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COMPARISON OF AIMS65, GLASGOW–BLATCHFORD SCORE, AND ROCKALL SCORE IN A TUNISIAN PATIENTS WITH UPPER GASTROINTESTINAL BLEEDING

Elleuch Nour*, Sonda Jardak, Asma Sabbek, Hammami Aya, Ben Slama Aida, Jaziri Hanen, Brahem Ahlem, Ajmi Salem, Ksiaa Mehdi and Jmaa Ali

University of Sousse, Faculty of Medicine of Sousse, Department of Gastroenterology, Hospital Sahloul, Sousse, Tunisia.

*Corresponding Author: Dr. Elleuch Nour

University of Sousse, Faculty of Medicine of Sousse, Department of Gastroenterology, Hospital Sahloul, Sousse, Tunisia.

ABSTRACT

Objective: The aim of this study was to assess the use of the main pronostic scores (AIMS65, Glasgow–Blatchford score and Rockall score) in upper gastrointestinal bleeding and to compare the performance of each score with regard to mortality, rebleeding and transfusion requirements. **Methods:** We performed a retrospective study including patients with upper gastrointestinal bleeding admitted in the hepato-gastroenterology department of Sousse between January 2018 and September 2018. Rockall score, Blatchford score and AIMS65 were calculated for each patient. The data was analyzed by the area under the curve ROC (Receiver Operating Characteristic). **Results:** A total of 110 patients were included in this study. Mean age was 59.3 (16-95 years). The sex ratio was 2.23 (M/F=76/34). The main causes of upper gastrointestinal bleeding were peptic ulcer (47.3%), portal hypertension (21.8%), a neoplasia (5.5%) and Mallory-Weiss syndrome (3.6%). The mortality rate and rebleeding was 0.9% and 10% respectively. In the evaluation of mortality, it was found an area under the curve ROC for AIMS65 score: 1, Rockall score: 0.95 and Glasgow-Blatchford: 0.89 (p=0.2) to predict rebleeding AIMS65 score: 0.5, Rockall score: 0.76 and the Glasgow-Blatchford score: 0.57 (p<0.05) and transfusion requirements of more than 2 globular packages AIMS65 score: 0.58, Rockall score: 0.52 and the Glasgow-Blatchford score: 0.59 (p=0.45). **Conclusion:** All of the studied scores are good predictors of mortality with superiority for the AIMS65. The results were less satisfactory with regard to rebleeding and transfusion requirements which confirm that the role of prognostic scores is limited of course to assit, clinical judgment remains fundamental in the management of upper gastrintestinal bleeding.

KEYWORDS: Upper gastrointestinal bleeding, AIMS65, Glasgow–Blatchford score, Rockall score.

INTRODUCTION

Upper gastrointestinal bleeding (UGIB) is the most common gastrointestinal emergency and is associated with substantial morbidity and mortality despite developments in endoscopic and medical treatment.[1] According to recent studies, mortality rates ranges from 2% to 2.5% although significant geographic variation exists.[1] International consensus guidelines recommend early risk stratification in patients presenting with UGIB to provide appropriate management to minimize mortality and morbidity.[2] Several scoring systems have been used to estimate the risks of rebleeding and mortality and to help in making decisions such as the timing of endoscopy, time of discharge, and level of care among which, the Glasgow-Blatchford score (GBS), the full Rockall score (RS), and AIMS65 score are the most widely used.[3] The best predictive value of each score in comparison to another is yet poorly known.[4] Till date, a golden standard as a single scoring system for UGIB is lacking.

Therefore, the aim of the present study was to compare the performance of the GBS, RS and AIMS65 in order to identify the optimal scoring systems for risk stratification and clinical decision support of UGIB Tunisian patients.

PATIENTS AND METHODS
Study Design and population
This was a retrospective study including patients admitted to the hepato-gastroenterology department of Sousse for the management of UGIB between January 2018 and September 2018. UGIB was defined as bleeding from the upper GI tract as manifested as hematemesis and/or melena.[2] Melena was defined as the presence of black, tarry feces.

Rebleeding was defined by the presence of fresh hematemesis and/or melena associated with the development of hemodynamic instability or a reduction in hemoglobin concentration greater than 2 g/dL over 24 hours.[9]

Patients were excluded if data required for calculation of risk stratification scores were incomplete or if medical records revealed an alternative diagnosis.

Data collection
For each patient, the following data were collected: demographic data, comorbidities, current medications (including antiplatelet agents, anticoagulant therapy, nonsteroidal anti-inflammatory agents), clinical presentation, vital signs including Glasgow Coma Score (GCS), laboratory tests (albumin level, INR, urea, creatinine, haemoglobin) and endoscopic findings.

All of the patients underwent endoscopy within 24 hours. Subsequent management was guided by endoscopic findings.

The interventions performed during hospitalization, such as blood transfusion.

All patients were risk stratified using AIMS65, GBS and Rockall scores. The full Rockall score is calculated by using pre-endoscopic and endoscopic variables. It is based on clinical parameters (patient age, hemodynamics: pulse rate and systolic blood pressure and comorbid diseases) and endoscopic findings (Table I).[6] The GBS is based on clinical and laboratory parameters. (Table I).[5] The AIMS65 score is based on five clinical and laboratory parameters: albumin level < 30g/L, international normalised ratio (INR) > 1.5, altered mental status, systolic blood pressure < 90 mm Hg and age older than 65 years.[9] Each parameter corresponds to 1 point, and the maximum score is 5 points.[9] The table I compare the AIMS65, Glasgow-Blatchford, and Rockall risk stratifications scores. Patients were categorized into low-risk (GBS score ≤2; RS<2; AIM65 score ≤1) and high risk (GBS score >2; RS≥2; AIM65 score >1) groups, respectively. The primary outcome was in-hospital mortality. Secondary outcomes were a composite endpoint of inpatient mortality, in-hospital rebleeding; blood transfusion requirement.

Statistical analysis
Categorical data were expressed as mean± standard deviation. The chi-square test or Fisher exact test was used to evaluate categorical variables. Receiver operating characteristic (ROC) curves were calculated and the areas under curve (AUC) with 95% confidence interval (CI) were used to compare the performance of GBS, RS and AIMS65 scores in predicting mortality, rebleeding and transfusion requirement. Two-sided P values ≤ 0.05 were considered statistically significant.

RESULTS
Patient characteristics
One hundred and ten patients (76 men; aged 59.3 years ± DS) were admitted with a diagnosis of UGIB over 9

months. Major comorbidities, including liver and renal diseases, coronary heart disease, heart failure and metastatic malignancy were present in 41% of the patients. Forty two (38%) patients were using antiplatelet or anticoagulant medications on admission: 21 (19 %) aspirin, 9 (8.1%) clopidogrel and 12 (10.9%) anticoagulant therapy.

Etiology of UGIB
Causes of UGIB were determined with endoscopy. The most common cause was peptic ulcers (n=52, (47.3%): duodenal ulcer, n=27; gastric ulcer, n=15; esophageal ulcer, n=7; and anastomotic ulcer, n=3), followed by esophageal and gastric varices (n=24, 21.8%), upper gastrointestinal tumors (n=6, 5.5%) and Mallory Weiss syndrome (n=4, 3.6%).

Performances of the GBS, RS and AIMS65 scoring systems in predicting adverse clinical outcomes with high- and low risk categories
Clinical adverse outcomes were observed in 42 (38.1%) patients. The incidence of adverse outcomes in high-risk patients was significantly higher than that in low-risk patients according to GBS, RS and AIMS65 scoring systems (all P < 0.001), respectively.

Analyses of in-hospital rebleeding, transfusion requirement and in-hospital mortality
In-hospital rebleeding was observed in 11 (10%) patients, among whom 8 received treatment, including 7 with endoscopic interventions and one with surgical intervention.

In-hospital mortality was 0.9 % (1/110). Variceal hemorrhage was the cause of death.

Fifty patients (45.4%) required red cell transfusion, with a median transfusion requirement of 2 units (IQR 0-4).

Performance of GBS, RS, and AIMS65 in the prediction of rebleeding, mortality and transfusion requirement
On ROC analyses, AIMS65, GBS, and RS were similar when predicting inpatient mortality (1 vs. 0.89 vs. 0.95), finding no differences when comparing the three curves (p=0.2; figure 1).

For the prediction of rebleeding, RS (AUC 0.76) performed significantly better than AIMS65 (AUC 0.5) and RS (AUC 0.57) (P < 0.05; figure 2).

The RS (AUC 0.52), GBS (AUC 0.59) and AIMS65 (AUC 0.58) were predictors of transfusion requirement. When the AUCs for these scores were compared, no significant differences were noted (p=0.45; figure 3).
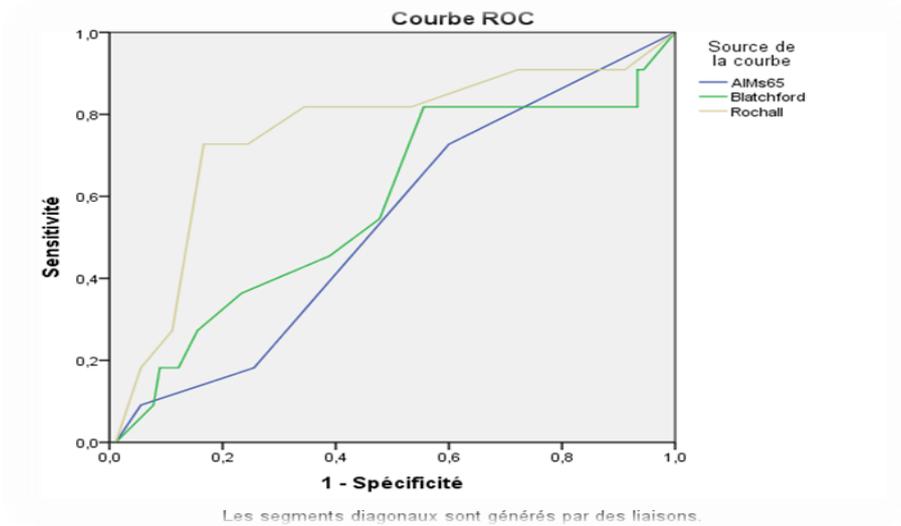
Figure 1: Receiver-operating characteristic curves (ROCs) for the AIMS65, Glasgow–Blatchford, and Rockall risk scores as predictors of impatient mortality.
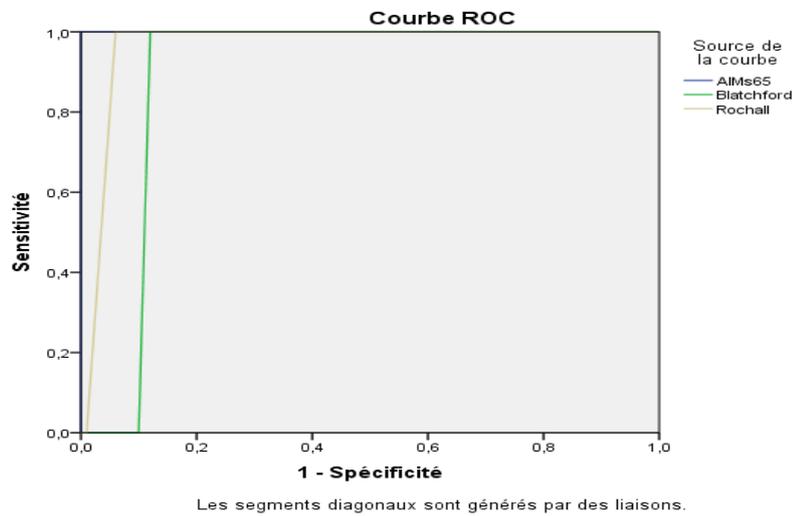

Figure 2: Receiver-operating characteristic curves (ROCs) for the AIMS65, Glasgow–Blatchford, and Rockall risk scores as predictors of rebleeding.
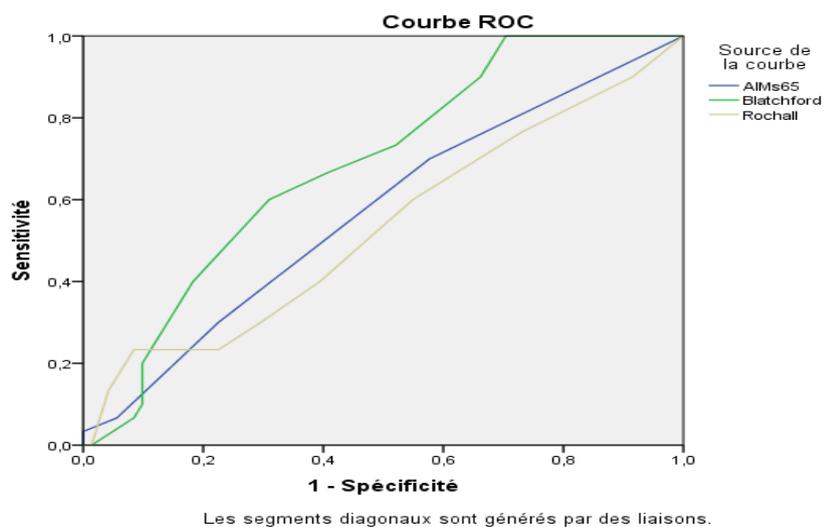

Figure 3: Receiver-operating characteristic curves (ROCs) for the AIMS65, Glasgow–Blatchford, and Rockall risk scores as predictors of transfusion requirement.

Table I: Comparison of the AIMS65, Glasgow-Blatchford, and Rockall risk stratifications scores.

GBS		Rockall	
Blood urea nitrogen level (mg/dL)		**Age, y**	
18.2 to <22.4	2	<60	0
22.4 to<28	3	60–79	1
28 to<70	4	>80	2
≥70	6		
Hemoglobin (g/dL)		**Shock**	
Men		No shock	0
12 to >13	1	Pulse >100 bpm, systolic BP >100 mm Hg	1
10 to >12	3	Systolic BP <100 mm Hg	2
<10	6	**Comorbidity**	
Women		No major	0
10 to 12	1	CCF, IHD, or major comorbidity	2
<10	6	Renal failure, liver failure, metastatic cancer	3
Systolic blood pressure (mm Hg)		**Diagnosis**	
100–109	1	Mallory-Weiss tear or no lesion and no stigmata	0
90–99	2	All other diagnoses	1
<90	3	GI malignancy	2
Other markers		**Evidence of bleeding**	
Pulse ≥ 100 beats/min	1	No stigmata or dark spot on ulcer	0
Presentation with melena	1	Blood in upper GI tract, adherent clot, visible or spurting vessel	2
Presentation with syncope	2	Maximum score	11
Hepatic disease	2		
Cardiac failure	2		
Maximum score	23		
AIMS 65 score			
Albumin <3.0 mg/dL		1	
INR >1.5		1	
Altered mental status		1	
Systolic BP <90 mm Hg		1	
Age >65 y		1	
Maximum score		5	

DISCUSSION

In our study, all of the studied scores are good predictors of mortality with superiority for the AIMS65. The findings of our study are in agreement with a retrospective analysis by Juan G and all, which found on ROC analyses, that AIMS65, GBS, and RS were similar when predicting inpatient mortality (0.76 vs. 0.78 vs. 0.78).[10] But, the mortality rate for our patients with UGIB is lower compared with previous study[11] (0.9% vs 11%). This is probably because we used only hospital mortality and because of the small number of patients. In fact, AIMS65 is an adequate score for the prediction of inpatient mortality, comparable to the previously developed scores, the RS and the GBS but easier to calculate in daily clinical practice.[12] It can be helpful in making rapid decisions. Some studies suggest that the AIMS65 score can accurately predict in-hospital mortality, length of stay, and cost of treatment in cases of UGIB.[9]

Two previous studies that confirmed the applicability of AIMS65 in UGIB patients included bleeding of variceal and nonvariceal origin.[6,13]

The results were less satisfactory with regard to rebleeding and transfusion requirements.

Rebleeding affects UGIB patients' outcome and is considered the most important risk factor for mortality.[14] Therefore, it is important to predict this complication as accurately as possible.[15] Our results showed that full RS can successfully stratify patients with UGIB into high- and low-risk categories for rebleeding. Whereas GBS and AIMS 65 showed no predictive ability.

A recent study including elderly patients with UGIB showed that the RS is clinically more useful for predicting mortality and rebleeding than the GBS and AIMS65 scores.[16] Indeed, the full RS is the most commonly used risk scoring system in patients with UGIB.[16]

Regarding to transfusion requirement, we found that all 3 scores had similar AUCs, none of them being considered a reasonable tool to predict this outcome. Other studies showed that GBS is superior to all other scores for predicting blood transfusion.[4]

Our study has some limitations. First, it was a retrospective, single centre study. The sample size was relatively small. Some outcomes were subjective, such as gastrointestinal bleeding and cognition level. Blood transfusion decisions were at the discretion of the treating physician. This might have introduced a degree of subjectivity. We didn't compare the predictive value of others scores such as the National Early Warning Score + Lactate with GBS, RS and AIMS 65. Furthermore, we did not analyze the association between proton pump inhibitor administration and the endoscopy timing. As proton pump inhibitors can influence endoscopy results, this is a significant limitation to consider. Therefore, additional multicenter studies are necessary to systematically compare the GBS, RS, and AIMIS65 scoring systems.

CONCLUSION
All of the studied scores are good predictors of mortality with a superiority for the AIMS65. The results were less satisfactory with regard to rebleeding and transfusion requirements which confirm that the role of prognostic scores is limited of course to assit, clinical judgment on a case-by-case basis, remains fundamental in the management of UGIB.

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