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Original Research

THE VALUE OF THE MODIFIED GLASGOW BLATCHFORD SCORE IN PREDICTING OUTCOMES IN NON-VARICEAL UPPER GASTROINTESTINAL BLEEDING

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ABSTRACT: Non-variceal upper gastrointestinal bleeding (UGIB) is a common medical and surgical emergency, and risk stratification upon patient admission is of great importance. Therefore, evaluating the predictive value of the Modified Glasgow Blatchford Score (mGBS) compared to the Full Glasgow Blatchford Score (GBS) and the Clinical Rockall Score (CRS) in patients with non-variceal UGIB upon hospital admission is essential. To assess the value of the Modified Glasgow Blatchford Score in predicting outcomes in patients with non-variceal upper gastrointestinal bleeding. A prospective cohort study was conducted on patients with non-variceal UGIB admitted to the Department of Gastroenterology, Thong Nhat Hospital, from January 2024 to July 2024. The mGBS, GBS, and CRS were calculated, and the area under the receiver operating characteristic curve (AUC) was compared to determine the predictive performance of these scores for interventions including blood transfusion, endoscopic hemostasis, and overall medical intervention. A total of 130 eligible patients with non-variceal UGIB were included. The mean age was 57.5 ± 19.8 years, with a male-to-female ratio of 3.1:1. The in-hospital rebleeding rate was 5.4%. Medical interventions were required in 59.2% of cases (blood transfusion: 45.4%, endoscopic intervention: 28.5%, surgery: 3.1%). Regarding prediction of medical intervention: The Modified Glasgow Blatchford Score (AUC=0.845) performed similarly to the Full Glasgow Blatchford Score (AUC=0.844; p=0.37) and outperformed the Clinical Rockall Score (AUC=0.707; p<0.001). The Modified Glasgow Blatchford Score demonstrated good predictive value for medical intervention in patients with non-variceal UGIB and may be widely applicable in clinical practice.

Keywords: Non-variceal upper gastrointestinal bleeding; Modified Glasgow Blatchford Score; Full Glasgow Blatchford Score; Clinical Rockall Score; medical intervention; in-hospital mortality and rebleeding.

1. INTRODUCTION

Non-variceal upper gastrointestinal bleeding is a common medical and surgical emergency in Vietnam. The condition may be self-limiting or life-threatening, requiring urgent intervention such as emergency endoscopic hemostasis. The estimated incidence of acute upper gastrointestinal bleeding is approximately 50-150/100,000 people per year, of which 40-60% is due to gastroduodenal ulcers, 10% due to esophageal varices rupture, 10% due to esophageal and other causes...

In clinical practice, risk stratification of acute upper GI bleeding upon initial presentation is essential to reduce mortality and decrease the burden on emergency resuscitation. International consensus guidelines have recommended using validated prognostic scores to help make appropriate initial treatment decisions and reasonable levels of care. Among the scores, the Blatchford [1] and Rockall scores have been most widely accepted and used due to numerous studies proving their value. However, both scores include multiple parameters, are difficult to remember, and have some subjective factors with unclear definitions, so they are still not routinely applied by clinicians. Recently, the Modified Blatchford Score (mGBS) includes only the objective quantitative factors of the Full Blatchford Score (GBS) (pulse, blood pressure, BUN, hemoglobin) and has been found to be as good as the currently used scores. By eliminating subjective factors, the mGBS is more concise and hopefully will be more easily applied clinically . Therefore, we conducted this study to determine the value of the mGBS compared to the GBS and Clinical Rockall Score (CRS) in predicting outcomes in patients with non-variceal upper gastrointestinal bleeding.

2. SUBJECTS AND METHODS

2.1. Study objectives

To evaluate the Modified Glasgow Blatchford Score in predicting blood transfusion, endoscopic hemostasis, and medical intervention in patients with non-variceal upper gastrointestinal bleeding.

2.2. Study methods: Prospective cohort study

2.2.1. Study subjects

All patients with non-variceal upper gastrointestinal bleeding admitted to the Department of Gastroenterology, Thong Nhat Hospital from January 2024 to July 2024.

2.2.2. Inclusion criteria

Age ≥ 18 years

Patients diagnosed with non-variceal upper gastrointestinal bleeding, who underwent upper endoscopy, admitted to the Department of Gastroenterology, Thong Nhat Hospital during the study period

Agreed to participate in the study

2.2.3. Exclusion analysis

Cases where gastrointestinal bleeding due to portal hypertension cannot be differentiated

Patients who refused endoscopy

Patients who did not receive endoscopy within the first 24 hours

2.2.4. Statistical analysis

Collected data will be coded and entered into the R20.0 data management and analysis program. The accuracy of the mGBS, GBS, and CRS in predicting requirements for medical intervention, blood transfusion, and endoscopic hemostasis intervention was assessed using the area under the ROC curve (AUC). The DeLong test was used to compare AUC between scores.

3. RESULTS

From January 2024 to July 2024, at the Department of Gastroenterology, Thong Nhat Hospital, we recorded 130 cases meeting the selection criteria included in the study.

Table 1: Characteristics of the study population

Characteristics		130
Age		**57,5 ± 19,8**
Age groups	< 60 years	**65 (50,0%)**
	60-79 years	**47 (36,2%)**
	≥80 years	**18 (13,8%)**
Gender	Male	**98 (75,4%)**
	Female	**32 (24,6%)**
Endoscopic characteristics	Gastric ulcer	**40 (30,8%)**
	Duodenal ulcer	**56 (43.1%)**
	Multiple gastric and đuoenal ulcers	**24 (18.4%)**
	Others	**10 (7.7%)**
Medical intervention (n=77; 59,2%)	Blood transfusion	**59 (45,4%)**
	Endoscopic interven-tion	**37 (28,5%)**
	Surgery	**4 (3,1%)**
Rebleeding/ Death in hospital		**7 (5,4%)**

In Table 1, the study subjects were predominantly male, with ≥60 years old accounting for 50%. Regarding upper endoscopy results, our study found that the causes of non-variceal upper GI bleeding were mainly gastric ulcer 30.8% and duodenal ulcer 43.1%. Multiple gastric and duodenal ulcers accounted for 18.4%. The proportion of patients requiring medical intervention was 59.2%, with most patients requiring blood transfusion and endoscopic hemostasis intervention. Rebleeding occurred in only 5.4%, with no patient deaths.

Table 2: Area under the ROC curve of scores in predictiong blood transfution

Score	AUC	KTC95%	p	Comparisonwith mGBS(p)
mGBS	0,892	0,839 – 0,944	<0,001	-
GBS	0,887	0,833 – 0,940	<0,001	0,94
cRS	0,739	0,654 – 0,824	<0,001	0,006

In Table 2, the area under the ROC curve of the mGBS was quite high, similar to the GBS and significantly higher than the CRS (p=0.006) in predicting the need for blood transfusion.

Table 3: Area under the ROC curve of scores in predictiong endoscopic hemostasis intervention

Score	AUC	KTC95%	p	Compariosn with mGBS(p)
mGBS	0,656	0,553 – 0,759	0,004	**-**
GBS	0,633	0,530 – 0,735	0,013	**0,07**
cRS	**0,593**	**0,481 – 0,705**	**0,06**	**0,3**

In Table 3, the area under the ROC curve of the mGBS was similar to the GBS and higher than the CRS in predicting hemostatic intervention

Table 4: Area under the ROC curve of scores for medical intervention requirements

Score	AUC	KTC95%	p	Comparison with mGBS(p)
mGBS	0,845	0,779 – 0,911	<0,001	-
GBS	0,844	0,777 – 0,910	<0,001	**0,37**
cRS	**0,707**	**0,618 – 0,796**	**<0,001**	**<0,001**

In Table 4, the area under the ROC curve of the mGBS was quite high, similar to the GBS and significantly higher than the CRS ($p<0.001$) in predicting the need for medical intervention.

4. DISCUSSION

Characteristics of the study population

Age: Non-variceal upper GI bleeding can occur at any age. In our study, patients with non-variceal upper GI bleeding had a mean age of 57.5 ± 19.8 years, ranging from 18 to 92 years, with patients ≥60 years accounting for 50.0%.

Gender: Upper GI bleeding occurs in both males and females, with males predominating. According to our study results, male patients with upper GI bleeding were 3.1 times higher than females.

Upper endoscopy characteristics: Endoscopy is the gold standard for determining the cause of upper GI bleeding, bleeding location, and hemostatic intervention if indicated. According to our study: 43.1% of patients had duodenal ulcers; 30.8% had gastric ulcers, 18.4% had multiple gastric and duodenal ulcers, and the remainder was due to other causes. Similar to the study by author Quach Trong Duc and colleagues, who recorded gastric ulcer (37.7%) and duodenal ulcer (35.9%) as the two highest causes of non-variceal upper GI bleeding . This proportion varies in different studies at different centers, but generally, the leading cause of upper GI bleeding remains peptic ulcer disease.

Complications: In our study, there were no patient deaths, with 7 cases of rebleeding accounting for 5.4%, lower than the study by author Tran Kinh Thanh at 14.79% , possibly because all our patients used high-dose PPI from admission.

Predictive value of the scores: In our study, 77 patients required medical intervention, accounting for 59.2%.

Blood transfusion: The proportion of patients requiring blood transfusion was 45.4%. The study by author Tran Kinh Thanh had this rate at 45.14% , while the study by author Quach Trong Duc was 29.6% . The differences in blood transfusion indications in different studies may be due to the decision to transfuse blood in upper GI bleeding patients depending largely on clinical physician decisions to maintain target Hb and specific conditions of each center. In our study, the mGBS had an area under the curve for blood transfusion (AUC=0.892) similar to the GBS (AUC=0.887; p=0.94) and higher than the CRS (AUC=0.739, p=0.006). According to the study by author Robert V. Bryant and colleagues on 888 upper GI bleeding patients admitted in Australia, 481 patients required blood transfusion, accounting for 54.2%, and the area under the ROC curve of the GBS (AUC=0.81; p<0.001) was greater than the CRS (AUC=0.68; p<0.001) .

Endoscopic intervention: Upper GI bleeding patients requiring endoscopic intervention in our study were 37/130 patients, accounting for 28.5%, similar to the study results by author Tran Kinh Thanh at 29.96% but lower than author Quach Trong Duc and colleagues at 33.7% and author Robert V. Bryant and colleagues at 40.3% . The differences in endoscopic intervention requirements in different studies may be due to different sample populations and different treatment methods and depending on specific endoscopic intervention conditions at specific centers. The mGBS had an area under the curve for endoscopic intervention (AUC=0.656) similar to the GBS (AUC=0.633; p=0.07) and higher than the CRS (AUC=0.593; p=0.3). According to the study by author Robert V. Bryant and colleagues on the risk of requiring medical intervention, 286 patients required endoscopic intervention, accounting for 40.3%, and the area under the ROC curve of the GBS (AUC=0.76; p<0.001) was

greater than the CRS (AUC=0.66; p<0.001) . According to the multicenter study by author Quach Trong Duc and colleagues, the mGBS (AUC=0.612) was equivalent to the GBS (AUC=0.608; p=0.55) and higher than the CRS (AUC=0.539; p=0.02) .

Surgery: The proportion of patients requiring surgical intervention was 3.0%. The study by author Tran Kinh Thanh had this rate at 1.95% , while the study by author Quach Trong Duc was 0.5% , and the study by author Robert V. Bryant was 2.8% . Overall, upper GI bleeding patients requiring surgical intervention accounted for a low proportion of 0-3%, varying by different studies.

Medical intervention: The scores have good predictive value for medical intervention (blood transfusion, endoscopic intervention, surgery) in non-variceal upper GI bleeding patients. The mGBS had an area under the curve for medical intervention (AUC=0.845) with similar value to the GBS (AUC=0.844; p=0.37) and higher than the CRS (AUC=0.707; p<0.001). According to the multicenter study by author Quach Trong Duc and colleagues, the mGBS had quite good predictive value for medical intervention (AUC=0.708), equivalent to the GBS (AUC=0.707; p=0.87) and higher than the CRS (AUC=0.594; p<0.01) .

5. STUDY LIMITATIONS

The use of PPI regarding drug type, dosage, and duration has not been standardized.

Short study duration and small sample size limit the determination of rebleeding and mortality outcomes.

6. CONCLUSION

Non-variceal upper GI bleeding is a common condition that can cause death. Assessing medical intervention requirements, especially indications for emergency endoscopy and therapeutic endoscopy, is very important for early treatment and reducing blood transfusion.

The Modified Glasgow Blatchford Score is as good as the Full Glasgow Blatchford Score and even better than the Clinical Rockall Score in predicting outcomes in non-variceal upper GI bleeding patients, especially in medical intervention requirements. This score is simple and can be widely applied in clinical practice, especially for district-level hospitals.

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