

Comparison of AIMS65 and rockall scoring systems for predicting mortality in patients with upper gastrointestinal system hemorrhage

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Abstract

Aim: Acute upper gastrointestinal system hemorrhage is a common and life-threatening condition, and its mortality may reach 10% despite developing medical facilities. In this study, we aimed to compare the efficacy of the AIMS65 risk scoring and Rockall scoring in the non-variceal upper gastrointestinal hemorrhage patients and investigate the relationship between C-reactive protein/albumin ratio and these scoring systems.

Materials and Methods: Forty-two inpatients diagnosed with upper gastrointestinal system hemorrhage in our hospital's Internal Medicine Department between January 2018 and July 2018 included to study. For each patient, AIMS65 scoring according to the first evaluation results in the emergency department and Rockall scoring after the endoscopy were performed.

Results: Mortality was observed in 2 (4.8%) patients. Both scoring systems were not statistically significant in determining the need for transfusion and predicting the hospitalization duration. The mean C-reactive protein/albumin ratio of the patients was found to be 0.94 (0.48-77.83), and C-reactive protein/albumin levels were higher in patients with high AIMS65 score ($p=0.005$).

Conclusion: Upper gastrointestinal hemorrhage is a common emergency problem, and it constitutes 80% of all gastrointestinal system hemorrhages. In our study, the C-reactive protein/albumin ratio was consistent with the AIMS65 score and suggested that it could be a parameter that could be used in patients with upper gastrointestinal system hemorrhage, but more extensive studies are needed on this subject.

Keywords: AIMS65; hemorrhage; rockall; scoring system.

INTRODUCTION

Acute upper gastrointestinal system (GIS) hemorrhage is a common and life-threatening condition, and its mortality may reach 10% despite developing medical facilities (1, 2).

GIS hemorrhages may be due to more common causes such as peptic ulcer, esophagogastric varices, severe or erosive gastritis/duodenitis, portal hypertensive gastropathy, angiodysplasia, mass lesions, Mallory-Weiss syndrome (3). The severity of hemorrhage may be subclinical, but it may have wide presentations include even hypovolemic shock (4).

Recently, risk assessment of patients presenting with upper GIS hemorrhage has been investigated in various studies but has not been widely used in clinical practice (5, 6). The most commonly used risk scoring method is Rockall Scoring nowadays (7). If the Rockall score calculated as

less than three after endoscopy, the risk of rebleeding and mortality is low, and discharge is recommended in the early period, but patients with Rockall score more than three should be hospitalized, and a score of 8 and above indicates a high risk of re-bleeding. The AIMS65 score is a noninvasive simple pre-endoscopic scoring system to estimate in-hospital mortality, hospitalization duration, and cost in patients with acute upper GIS hemorrhage and a score at 2 or above indicates high mortality (8).

In this study, we aimed to compare the efficacy of the AIMS65 risk scoring which is calculated pre-endoscopy (Table 1) and Rockall scoring which is calculated post-endoscopy (Table 2), in the non-variceal upper gastrointestinal hemorrhage patients and investigate the relationship between C-reactive protein (CRP)/albumin ratio and these scoring systems.

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Table 1. AIMS65 Scoring system

Variables	
Albumin < 3 g/dL	1
INR > 1.5	1
Systolic blood pressure < 90 mmHg	1
Altered mental status	1
Age > 65 years	1

Table 2. Rockall Scoring system

Variables	
A. Age	
≥ 80	2
60-79	1
≤ 60	0
B. Shock	
Hypotension, systolic blood pressure < 100 mmHg	2
Tachycardia, systolic blood pressure ≥ 100 mmHg and pulse ≥ 100/minute	1
No shock, systolic blood pressure ≥ 100 mmHg and pulse ≤ 100 / minute	0
C. Comorbidity	
Renal / Liver failure, disseminated malignancy	3
Cardiac failure, any major comorbidity	2
None	0
D. Endoscopic diagnosis	
Malignancy of the upper GI tract	2
All other diagnosis	1
No lesion, no new bleeding, Mallory-Weiss tear	0
E. Major stigmata of recent hemorrhage	
Blood in upper GI tract, adherent clot, visible or spurting vessel	2
None or dark spot only	0
Pre-endoscopy score: A+B+C. Total score: A+B+C+D+E	
Minimum score: 0 Maximum score: 11	

MATERIAL and METHODS

The approval of the ethics committee of this retrospective study was obtained from Erzincan Binali Yildirim University Clinical Researches Ethics Committee by the decision no 2019/02/11. Forty-two inpatients diagnosed with upper GIS hemorrhage in our hospital's Internal Medicine Department between January 2018 and July 2018 included to study. Patients with active infection focus and variceal hemorrhage were excluded from the study. Patients information were scanned through the hospital information system. For each patient, AIMS65 scoring according to the first evaluation results in the emergency department and Rockall scoring after the endoscopy were performed. The data were statistically evaluated with the SPSS program. A value of $p < 0.05$ was considered significant.

RESULTS

The mean age of the patients included in the study was 68.5 (24-89), and 59.5% were male. The most frequent complaints of the patients were melena (73.8%), followed by hematemesis (16.6%) and abdominal pain (10%). The most common comorbidities were hypertension (47.6%), chronic obstructive pulmonary disease (19%), and type 2 diabetes mellitus (16.7%). The mean hospitalization duration calculated as 5 (1-10) days. As a result of endoscopy, peptic ulcer detected in 22 (52.4%) patients, gastritis in 16 (38%) and stomach cancer in 4 (9.5%). Erythrocyte suspension replacement was performed in 18 (42.9%) patients. Mortality was observed in 2 (4.8%) patients. Both scoring systems were not statistically significant in determining the need for transfusion and predicting the hospitalization duration. The mean CRP/albumin ratio of the patients was found to be 0.94 (0.48-77.83), and the relationship of CRP/albumin ratio with scoring systems was shown in Table 3. CRP/albumin levels were higher in patients with high AIMS65 score ($p = 0.005$).

Table 3. The mortality rates according to AIMS65 and Rockall risk scores

	Discharged (n=40)	Exitus (n=2)	p
	n(%)		
AIMS65 score			
0	15 (%37.5)	-	0.547
1	14 (%35.0)	1 (%50)	
2	11 (%27.5)	1 (%50)	
Rockall score			
0	6 (%15.0)	-	<0.001
1	4 (%10.0)	-	
2	3 (%7.5)	-	
3	9 (%22.5)	-	
4	8 (%20.0)	-	
5	6 (%15.0)	-	
6	3 (%7.5)	-	
7	1 (%2.5)	2 (%100)	
*Ki-kare test			

DISCUSSION

Upper gastrointestinal hemorrhage is a common emergency problem, and it constitutes 80% of all GIS hemorrhages (9). In a study conducted by Kaplan et al., it was stated that the mortality rate is higher in elderly patients with additional medical problems (10). The most common comorbidity in our study was hypertension as similar to the study of Dicu et al. (11). In a study, the most common cause of upper GIS hemorrhage was detected as a peptic ulcer (1). In a study conducted by Köseoğlu et al., the most common cause of upper GIS hemorrhage was

Table 4. The relationship between CRP / albumin ratio and scoring systems

	CRP/Albumin Median (min-max)	p
AIMS65 score		
0	0.85 (0.48-9.31)	0.005
1	0.87 (0.7-3.29)	
2	4.68 (0.9-77.83)	
Rockall score		
0	0.79 (0.66-9.31)	0.202
1	0.94 (0.85-2.16)	
2	0.83 (0.7-2.62)	
3	0.95 (0.7-4.72)	
4	1.07 (0.87-8.92)	
5	0.96 (0.48-5.38)	
6	0.87 (0.83-0.9)	
7	65.5 (53.16-77.83)	

*Mann-Whitney U test

duodenal ulcer similarly, and the stomach tumor rate was found to be 4.6% (12). Also, in our study, the most common cause was peptic ulcer however the rate of malignancy was higher. It is thought that this may be due to the low number of patients included in the study. Different rates of erythrocyte suspension transfusion rates were reported in different studies. In different two studies conducted by Cheng et al. and Zargar et al. 32% and 26.6% of patients were transfused, respectively (13, 14). Similar to these studies, in our study 42.9% of patients were transfused. The mean hospitalization duration may vary depending on the etiology of upper GIS hemorrhage. In one study, the mean hospitalization duration was 3-7.2 days, depending on the etiology (15). Similar to this study, the mean hospitalization duration of our patients was 5 days. Although GIS hemorrhages still have a high mortality rate despite developing techniques, the mortality rate in a study was found to be 4.8% in GIS hemorrhage cases (16). This rate is the same as our study (4.8%).

In inflammation and infection, serum CRP levels increase, and serum albumin levels decrease. Studies are showing the prognostic importance of CRP/albumin ratio in cases such as pancreatitis, malignancy, and sepsis (17-19). Although CRP/albumin ratio's place is not fully known in upper GIS hemorrhage, a previous study reported low serum albumin levels as a single prognostic factor which predicting outcomes in patients with peptic ulcer bleeding (19). In our study, the CRP/albumin ratio was consistent with the AIMS65 score and suggested that it could be a parameter that could be used in patients with upper GIS hemorrhage. However, more extensive and multicentric studies are needed for this subject.

Our study was retrospective and monocentric and included only inpatients of internal medicine clinic. These factors are among the limiting features of our study.

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