria and their ability to promptly predict the complications from acute upper gastrointestinal haemorrhage.

MATERIAL AND METHODS

Present study is a prospective, observational study, conducted in a tertiary health centre in India. Study duration was 2 years (November 2018 to December 2019). Study approval has been obtained from institutional ethical committee.

Inclusion criteria
- Patients > 18 years, either gender, presenting with acute upper gastrointestinal haemorrhage, willing to participate in present study

Exclusion criteria
- Patient's relatives not giving consent.
- Patients with upper respiratory bleed and paranasal sinuses bleed.
- Patients developing bleeding secondary to head injury. (Road traffic accidents)
- Patients with inherited Bleeding/coagulation disorders.
- Bleeding due to trauma (iatrogenic or others.)

The study has been explained to patient's relatives in their regional language & written consent has been taken for participation and study. Patient details such as age, gender, presentation at admission (hematemesis, melena, hematochezia), associated factors (Alcohol consumption, smoking, use of medications such as non- steroidal anti-inflammatory drugs, aspirin, warfarin, steroids, any past history of upper GI bleed), comorbid conditions (Ischemic heart disease, congestive cardiac failure, renal failure, liver disease, disseminated malignancy, uncontrolled Diabetes mellitus, Hypertension) have been noted. All patients are subjected to detailed physical examination (GCS, systemic examination) and the clinical diagnosis have been noted,

Upper GI endoscopy has been performed in all patients, and their findings are documented. The various causes for upper GI haemorrhage are noted. The endoscopic therapy to control bleeding in indicated cases – such as banding of varices and glue application for gastric varices, that have been performed is also noted. Peptic ulcers have been classified based on the Forrest classification and varices by the classification according to American Association for Study of Liver Diseases (AASLD).

BLEED criteria is a triaging tool used for risk stratification of patients with AUGIB and to predict their prognosis based on simple clinical and laboratory parameters and categorising patients into low risk and high risk categories.

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Components of BLEED criteria:
- B- On going BLEED
- L- Low Blood Pressure (Systolic BP <100mmHg)
- E- Elevated Prothrombin time (Prothrombin time more than 1.2 times normal limit)
- E- Erratic mental status
- D- Disability: secondary to other comorbidities that increase the risk of morbidity and mortality (comorbidities requiring ICU care).

Variables such as requirement for blood transfusion, length of hospital stay. In hospital complications such as re-bleed, need for ICU stay, mortality are also noted.

The data is analysed using SPSS software. Each variable in the BLEED criteria along with other patient variables is analysed using chi square analysis with various outcomes that are noted in the study. P value <0.05 is taken as significant in this study. The results are averaged (mean + standard deviation) for each parameter for continuous data and numbers and percentage for categorical data is presented in table below. Proportions were compared using Chi-square test of significance.

RESULTS

[Table 1] In this study out of total 100 cases maximum number of cases are >60yrs i.e 30 cases (30.00%) with mean age of 51 yrs. Male patient are more compared to female patients with male to female ratio of 4.26:1.

Table 1: General characteristics

Characteristics	No. of patients	Percentage
Age groups (in years)		
<=30yrs	10	10.00
31-40yrs	16	16.00
41-50yrs	23	23.00
51-60yrs	21	21.00
>=61yrs	30	30.00
Mean age (years)	51.34	
Gender		
Male	81	81.00
Female	19	19.00

[Table 2] Etiological analysis suggest Oesophageal varices as the commonest cause for acute Upper GI bleed. A total of 57 cases diagnosed as Oesophageal varices.

Table 2: Etiology

Diagnosis	Frequency	Percentage

Eesophageal varices	57	57.0
Acid peptic disease	26	26.0
Carcinoma of stomach	1	1.0
Oesophageal varices+ Acid peptic disease	9	9.0
Gastric varices	1	1.0
GAVE	3	3.0

[Table 3] Hematemesis (100 %) & melena (74 %) were common presenting complaints.

Table 3 Showing clinical presentation of patients with Hematemesis & Melena:

Variables	Categories	Present	%
Haemetemesis	Red	86	86.00
	Coffee	14	14.00
Melena	Present	74	74.00
Fresh bleeding PR	Present	2	2.00

[Table 4] 47% are alcoholics and 20% of patients are smokers. 27% of patients have previous history of liver disease, 31% patient have hypertension and 24% have diabetes mellitus in this study group.

Table 4: Showing Presence of co-morbidities in study group:

Characteristics	No. of patients	Percentage
Habits		
Alcohol intake	32	32.00
Smoking	5	5.00
Alcohol + smoking	15	15.00
Co-morbidities		
DM	24	24.00
HTN	31	31.00
Liver Disease	27	27.00

[Table 5] 6 % patients presented with altered level of consciousness at the time of presentation, 86 % patients presenting with acute UGIH have fresh blood through the nasogastric tube. Per abdominal examination showed Hepatomegaly (11 %), Splenomegaly

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(12 %) & Ascites (11 %). It was observed that 30 patients have deranged LFT, 34 patients have deranged RFT, and 15 patients have deranged electrolytes, elevated prothrombin time is found in 47 patients.

Table 5: Other characteristics

Characteristics	No. of patients	Percentage
Conscious level		
Normal	94	94.00
Altered	6	6.00
Nasogastric aspiration		
Red Blood	86	86.00
Coffee Ground	14	14.00
Abdominal	Present	%
HepatoMegaly	11	11.00
SpleenoMegaly	12	12.00
Ascites	12	12.00
Investigations	31	31.00
Alt RFT	34	34.00
Alt LFT	30	30.00
Alt electrolyte	15	15.00
Elevated PT	47	47.00

[Table 6] Endoscopic examination is done in all patients after the initial stabilisation and resuscitation of the patient. The most common endoscopic findings are found to be oesophageal varices (66 %) followed by acid peptic disease (35 %). On endoscopic examination most common finding is oesophageal varices (66%) in which Grade III oesophageal varices is most predominant type. 52% patient underwent banding & 3% underwent glue application.

Table 6: Endoscopic findings in study population:

Endoscopic findings	Frequency	Percentage
Esophageal varices seen	66	66.00

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APD	35	35.00
PHG	21	21.00
Gastric varices	7	7.00
Malignancy	1	1.00
GAVE	3	3.00
Esophageal Varices :Grades		
Grade I	15	15.00
Grade II	14	14.00
Grade III	37	37.00
Endoscopic management	Present	%
Glue applied	3	3.00
Banding	52	52.00

[Table 7] Out of 100 patients 53 are admitted into the ICU , 7 patients are noted to have re-bleed within the 1st 24 hours of admission, mortality is noted in three patients.

Table 7: Clinical outcome

Clinical outcome	Frequency	Percentage
ICU	53	53.00
Re-bleeding	7	7.00
Mortality	3	3.00

[Table 8] There are a total of 88 patients under the high risk category and 12 patients under the low risk category. 88% of patients are in high risk group of which, 86% have on-going bleeding at admission, 22% have low Systolic BP, 47% have elevated PT, 6% have altered consciousness & 48% have associated comorbidities.

Table 8 Components of BLEED criteria

BLEED criteria	Frequency	Percentage
Fresh bleeding	86	86.00
Low Systolic BP	22	22.00
Elevated PT	47	47.00
Erratic mental status	6	6.00

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Co-morbidities	48	48.00
Risk categorization		
High risk	88	88.00
Low risk	12	12.00

[Table 9] Statistical analysis while associating risk status with BLEED criteria showed significant association between on-going bleed, low systolic blood pressure, elevated PT time, and associated comorbidities.

Table 9: Association between BLEED criteria and complications

Features	No Complications N (%)	Complications N (%)	p value#
Ongoing fresh bleed			
No	8	6	0.46
Yes	40	46	
Low SBP (<100mm of Hg)			
No	43	35	0.00056*
Yes	3	19	
Elevated PT			
No	24	29	0.879
Yes	22	25	
Erratic mental status			
No	46	48	0.019*
Yes	0	6	
Associated co-morbidities:			
No	31	21	0.008*
Yes	15	33	

DISCUSSION

It has long been suspected that the presence of specific clinical factors might significantly influence the outcome of patients with acute GI haemorrhage.[8,9] Larson and colleagues[10] examined 115 patients with upper GI bleeding and found that age of >60 yrs, disease in

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three or more organ systems, the need for surgery, the presence of lung or liver disease, and the recent stress of surgery, trauma, or sepsis were predictors of mortality for this group of patients. Other investigators, using disease-specific scoring systems[11] or more general prediction models such as APACHE[12], have also been able to stratify patients with GI haemorrhage into risk groups. In general, these studies[10,11,12] support the importance of underlying severity of illness as a determinant of outcome for the patients with acute GI haemorrhage. However, none of the methods employed in these studies have been prospectively validated as reliable predictors of outcome for this patient population.[13]

In our study there are both male patients and female patients with male to female ratio of 4.26:1 showing preponderance towards male population. Similar finding was observed in other studies by Kollef et al.,[13] (1.5:1), Javad salami et al.,[14] (3.39:1) & Aneesa M Das et al.,[15] (1.8:1). This implicated that there is increase in the incidence of Acute Gastrointestinal Haemorrhage in male patients.

In our study 100 patients presented with history of hematemesis as presenting complaint out of which 86 (86.0%) patient have history of fresh blood in vomitus. These findings in our study pertaining to presenting complaint had difference with the findings in other study by Kollef et al.,[13] & Aneesa M Das[15] where history of vomiting fresh blood was not as common as in our study. Out of 100 patients with history of hematemesia 86(86 0%) patients are noted to have fresh blood through Nasogastric aspiration. Other similar study by Javad salimi et al.,[14] (26.73 %), Kollef et al.,[13] (19.2 %) had less incidence of Nasogastric aspirate containing blood. Endoscopy was done in patients after initial stabilisation, Oesophageal varices accounted for 66.00% of Endoscopic finding out of that Grade III Oesophageal varices constituted 37.00%. This endoscopic finding in our study differed when compared to other similar studies by Kollef et al.,[13] where predominant endoscopic finding was Gastric ulcer (17.6 %) &oesophageal varices (6.6 %) respectively.

In our study group all the patients having any of the component of BLEED criteria were analysed& it has been noted that 86 % patients have ongoing bleeding , 22 % patient have low SBP (<100), 47 % patient have elevated prothrombin time, 6 % patients have altered mental status , 48 % patient have associated co-morbidities.

Javad salimi et al.,[14] showed total number of high risk patients were 71(of 101), out of which 45 patients developed in hospital complications. In another study by Kollef et al.,[13] there were total 80 patients in high risk group (80/108) out of which 43 patients developed in hospital complications. Comparing with other studies percentage of patients in high risk group were higher in our study (54.0%) compared to Javad salimi et al.,[14] (70.29%) &Kollef et al.,[13] (74.07%). Also percentages of patients developing in hospital complication are more in our study (54.0%) compared to Javad salimi et al.,[14] study (42.57%) &Kollef et al.,[13] study (41.66%). But values were comparable and nearly correlating with other studies.

In our study observations showed association between complications and decreased SBP, erratic mental status and associated co-morbidities with significant p value. These findings have correlation with the findings in study by Kollef et al.,[13] &Javad salimi et al.,[14] except for ongoing bleeding and elevated PT which do not show association in our study with in hospital complications but had association in study by Kollef et al.,[13] & Javad salimi et al.,[14] study. Association between on-going bleeding and in hospital complication was also significant in study by Javad salami et al.,[14] with p value of 0.001.

In study done by Kollef et al.,[13] BLEED criteria was applied to patients who were initially resuscitated or have received some critical care in ICU .Where as in our study BLEED criteria was applied to patients at initial level of presentation before receiving critical care or ICU admission there by eliminating bias caused by initial critical care and ICU admission on

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clinical outcome. There is the possibility that endoscopic therapy influenced some of results in Kollef et al.,[13] study. Endoscopic therapy may explain, in part, the lack of correlation observed between the presence or absence of stigmata of recent haemorrhage and the recurrence of re-bleeding by significantly neutralising this effect.In our study Endoscopy have been performed minimum 24 hr after admission, which is later than early endoscopy. This emphasises the importance of risk stratifying system independent of endoscopic findings in country like India where urgent endoscopy is less commonly available in most circumstances.

CONCLUSION

BLEED clinical criteria available at the time of triage determination can be used to stratify patients with Acute gastrointestinal haemorrhage into high risk and low risk groups. Risk stratification using BLEED criteria applied at the time of triage can be used to predict outcome of patient hospitalised with Acute gastrointestinal haemorrhage.

Conflict of Interest: None to declare
Source of funding: Nil

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