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General Surgery

PREDICTIVE VALUE OF ROCKALL SCORE IN DETERMINING THE RE BLEEDING RATES IN PATIENTS WITH NON VARICEAL UPPER GASTROINTESTINAL BLEED – A PROSPECTIVE STUDY

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ABSTRACT **Background:** Eighty two patients with acute non variceal upper gastrointestinal bleeding in a study period of 2 years was assessed with endoscopy and stratified according to the Rockall score in terms of high risk for Re bleeding. **Aims and Objectives:** To determine predictive value of Rockall Score in assessing the re bleeding rates of Non Variceal Upper Gastro-Intestinal Bleeding. **Materials and methods:** This was a prospective, longitudinal and analytical study of inpatients presenting with upper gastro-intestinal bleed. Patients were categorized depending upon etiology and complete Rockall score. If the score was greater than or equal to 8, there was a high chance of Re bleeding. **Results:** Rockall score moderately predicted re bleeding (p value – 0.045, area under curve -0.885). The sensitivity, specificity and positive predictive value of Rockall score in determining re bleeding were 86%, 63% and 63% respectively. **Conclusion:** The present study concluded that Rockall score was a good, cheap and an applicable tool for segregating patients who were at high risk of re bleeding.

KEYWORDS : Non variceal upper gastrointestinal bleed, Rockall score, Re bleeding.

INTRODUCTION

Upper Gastro Intestinal Bleeding contributes for about 80% of significant gastro intestinal hemorrhage [1]. In western literature, it was considered to be the most commonly encountered emergency with an annual incidence of 50 to 150 per100, 000 of the population [2]. Several scoring systems and classifications of Gastro Intestinal Bleed have been developed to help predict the outcome of patients and to improve patient management and promote cost-effective use of hospital resources [2]. Some of them are Rockall scoring system [3], Glasgow Blatchford scoring system [4] and Forrest classification of Peptic ulcer Disease, BLEED classification [5].

The most commonly used risk scoring system in upper gastrointestinal bleeding is the Rockall score, which was described in 1996 following the analysis of data from a large English audit [3]. The score was developed to assess the risk of re bleeding following presentation with upper gastrointestinal bleeding and incorporates patient age, hemodynamic parameters, co morbidities and endoscopic findings.

The complete Rockall score, which relies on clinical and endoscopic variables, is also used to identify patients with upper gastrointestinal bleeding who died or have recurrent bleeding [6, 7]. To date, the Rockall score is one of the most widely used methods for risk assessment for upper gastrointestinal bleeding and has been validated by many studies [8]. It can differentiate between patients with stable condition that could be discharged from hospital and those who require further care and this could help to minimize hospital stay and cost [9]. Increased Rockall scores were associated with increased risk of re bleeding and need for blood transfusions [10].

The Rockall score enables the clinician to formulate a more precise diagnosis and substantially shortens the time in hospital, especially for patients at low-risk of re bleeding and death, so more resources can be dedicated to critically ill patients [11].

The Rockall score has been externally validated in several countries.

It has been also been shown to be superior to the Baylor and Cedar-Sinai scores in identifying low risk patients among a cohort with non-variceal bleeding [12]. At present, the Rockall score is the most widely used and studied post-endoscopy score to predict Re bleeding. No other endoscopy based score has yet been validated to be of proven superiority in clinical use to triage patients appropriately, without affecting the outcomes [13, 14].

Figure 1 – Rockall Score [3].

AIMS AND OBJECTIVES:

- To determine the predictive value of Rockall Score in assessing the re bleeding rates in patients presenting with Non Variceal Upper Gastro Intestinal Bleed.

MATERIALS AND METHODS:

Eighty two patients (only adults, age > 18 years, with no coagulopathy) who presented with Non variceal Upper Gastrointestinal bleed were examined and endoscopy was done. Rockall score was calculated for everyone and they were categorized according to the severity of the score. The statistical

method used here was to find the correlation between re bleeding and Rockall scores using Spearman's rho Co efficient. If there was a positive correlation then the predictive ability of Rockall score in determining re bleeding was calculated using Receiver Operator Characteristics curve and significant association between the Rockall scores were ascertained. Then eventually, the overall positive predictive value of the Rockall score in determining the re bleeding status was calculated. SPSS version 16.0 software was used to do the statistical analysis.

RESULTS AND OBSERVATIONS:

Among 82 patients, in patients with score less than six, no patient re bled during the course of hospital stay. Whereas in patients with score greater than or equal to seven, many patients re bled forcing to intervene.

The following table shows the distribution of the study population with respect to the Rockall score and total number of patients re bled during the course of the hospital stay forcing to intervene.

S.NO	CUMULATIVE ROCKALL SCORE	TOTAL NUMBER OF PATIENTS IN THAT SCORE	TOTAL NUMBER OF PATIENTS RE-BLED	RE-BLEEDING PERCENTAGE
1	6	15	1	6
2	7	24	16	67
3	8	4	1	25
4	9	27	26	96
5	10	2	2	100
6	11	---	---	---

Table 1: Rockall score in the study showing varying outcome

Any score around 7, 8 or more, it was inferred that they had high possibilities of re bleeding.

Spearman's Rho correlation test was used which showed the p value of 0.042 (p<0.05 – statistically significant) between Rockall score and re bleeding.

SPEARMAN RHO'S CORRELATION		REBLEEDING	ROCKALL SCORE
REBLEEDING	CORRELATION COEFFICIENT	1.000	-0.684
	SIG. (2- TAILED)		0.042
	N	82	82
ROCKALL SCORE	CORRELATION COEFFICIENT	-0.684	1.000
	SIG. (2- TAILED)	0.042	
	N	82	82

Table 2: Spearman Rho's Correlation between Rockall score and Rebleeding.

Since there was a significant correlation between Rockall score and Rebleeding, the co ordinates were plotted in a Receiver Operator Characteristics curve. The Receiver Operator Characteristics curve of Rockall scores (shown below) demonstrates several things. Area under the curve was 0.885. It seems from the Receiver operator characteristics that Rockall scores itself is a moderately good indicator of re bleeding.
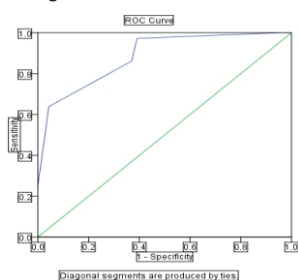

Figure 2: Receiver Operator Characteristics curve depicting sensitivity and 1- specificity.

Area	Std. Error	Asymptotic Sig.	Asymptotic 95% Confidence Interval	
			Lower Bound	Upper Bound
.885	.036	.000	.814	.955

Table 3: Area under Curve

As per the Receiver Operator Characteristics curve the cut off value for Rockall score at 7.5 (~8) was ascertained. The sensitivity and specificity of the Rockall score in determining the re bleeding status at the cut off level 8 was 86% and 63% respectively. The positive predictive value was around 63%.

DISCUSSION:

All the patients with scores more than 8 underwent compulsory repeat endoscopy as they had re bleeding during their course of hospital stay. Our findings and observations were compared with international journals. In our study, the minimal Rockall score was 4 and maximal score was 10. This was in contrast with study by Reda et al [9] who published minimal score as 1 and maximal score was 9. In our study, patients with Rockall score above 8 certainly re bled during the course of their hospital stay. Similarly patients with score less than 5 did not bleed at all. But out of 15 patients with a score of 6, only one re-bled. Of the 24 patients with score of 7, sixteen of them re-bled. But contrary to our expectation, out of 4 patients with a score of 8, one only re-bled. This was because of the lack of subjects with score of 8 during our study. This showed any score above or equal to 7 had high chances of re- bleeding.

Wang CY et al in the World Journal of Gastroenterology 2013 observed that out of 20 cases with a Rockall score of 7, ten have re-bled. He also mentioned that out of 15 cases with a score of 8, ten re-bled [15]. Thus our observations were in contrast with the world literature which states that for scores greater than 3, there are higher chances of re bleeding. In the international literature by Reda et al [9] the cut off value at 3.5 showed sensitivity 100%, specificity 53.7% and positive predictive value = 32.1%. Nevertheless in our observation there were no patients re bled with a score of 4 or 5. From the table 1, we inferred that in patients with high Rockall scores, they had a significant risk of Re bleeding. Patients who had score more than or equal to seven re bled during their course of hospital stay. That too there was bleeding percentages which became exponentially high if the score was more than eight. Thus our observation correlated with the statistical cut off value.

CONCLUSION:

Rockall score is a good tool for segregating patients who are at high risk of re bleeding to a certain extent. But it cannot be considered as a gold standard one because of its own limitations. However repeated clinical evaluation with high index of suspicion only helps in diagnosing re bleeding at an early stage in order to prevent morbidity and mortality.

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