ORIGINAL ARTICLE

Predictive accuracy of Rocalls Risk score for in hospital mortality of Patients with Variceal Upper GI Bleed

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ABSTRACT

Background: Variceal bleeding is an important issue in an emergency department. Prediction of risk in the patients with variceal upper gastrointestinal bleeding has been subject. A limited data is available for the prediction of variceal bleeding and in hospital mortality using Rockall risk score.
Aim: To determine diagnostic accuracy of Rockall risk score for hospital mortality of patients having variceal upper GI bleeding
Setting: Study was conducted in medical departments of Mayo Hospital Lahore.
Duration: Study was carried out from 14-05-2014 to 13-11-2014
Study design: It was cross sectional study
Data collection procedure: Total of 254 cases with variceal upper GI were enrolled in this study. Basic demographic features like age, gender were noted for each patient. Appropriate pharmacological and endoscopic therapy such as double IV line, proton pump inhibitors, vasoactive drugs and IV antibiotics were given. Endoscopy was done for endoscopic variceal band ligation and then patients were followed for in hospital outcome. Data collected was entered and analyzed using SPSS 20.
Results: Age mean of patients was 51.87±14.53 years. 56% male patients and 44% female. Mean Rockall risk score was 3.73±1.17. Ranging from 2-8 There were 112(44.1%) patients who had Rockall risk score>4and 142 patients had Rockall risk score as <4.In hospital mortality results showed that 71(28%) patients had in hospital mortality while the remaining 183(72%) of the patients survived. Sensitivity and specificity of Rockall risk score was 98.59% and 77.05%.
Conclusion: According to this study Rockall risk score be used to predict hospital mortality in patients with variceal upper GI bleeding.
Keywords: Hospital mortality, Predictive accuracy, Rockall risk score, Variceal upper GI bleeding

INTRODUCTION

Causes of upper gastrointestinal bleeding are divided into variceal bleeding both esophageal and gastric varices and non-variceal bleeding (peptic ulcer, erosive gastroduodenitis, reflux esophagitis, tumor, vascular ectasia, *etc*)[3].

Acute variceal bleeding causes for about one-third of all deaths among upper gastrointestinal bleeding. Major problems related to the prevention and treatment of variceal hemorrhage, prediction of patients at risk, prophylaxis against a first bleed, treatment of an active bleed and prevention of rebleeding[4].

Upper GI endoscopy remains the primary diagnostic investigation[5]. Rockall risk score has been developed and widely used to predict re-bleeding and mortality in individuals with non-variceal bleeding especially[6] but some authors used this scoring method for the prediction of variceal bleeding and in hospital mortality[7,8,9].

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A local study (short communication) reported the mean Rockall risk score in patients who died was 4.30±1.78[8].

There is no published study available that predicts in hospital outcome for such patients. Presently we don't have a reliable prognostic indicator for patients with variceal bleeding.

The objective of the was to detect & determine diagnostic accuracy of Rockall risk score for hospital mortality of patients with upper variceal GI bleeding

OPERATIONAL DEFINITION

Rockall risk score: Rockall risk score was used for predicting the outcome hospital mortality and discharge in patients with variceal upper GI bleeding. This scoring system uses clinical criteria as well as endoscopic findings to predict outcome. Scores was from 0 to 9 and was further divided into three categories i.e., low risk < 3, Moderate risk 3-4 and High risk > 4. Mortality was considered if Rockall risk score > 4.

MATERIAL AND METHODS

This cross-sectional study was conducted at the medical departments of Mayo Hospital Lahore from

14-05-2014 to 13-11-2014. Total 254 patients were taken in this study, using expected sensitivity and specificity of Rockall risk score as 88.89% and 81.82% respectively (results of pilot study are attached), taking 15% prevalence of mortality, 95 % confidence level and 10% margin of error. Non Probability Purposive Sampling technique was used.

Inclusion Criteria

- Patients having age more than 18 years of either gender.
- Patients admitted with hematemesis (was assessed clinically, nasogastric aspirate containing blood), malena (was assessed clinically) secondary to cirrhosis of liver.
- Patients found to have esophageal and gastric varices as source of bleeding by active bleeding, oozing, red sign (was assessed on endoscopy) or absence of other source of bleeding.

Exclusion criteria

- Patients with hepatic encephalopathy (was assessed clinically).
- Patients not fit to undergo endoscopy (was assessed clinically).
- Patients with other sources of bleeding from ulcer, growth and erosion (was assessed with upper gastrointestinal endoscopy).

Data collection: After approval of synopsis and informed consent, 254 cases with variceal upper GI bleeding were enrolled for study. All data was taken from medical departments of Mayo hospital Lahore. Basic demographic features like age, gender was taken from each patient or attendant. All clinical and endoscopic features were noted down to calculate Rockall risk score. Appropriate pharmacological and endoscopic therapy such as double IV line, proton pump inhibitors, vasoactive drugs and IV antibiotics were given. Then endoscopy was done for endoscopic variceal band ligation and then patients were followed for in hospital outcome, discharge or mortality (as per operational definition). All the relevant data was collected by researcher himself in a pre defined proforma.

Data Analysis Procedure: Data collected was entered and assessed using SPSS 20. Quantitative variables as age and Rockall risk score was presented as mean±Standard Deviation. Qualitative variables like gender of patients, in hospital outcome (discharge and in hospital mortality) was presented for frequency and percentages. Findings of Rockall risk score and in hospital outcome discharge and in hospital mortality was tabulated the form of 2×2 table. Data was stratified for gender and age > 60 years. Post stratification diagnostic accuracy was also determined.

RESULTS

Mean age of all 254 patients was 51.87±14.53 years. Mean age of male and female patients was 52.57±15.10 and 50.99±13.80 years respectively (Table-1).

Gender distribution of patients showed that there were 56% male patients and 44% female patients were in the study.

Mean Rockall risk score was 3.73±1.17. Minimum and maximum Rockall risk score was 2 and 8. There were 112(44.1%) patients who had Rockall risk score> 4and 142 patients had Rockall risk score as <4 (Table 2)

In hospital mortality results showed that 71(28%) patients died during hospital stay. While the remaining 183(72%) of the patients survived. Here were 71 patients who had in hospital mortality. Among these patients 70 patients Rockall risk score was >4, while 1 patient had <4 score. Among survived patients 42 patients had Rockall risk score >4 while the remaining 141 patients had Rockall risk score <4. Sensitivity and specificity of Rockall risk score was 98.59% and 77.05%. While PPV and NPV was 62.5% and 99.3% respectively. Overall diagnostic accuracy of Rockall risk score was 83.07% (Table 3).

Diagnostic accuracy of Rockall risk score was seen in relation to the gender of the patients. For male patients sensitivity and specificity of Rockall risk score to predict in hospital mortality was 100% and 75% respectively. PPV and NPV in male and female patient was 56.67 and 100% and 69.23% and 98.33% respectively. Overall diagnostic accuracy of Rockall risk score among male and female patients was 81.69% and 84.84% respectively.

Patients who were <60 years of age among them sensitivity, specificity, PPV and NPV of Rockall risk score was 97.37%, 96.27%, 88.1% and 99.23%. Overall diagnostic accuracy was 96.51%

Table 1: Descriptive statistics for age of patients

	Male	Female	Total
N	142	112	254
Mean	52.57	50.99	51.87
SD	15.10	13.80	14.53
Minimum	21.00	23.00	21
Maximum	100.00	88.00	100

Table 2: Cutt points for rockall risk score

	Frequency	%age
>4	112	44.1
<4	142	55.9
Total	254	100

Table 3: Diagnostic accuracy of rockall risk score in relation to mortality

	In Hospital Mortality		Total
	Yes	No	
>4	70	42	112
<4	1	141	142
Total	71	183	254

DISCUSSION

Varices are present in approximately 50% of patients with cirrhosis. Patients without varices develop them at a rate of 8% per year, and the strongest predictor for development of varices in those with cirrhosis who have no varices at the time of initial endoscopic screening is an HVPG >10 mmHg. Prediction of the risk in the patients with upper gastrointestinal bleeding has been the subject for a several decades[22,23 20].

The RRA score was mainly used for prediction of the risk of rebleeding and death in patients with upper non variceal GI hemorrhage. The score was derived by multivariate analysis in a cohort of patients with upper GI hemorrhage and subsequently validated in a second cohort. There are many studies available for non-variceal bleeding but data is limited for variceal bleeding[18].

Moreover they reported that such findings cannot be extrapolated to those with variceal bleeding as our study did not include such patients[18].

Moreover, Sanders SD, et al reported that the Rockall score was predictive of both rebleeding and mortality in patients with variceal hemorrhage (p-value < 0.0005), as was the Child-Pugh score (p = 0.001 and p < 0.0005, respectively)[7].

A local study (short communication) reported the mean Rockall risk score in patients who died with variceal bleeding was 4.30±1.78[8]. Another local study reported Rockall score was found to have good predictive value for in hospital mortality (p-value<0.001 and area under curve AUC 0.834).[9]But both studies did not give any diagnostic accuracy such as sensitivity and specificity so we planned this study to determine the diagnostic accuracy in terms of sensitivity, specificity, PPV and NPV (which is not available in literature for variceal upper bleeding). We found sensitivity and specificity of Rockall risk score was 98.59% and 77.05%. While PPV and NPV was 62.5% and 99.3% respectively. Overall diagnostic accuracy of Rockall risk score was 83.07%. These results are same to the results of our pilot study that was conducted for synopsis approval, i.e. the sensitivity and specificity of Rockall risk score was 88.89% and 81.82% respectively with overall diagnostic accuracy 85%.

CONCLUSION

According to this study Rockall risk score can be used to predict hospital mortality of patients with variceal upper GI bleeding, as we found the sensitivity and specificity of Rockall risk score was 98.59% and 77.05%. While PPV and NPV was 62.5% and 99.3% respectively.

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