A Quantitative Analysis on Requirement of Blood Transfusion in Upper Gastrointestinal Bleeding using Blatchford Bleeding Score

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ABSTRACT

Introduction: The GBS enables assessment of risk based on clinical variables alone without the use of endoscopic findings. Its purpose is to aid in identification of patients requiring intervention, such as blood transfusion, or endoscopic or surgical intervention to control UGI haemorrhage. Study objective was to correlate the requirement of blood transfusion in patients presenting with upper gastrointestinal bleeding and Blatchford scoring system.To analyse and correlate the score with prediction of rebleeding, duration of hospital stay.

Material and Methods: A Cross sectional quantitative study was conducted in Medical ICU/Wards of Pushpagiri medical college. From (January 2016 to June 2017). All Patients admitted with upper gastrointestinal bleeding during this period was selected as sample size. A detailed history was taken, and a thorough clinical examination was done, complemented by relevant investigation as required for the study. Unpaired t-test,Chi square test and Correlation were used as Test of significance. P-value <0.05 is considered statistically significant using Epi-info 7 software.

Results: Majority of patients were in the age group of 41 to 50 years (28.6%). 72.6% were males and the remaining females. 54.8% of patients did not require blood transfusion at all, 20.2% was transfused 1 unit of packed red cells and only 1.2% with 4 units. Only 3.6% patients who presented with upper GI bleed had a rebleeding which further tells the need of blood transfusion.majority of the patients had a mean hospital stay of 5 – 8 days around 48%. There was significant correlation between Blatchford score on admission and requirement of blood transfusion (p value 0.000) and duration of hospital stay (p value 0.008).

Conclusion: There was a significant correlation between Blatchford scoring on admission and requirement of blood transfusion. There was also a significant correlation between initial Blatchford scoring and duration of hospital stay and outcome

Keywords: Blood Transfusion, Upper Gastrointestinal Bleeding, Blatchford Score, Rebleeding, Sensitivity, Specificity.

INTRODUCTION

Upper gastrointestinal bleeding is haemorrhage originating proximal to the ligament of Treitz; in practice from the oesophagus, stomach and duodenum.[1] The severity of the disorder varies from mild symptoms, such as coffee-ground vomiting without haemodynamic compromise to exsanguination. However, most patients do not need emergency endoscopic intervention or blood transfusion.[2] The approach to upper GI bleeding consists of maintenance of hemodynamic stability and determination of the amount and localization of bleeding.[1] The prognosis of GI bleeding is variable, from mild to life-threatening bleeding. As in all life-threatening conditions in an emergency department, physical examination, diagnostic procedures, and therapeutic efforts should be simultaneously initiated, and patients should be resuscitated and stabilized in upper GI bleeding.[2-4] In order to stratify patients according to the risk of the complications, such as rebleeding or death, and to predict the need of clinical intervention, several risk scores have been proposed and their use consistently recommended by international guidelines.[3] Although several scores have been published and validated for predicting different outcomes, the most frequently cited ones are the Rockall score and the Glasgow Blatchford score (GBS). The GBS enables assessment of risk based on clinical variables alone without the use of endoscopic findings. Its purpose is to aid in identification of patients requiring intervention, such as blood transfusion, or endoscopic or surgical intervention to control UGI haemorrhage.[4] This study aimed at correlating GBS with requirement of blood transfusion in Upper GI bleeding based on the hypothesis that GBS will be able to reliably predict whether blood transfusion will be required in cases of upper GI bleeding. Patients with higher score were analysed regarding need of blood transfusions, additionally regarding duration of hospital stay and outcome and also whether assessing patients based on this score reduced admissions for this condition, allowing more appropriate use of in-patient resources.

MATERIAL AND METHODS

This Cross-sectional quantitative analysis was done in the Medical ICU/Wards of Pushpagiri medical college on patients admitted with upper gastrointestinal bleeding in Medical ICU/Wards. The duration of study was 1.5

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Section: Medicine

years (January 2016 to June 2017). Consecutive sampling technique was used in the study.

Inclusion criteria - 1. All patients more than 18 years of age. 2. Experiencing either haematemesis (NG bloody aspirate), melaena or both as confirmed by hospital staff.

Exclusion Criteria - 1. Patients admitted with lower GI bleed 2.Patients declining to undergo blood transfusion.

Methodology- A detailed history was taken, and a thorough clinical examination was done, complemented by relevant investigation as required for the study. All the data were duly recorded in the standard prepared proforma. Details of each patients were recorded and analysed with respect to aetiopathology, age. Cases were put on Blatchford scoring system and prognosticated. Cases were classified as those requiring and not requiring blood transfusion based on the score assigned on admission. Written Informed consent from the subjects and ethical clearance was obtained from the ethical committee was obtained before the start of study.

STATISTICAL ANALYSIS

Data was consolidated and entered in a Microsoft Excel spreadsheet and then transferred to Epi info version (7.1.3.0. centre for disease control and prevention, Atlanta, Georgia, USA, 2013) software for analysis. Unpaired t-test, Chi square test, correlationwas used as Test of significance. P-value <0.05 is considered statistically significant.

RESULTS

Majority of patients were in the age group of 41 to 50 years (28.6%). Patients less than 40 years accounted to 9.5% and those more than 70 years to 16.7%. As per the percentage distribution of gender, 72.6% were males and the remaining females. This indicates that UGI bleeding is male preponderance. Both age and sex showed significant association (table-1).

As per table 2, 54.8% of patients did not require blood transfusion at all, 20.2% was transfused 1 unit of packed red

Age (years)	N	Percent (%)	p-value
<=40	8	9.5	
41 – 50	25	28.6	
51 – 60	23	27.4	
61 – 70	15	17.9	
>70	14	16.7	
Mean ± SD		56.5 ± 15.1	0.001*
Male	62	72.6	0.03*
Female	23	27.4	
*statistically significant			

Table-1: Distribution of cases according to Age and Sex

Blood transfusion	N	Percent (%)
0	46	54.8
1	18	20.2
2	14	16.7
3	6	7.1
4	1	1.2

Table-2: Distribution of sample according to blood transfusion

cells and only 1.2% with 4 units.

As per table 3- In the study population out of 85 patients admitted, only 3.6% patients who presented with upper GI

Rebleeding	Count	Percent
No	82	96.4
Yes	3	3.6

Table-3: Distribution of Sample according to Rebleeding

Hospital stay	Count	Percent
1 - 4	18	21.4
5 - 8	41	47.6
9 - 12	15	17.9
>12	11	13.1
Mean ± SD, p-value	7.7 ± 3.8, 0.001*	
*statistically significant		

Table-4: Distribution of sample according to Hospital stay

Mean	9.8
SD	4.6
Median	10.0
Minimum	1.0
Maximum	16.0

Table 4- Descriptive Statistics for GB Score

Variables	r	p-value
Blood transfusion (units)	0.645**	0.000
Hospital stay	0.288**	0.008
r- correlation coefficient		

Table-5: Correlation between GB score and Selected variables

Rebleeding	Mean	SD	N	t	p
No	9.8	4.6	82	0.04	0.967
Yes	9.7	4.0	3		

Table-6: Association of GB Score based on Rebleeding

Positive if Greater Than or Equal To	Sensitivity	Specificity
0.00	1.00	0.00
1.50	1.00	0.03
2.50	1.00	0.05
3.50	1.00	0.11
4.50	1.00	0.25
5.50	1.00	0.27
6.50	1.00	0.29
7.50	1.00	0.39
8.50	1.00	0.47
9.50	1.00	0.52
10.50	1.00	0.57
11.50	1.00	0.59
12.50	1.00	0.75
13.50	0.89	0.80
14.50	0.89	0.84
15.50	0.33	0.95
17.00	0.00	1.00

Table-7: Sensitivity and Specificity for different points of GB score

F14

International Journal of Contemporary Medical Research
Volume 6 | Issue 6 | June 2019 | ICV: 98.46 | ISSN (Online): 2393-915X; (Print): 2454-7379

Varghese, et al.   Blood Transfusion in Upper Gastrointestinal Bleeding using Blatchford Bleeding Score
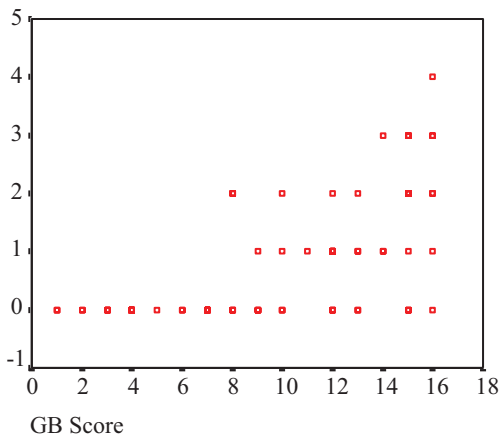
Section: Medicine

Figure-1: Scatter Diagram for Blood Transfusion based on GB Score
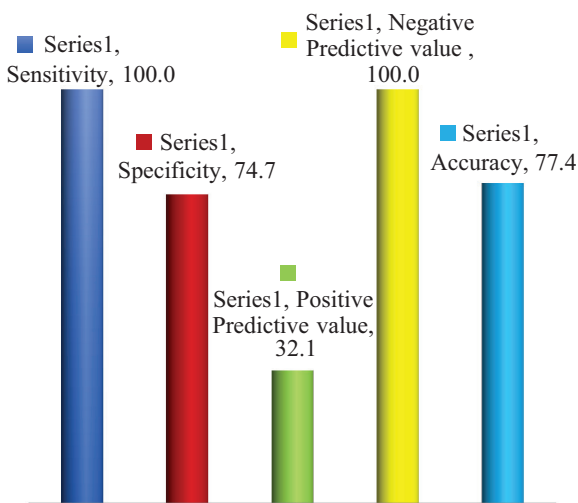

Figure-2: Predictive power of GB score for predicting outcome

bleed had a rebleeding which further tells the need of blood transfusion.

As per table-4 majority of the patients had a mean hospital stay of 5 – 8 days around 48%. 13.1% stayed for more than 12 days which was found to be statistically significant. (p<0.05). while 18% of cases stayed for between 9-12 days. It is evident from our study the minimum Blatchford scoring on admission was 1 and the maximum score was 16 (table-4). On analyzing the data, there was significant correlation between Blatchford score on admission and requirement of blood transfusion (p value 0.000) and duration of hospital stay (p value 0.008) (table 5).

As per table 6 and figure-1 there was no significant association between the score and the occurrence of rebleeding(p value 0.967). As rebleeding is very low in patient the association was not significant.

This scoring has a high sensitivity and specificity at a value of 14 (around 90%), after which the sensitivity is shown a steep decline which indicates the importance of GB score (table 7).

Glasgow Blatchford scoring has a sensitivity and negative predictive value of 100% in assessing the outcome of patients in the present admission according to this study (figure 2).

DISCUSSION

In the present study once the criteria to select the patient were fulfilled the patients were selected for the study. It was found that out of 85 patients with upper GI bleeding, 62 were males and 23 were females. 50 patients had variceal bleeding and 35 had a non-variceal aetiology. 46 out of 85 patients required no blood transfusion at all, 11 patients needed 1 unit and only 1 needed 4 units. Only 9 out of 85 patients died due to the disease during that admission. All the patients who succumbed had a score of more than 12. In the present study it was analysed that there was a significant association between initial Blatchford scoring and outcome (p value 0.001). this further concludes that blood transfusion is significantly important in cases of UGI bleeding like gastric erosions, Mallory Weiss tear etc. In elderly patients with upper gastrointestinal bleeding, the Rockall score is clinically more useful for predicting mortality and rebleeding than the Glasgow-Blatchford and AIMS65 scores;[4,5] however, for predicting duration of hospitalization and the need for blood transfusion, the Glasgow-Blatchford score is superior to the Rockall and AIMS65 scores.[6,7] As in our study, there was no significant correlation between Blatchford score and prediction of rebleeding. The AIMS65, GBS and Pre-endoscopic RS scores are comparable but not useful for predicting outcome in patients with variceal UGI bleed because of poor discriminative ability. The GBS is superior in predicting the need for transfusion compared to AIMS65 score and Pre-endoscopic RS.[8,9] The GBS showed its ability to discriminate severe from non-severe variceal bleeding as well as non-variceal bleeding.[10] GBS appears best at identifying patients at low risk of requiring intervention or death and therefore may be best for use in clinical practice, allowing outpatient management in low risk cases.[11,12] As in the studies described, there was significant correlation between Blatchford scoring on admission and requirement of blood transfusion and also in predicting the duration of hospital stay and outcome of patients who presented to us with Upper GI bleeding.

CONCLUSION

59.5% patients presenting with upper GI bleed has a variceal etiology. There was a significant correlation between Blatchford scoring on admission and requirement of blood transfusion. There was also a significant correlation between initial Blatchford scoring and duration of hospital stay and outcome. There was no significant correlation between the score and occurrence of rebleeding. The Glasgow Blatchford score had a 100% sensitivity and negative predictive value in assessing outcome based on the initial score. Patients should be triaged in casualty with Blatchford scoring. High score helps in predicting the requirement of blood transfusion and outcome of patients so that they can be managed judiciously.

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International Journal of Contemporary Medical Research
ISSN (Online): 2393-915X; (Print): 2454-7379 | ICV: 98.46 | Volume 6 | Issue 6 | June 2019

F15

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