Original Article

THE PROGNOSTIC VALUE OF AIMS65 SCORE IN PREDICTING 30 DAY MORTALITY IN PATIENTS WITH ACUTE NON-VARICEAL UPPER GASTROINTESTINAL BLEEDING

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ABSTRACT

Background: Acute upper gastrointestinal bleeding(UGIB) is a frequent reason for hospital admission with high rates of morbidity and mortality, management of UGIB is of a great importance. **Objective**: the present study aims to assess the predictive accuracy and clinical utility of AIMS65 score system in patients with UGIB. **Materials and Methods**: This is prospective study conducted in the department of Gastroenterology in Tishreen University Hospital –Lattakia- Syria from November 2019 to November 2020. Patients with acute non-variceal UGIB who presented to the emergency department(ED) were included in the study. **Results:** A total of 115 patients with acute UGIB were included in the study. The median age was 68 years, 66.10% were men, and the use of antiplatelet drugs was found in 59.1% of patients. Peptic ulcer was the most common diagnosis of acute UGIB(73.9%). The overall 30-day mortality rate was 17.4%, mortality increased by increasing score, with scores of 0,1,2,3,4 for mortality rates of 10%, 10%,20%,25% and 35% respectively. The AIMS65 score was good in predicting mortality with an AUC of 0.81[0.65-0.91], p:0.001, poor in predicting rebleeding with AUC of 0.57 [0.41-0.72], p:0.3 and endoscopic intervention with AUC of 0.55 [0.41-0.69], p:0.5. **Conclusion:** The AIMS65 score has a good accuracy in predicting death, and the use of this score in the ED might allow to patients with UGIB to be safely managed.

KEYWORDS: Upper gastrointestinal bleeding, peptic ulcer, AIMS65, mortality.

INTRODUCTION

Upper gastrointestinal bleeding(UGIB) is a common medical condition that result in substantial morbidity, mortality, and medical care cost.[1] It is defined as bleeding derived from a source proximal to the ligament of Treitz.[2] The incidence of UGIB is approximately 100 per 100000 adults per year, is higher in men than in women and increases with age.[3] UGIB has multiple etiologies, variceal and non variceal, being the main categorization: 40-60% of these bleeds are caused by a peptic ulcer, 10% are related to varices, 10% are attributable to erosive esophagitis and the remainder are caused by a variety of conditions.[4]

Early risk assessment is crucial in patients presenting with UGIB to ensure optimal timing of endoscopy, and to determine whether other measures(such as hospital admission, blood transfusion and treatment in an intensive care unit) are required.[5] Several risk assessment scales have been developed over the past 15 years. Recently, AIMS65 score is a pre-endoscopy score, easy to remember and calculate at the bedside. It predicts length of hospital stay and mortality.[6] The absence of local studies prompted us to carry out this research to evaluate the predictive value of AIMS65 score when dealing with patients with acute UGIB.

MATERIALS AND METHODS

Study design and data collection
We studied all patients aged >18 years who presented to the ED with evidence of acute UGIB, defined by hematemesis, coffee-ground vomiting, or melena from November 2019 to November 2020 in Tishreen University Hospital –Lattakia-Syria. The following data were recorded: demographic (age, sex), past medical history, co- morbidities, laboratory variables at

presentation necessary to calculate the AIMS65 score. Exclusion criteria were patients with one of the following: hypochromic microcytic anemia without any sign of hemorrhage, variceal bleeding, patients who underwent to upper gastrointestinal endoscopy without observation any sign of hemorrhage, and who refuse undergoing to upper gastrointestinal endoscopy. Patients were followed for 30 day and outcomes were recorded.

Definition
Forrest classification: It differentiates ulcers with a spurting hemorrhage(Forrest Ia), an oozing hemorrhage(Forrest Ib), with a visible vessel(Forrest IIa), an adherent clot(Forrest IIb), hematin on the ulcer base(Forrest IIc), and a clean ulcer base(Forrest III).[7]

AIMS65 score: It has five elements(albumin, international normalized ratio[INR], mental status, systolic blood pressure, age>65 years. AIMS65 score classifies patients into two groups: low risk(score: 0-1) and high risk (score>1).[8]

Statistical Analysis
Statistical analysis was performed by using IBM SPSS version20. Basic Descriptive statistics included median, means, standard deviations(SD), Frequency and percentages. Receiver operating characteristic(ROC) curve for 30- day mortality were calculated for the AIMS65, and the predictive accuracy of the scoring system was measured by the area under the receiver-operating curve(AUC).

RESULTS
A total of 162 patients who presented with acute UGIB, 47 patients were excluded according to the exclusion criteria. The median age of patients who enrolled in the study was 68 years, and 66.10% were men. Hypertension and ischemic heart disease were the most common co-morbidities in the study population, patients were more likely to use antiplatelet drugs(59.1%). Peptic ulcer was the most common diagnosis of UGIB (73.9%) with duodenal ulcer being more common than gastric ulcer. Among those patients who had duodenal ulcer, 63.9% were on antiplatelet drugs and 31.1% were on non-steroidal inflammatory drugs(NSAIDs).Forrest ulcers III were found in 45.2% . Patients were distributed in two groups: high risk(45.2%) and low risk(54.8%) according to AIMS65 score. 17.4% of patients died within 30 days of admission, 15.7% experienced rebleeding, 13% underwent to endoscopic intervention and 8.7% underwent to surgical intervention.

Table (1): Demographic characteristics of the study population(N=115).

Variables	
Age(years)	68(19-90)
Sex	
Male	76(66.10%)
Female	39(33.90%)
Co-morbidities	
• Hypertension(HTN)	70(60.9%)
• Ischemic heart disease	47(40.9%)
• Chronic renal failure	14(12.2%)
• Cancer	10(8.7%)
• Liver disease	2(1.7%)
• Other chronic disease	42(36.5%)
Drug	
• Antiplatelet drugs	68(59.1%)
• Non-steroidal anti-inflammatory drugs(NSAIDs)	36(31.3%)
• Anticoagulants drugs	14(12.2%)
Laboratory results	
• Hemoglobin(Hb)	8.9±2.6[4.3-15.9]
• Albumin(ALB)	3.3±0.5[2.1-4.5]
• International normalized ratio (INR)	1.4±1.3[0.11-10]
Etiology of bleeding	
• Peptic ulcer Duodenal ulcer Gastric ulcer	61(53%)
	24(20.9%)
• Ulceration Duodenal ulceration Gastric ulceration	8(7%)
• Reflux esophagitis	11(9.6%)
• Malignancy	11(9.6%)
	8(7%)
• Abnormal hemangiectasis	4(3.5%)

• Gastrointestinal stromal tumor(GIST)	2(1.7%)
• Mallory –Weiss	1(0.9%)
• Ulcerative polyp	1(0.9%)
Forrest classification	
Ia	2(1.8%)
Ib	6(5.2%)
IIa	11(9.6%)
IIb	5(4.4%)
IIc	9(7.8%)
III	52(45.2%)
AIMS65 score	
0	27(23.5%)
1	36(31.3%)
2	29(25.2%)
3	13(11.3%)
4	10(8.7%)
Outcomes	
• Recovery	62(53.9%)
• Mortality	20(17.4%)
• Rebleeding	18(15.7%)
• Endoscopic intervention	15(13%)
• Surgical intervention	10(8.7%)

The overall 30-day mortality was 17.4%. For AIMS65 score, mortality increased by increasing score, with mortality rate of 35% at score 4, Table(2).

Table (2): Mortality rates according to AIMS65 score.

AIMS65 score	Mortality rate
0	2(10%)
1	2(10%)
2	4(20%)
3	5(25%)
4	7(35%)

As shown below, Receiver –operating characteristic curves yielded an AUC of 0.81(95% CI 0.65-0.91, p:0.001) for AIMS65 score in predicting 30-day mortality. A pre-endoscopic AIMS65 cut-off score of 1 predicted mortality with a sensitivity of 90% which decreased with increasing the score to 35% at cut-off score 4.

Table (3): Area under the receiver –operating curve of AIMS65 scoring for predicting outcomes.

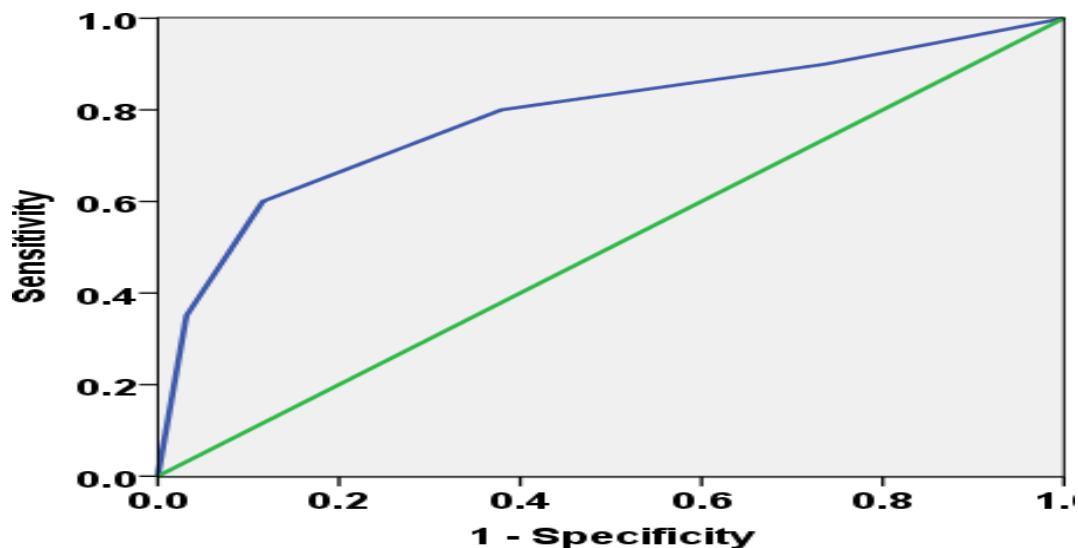|	Area	Confidence interval 95%	p-value
Mortality	0.81	[0.65-0.91]	0.001
Rebleeding	0.57	[0.41-0.72]	0.3
Endoscopic intervention	0.55	[0.41-0.69]	0.5

Figure (1) AIMS65 score with AUC curve for prediction of 30 day mortality in nonvariceal UGIB.

DISCUSSION

This prospective study demonstrated that acute non-variceal UGIB was more prevalent among men and older people. The use of antiplatelet drugs was frequent and the most common etiology for UGIB was peptic ulcer. Mortality rate increased with increasing AIMS65 score .The AIMS65 had a good ability in predicting 30-day mortality in the present study, but the predictive ability was poor for other clinical outcomes(rebleeding, endoscopic intervention).

Use of a score such as AIMS65 in the ED is worth considering because it consists of only five components and easy to calculate without the need for urgent endoscopy.[9] Several studies have evaluated the ability of AIMS65 score to predict various outcomes after UGIB.

Palmer *et al* (2015) showed that AIMS65 score predicted accurately mortality in patients with non-variceal UGIB with AUC of 0.87.[10]

According to a study by Park *et al*(2016) in Korea, found that AIMS65 score was useful for predicting the 30- day mortality; AUC 0.79 (95% CI, 0.69-0.88; p<0.001), but the ability was poor for predicting transfusion requirement; AUC:0.60(95% CI, 0.55-0.65, p:0.01), and endoscopic intervention; AUC:0.55 (95% CI, 0.50- 0.60; p:0.05) in patients with acute non-variceal UGIB.[11]

Tang *et al*(2018) found that AIMS65 score is clinically useful for predicting 30- day mortality than other scores in which AUC was 0.87(95% CI, 0.83-0.92; p<0.001) and might be more ideal for risk stratification in the ED setting.[12]

Gu *et al*(2018) found in study conducted in China that AIMS65 score was acceptable for predicting in hospital death among non-variceal UGIB patients; AUC:0.89(95% CI, 0.80-0.98), and might be the most

powerful predictor compared to other scores.

The best optimal cutoff value was 2 with sensitivity 88% decreased with increasing AIMS65 score.[13]

CONCLUSION

The AIMS65 score might be a useful tool for predicting the prognosis of patients with acute UGIB.

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