ORIGINAL ARTICLE

Features of patients with upper gastrointestinal bleeding and factors affecting the re-bleeding risk

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ABSTRACT

BACKGROUND: The risk of re-bleeding in upper gastrointestinal bleeding (UGIB) is a major complication that can be mortal. In this study, we aimed to determine the factors that can predict the risk of re-bleeding in UGIB patients.

METHODS: We retrospectively screened UGIB patients admitted in adult intensive care. Along with age and gender, complaints of admission, vital signs, comorbidities, laboratory findings, medications, endoscopy status, and re-bleeding status were recorded. According to these findings, Glasgow-Blatchford and AIMS65 scores of the patients were calculated. All statistical tests were performed with the Predictive Analytics Software (PASW®, version 18, SPSS Inc., Chicago, IL).

RESULTS: A total of 241 patients were included in the study. Mean age of patients was 57.58±19.31, years and 176 (73.0%) of them were male. A total of 117 (48.5%) patients were *Helicobacter pylori* positive and re-bleeding occurred in 77 (32.0%) patients. Sclerotherapy was applied in 103 (42.7%) patients, while 5 (2.1%) underwent electrocoagulation, and 4 (1.7%) underwent hemoclips. There was a significant difference between patients with and without endoscopic intervention for re-bleeding (p<0.001). Hematocrit, urea values, Glasgow-Blatchford, and AIMS65 scores were statistically significant different between the groups with and without re-bleeding (p=<0.001, <0.001, <0.001, and 0.008, respectively). In the ROC analysis of Glasgow-Blatchford and AIMS65 scoring systems area, under the curve values were 0.700 (p=<0.001, 95% CI: 0.626–0.775), and 0.557 (p=0.194, CI 95%: 0.469–0.645), respectively. Mortality rate was 2.1% (n=5) among study population.

CONCLUSION: Hematocrit and urea values seem beneficial among studied laboratory values, however, Glasgow-Blatchford scoring system performed better than AIMS65 in the prediction of re-bleeding risk in UGIB. The authors concluded that more specific predictive markers may be useful for clinicians.

Keywords: AIMS65 score; Glasgow-Blatchford score; hematocrit; re-bleeding; upper gastrointestinal bleeding; urea.

INTRODUCTION

Upper gastrointestinal bleeding (UGIB) is an important cause of mortality and morbidity, and its incidence has been reported as 82–96/100.000.[1] Duodenal and gastric ulcers have been reported as the most frequent etiology of UGIB.[2] Patients may require hospitalization in intensive care.

Besides planning the treatment of the patients such as anti-acid therapy, endoscopy, and blood product transfusion, it is also important to evaluate the risk of re-bleeding.[3] Because re-bleeding can increase the mortality and morbidity rates as well as the length of stay time and the costs. In addition, by defining the risk factors of re-bleeding, patients can be identified in the early phase and that may reduce the mortality and morbidity rates.[4,5]

In this study, it was aimed to determine the risk factors that may predict the re-bleeding of UGIB patients admitted to an adult intensive care unit (ICU).

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MATERIALS AND METHODS

This is a retrospective observational study. Local ethical committee of Bagcilar Training and Research Hospital approved the study before data collection (approval number was 2020.01.1.07.007). Obtaining informed consent was waived by the ethical committee. Patients were screened for eligibility between January 01, 2015 and December 31, 2017. Laboratory findings and demographics were recorded from patient charts and hospital electronic information system. Glasgow-Blatchford score (GBS) and AIMS65 scores were calculated for each patient at admission (Tables 1 and 2).[6,7]

Diagnosis of UGIB was mainly based on history, physical examination, laboratory, and endoscopic findings. We included all the patients ≥18-years-old and admitted to ICU from emergency department with UGIB during study period. Standardized treatment was given according to current guidelines and hospital policy. This treatment includes initiating nil per os, close monitorization, loading of proton-pump inhibitors (PPI), subsequent PPI infusion, *Helicobacter pylori* eradication, and restricted ES transfusion. Patients with inadequate response to medical treatment are consulted for endoscopic interventions. If the patient could not be treated by endoscopic intervention, then it is a candidate for surgery. Exclusion criteria were missing data, being under 18-years-old, and pregnancy.

Laboratory tests were performed through hospital laboratory according to routine patient management policy. Hemoglobin, hematocrit, albumin, urea, creatinine, and INR values were recorded in the hospitalization day. In the hosting institution Beckman Coulter AU 680 (Brea, California, USA) chemistry analyzer, and Sysmex XN-1000 (Kobe, Japan) hematology analyzer are used for routine analyzes. *H. pylori* was diagnosed by biopsy taken during endoscopy. Otherwise, *H. pylori* antigen test from feces or *H. pylori* antibody test from blood was used for the diagnosis of *H. pylori* according to routine hospital policy. Blood transfusion status and blood type of the patients were recorded and compared between groups.

Statistical Analysis

For categorical variables were given as frequency and percentage mean±standard deviation values were given for whereas continuous variables . Kolmogorov-Smirnov test was used to test the normal distribution of data. For comparison of continuous variables, Students t-test and Mann-Whitney U test were used for normally and non-normally distributed data, respectively. Chi-square test was used to compare categorical values. Receiver operator characteristics (ROC) analyzes were performed to determine cut-off and test performance parameters were calculated including specificity, sensitivity, positive and negative likelihood ratios, and positive and negative predictive values. Multivariate logistic regression analysis was performed to identify independent predictors of re-bleeding. All statistical tests were performed with the Predictive Analytics Software (PASW®, version 18, SPSS Inc., Chicago, IL).

Table 2. The contents and calculation methods of AIMS65 score

Albumin <3.0 g/dL	1
INR >1.5	1
Altered mental status	1
Systolic blood pressure <90 mmHg	1
Age >65 years	1

INR: International normalized ratio.

RESULTS

A total of 241 patients were included in the study. Mean age was 57.58±19.31, and 176 (73.0%) of them were male whereas 65 (27.0%) were female. Re-bleeding was occurred in 77 (32.0%) patients (Table 3). Mean hospitalization time of the patients was 5.49±5.93 (min: 1, max: 60) days and mortality rate was 2.1% (n=5). There was no patient required surgical intervention. Flowchart of the study presented in Figure 1.

Main admission causes were melena (n=126), hematemesis (n=31), hematochezia (n=14), vertigo (n=50), dizziness (n=58), abdominal pain (n=19), hematemesis+melena (n=64). Congestive heart failure was positive in 44 (18.3%) patients and hepatic failure was positive in 10 (4.1%) patients. A total of 82 patients were using non-steroidal anti-inflammatory

Table 1. The contents and calculation method of Glasgow-Blatchford score

	0	1	2	3	4	6
Blood urea nitrogen, mg/dL	<18.2		≥18.2–<22.4	≥22.4– <28	≥28–<70	≥70
Hemoglobin, men, g/dL	≥13	≥12–<13		≥10–<12		<10
Hemoglobin, women, g/dL	≥12	≥10–<12				<10
Systolic blood pressure, mmHg	≥110	≥100–109	≥90–99	<90		
Other markers		Pulse rate ≥100 bpm; melena	Syncope; hepatic disease; heart failure			

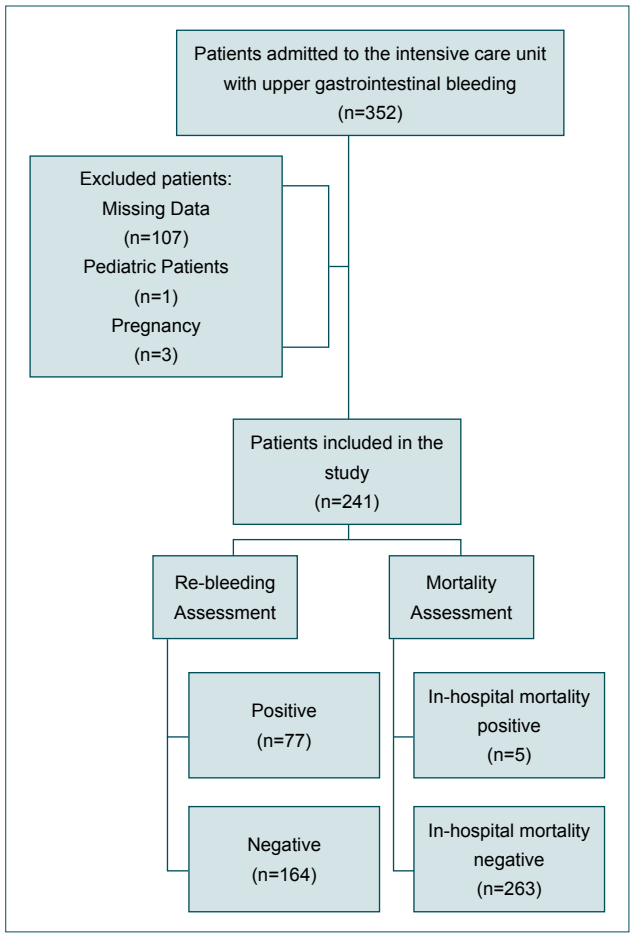

Figure 1. Flowchart of the study.

drugs (NSAID), acetyl salicylic acid (ASA) in 22 patients, warfarin in 13 patients, NSAID+ASA in 16 patients, warfarin + ASA in 4 patients, clopidogrel + ASA in 13 patients, whereas 88 of them were not declared any routine drug use. Alcohol consumption was recorded in 5 (2.1%) patients. Vital signs at the time of admission were classified as flows; pulse rate >100 in 85 (35.3%) patients, pulse rate <100 in 156 (64.7%) patients, and systolic blood pressure (SBP) >100 mmHg in 213 (88.4%) patients, and SBP <100 mmHg in 28 (11.6%) patients (Table 3).

H. pylori was positive in 117 (48.5%) patients. In endoscopic examination, 43 (17.8%) patients did not show any pathologic changes. However, reported lesions were as follows; duodenal ulcer in 23 (9.5%) patients, gastric ulcer in 76 (31.5%) patients, erosive gastritis/duodenitis in 87 (36.1%) patients, angiodysplasia in 2 (0.8%) patients, malignancy in 8 (3.3%) patients, variceal bleeding in 4 (1.7%) patients. Any endoscopic treatment was not applied in 129 (53.5%) patients whereas sclerotherapy was applied in 103 (42.7%) patients, electrocoagulation applied in 5 (2.1%) patients, hemoclips applied in 4 (1.7%) patients. There was a significant difference between patients underwent endoscopic intervention or not ($p<0.001$) (Table 3).

Among laboratory results, hematocrit and urea levels were significantly different between the patients re-bleeding was occurred or not ($p<0.001$, for both) (Table 4). ROC analysis for hematocrit and urea showed are under the curve (AUC) values 0.662 ($p<0.001$, 95% CI: 0.583–0.742), and 0.664 ($p=0.039$, CI 95%: 0.588–0.740), respectively (Fig. 2).

Table 3. Comparison of demographics of patients with and without re-bleeding

Parameters	Re-bleeding negative (n=164)	Re-bleeding positive (n=77)	p
Age	56.70±19.4	59.4±19.2	0.315*
Gender (male/female)	119/45	57/20	0.877**
Systolic blood pressure <100 mmHg (mmHg)	7/157	21/56	<0.001**
Pulse >100 bpm (positive/negative)	125/39	31/46	<0.001**
Alcohol (positive/negative)	4/159	1/76	0.666**
Helicobacter pylori (positive/negative)	70/94	47/30	0.009**
Endoscopic treatment (positive/negative)	59/105	53/24	<0.001**
Sclerotherapy	52	51	N/A
Electrocoagulation	3	2	
Hemoclips	4	0	
Erythrocyte suspension replacement (positive/negative)	117/47	73/4	<0.001**
Hepatitis B virus (positive/negative)	9/155	2/75	0.510**
Hepatitis C virus (positive/negative)	10/154	5/72	1.000**
Glasgow-Blatchford score (high risk [≥6]/low risk [<6])	101/41	59/4	<0.001**
AIMS65 score (high risk [≥3]/low risk [<3])	3/82	9/38	0.008**
Mortality (positive/negative)	3/161	2/75	0.513**

N/A: Not-applicable. *Student's t-test, **Chi-square test.

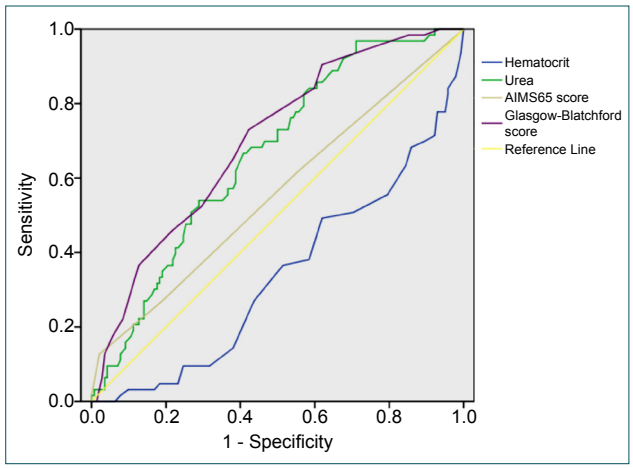

Figure 2. Receiver operating characteristics of the laboratory parameters and scoring systems.

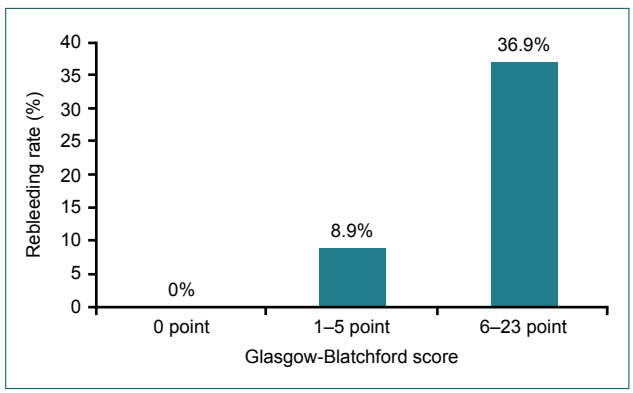

Figure 3. Re-bleeding rates according to risk stratification of Glasgow-Blatchford scoring system.

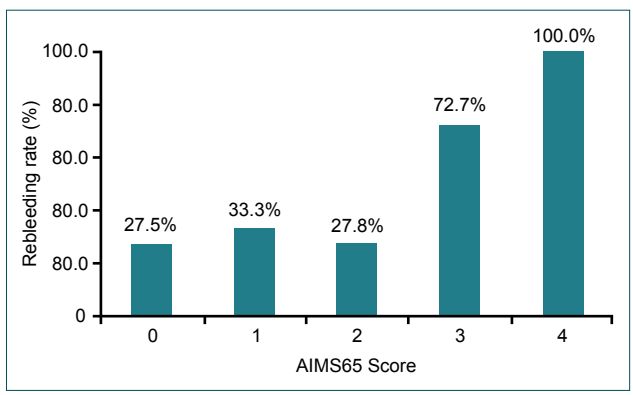

Figure 4. Re-bleeding rates according to risk stratification of AIMS65 scoring system.

ROC analysis for GBS and AIMS65 scores showed AUC values 0.700 (p<0.001, 95% CI: 0.626–0.775), and 0.557 (p=0.194, CI 95%: 0.469–0.645), respectively (Fig. 2). Sensitivity and specificity values were calculated as (91.11% [78.78–97.52%], 36.88% [29.39–44.85%]) for GBS, and (19.15% [CI 95%: 9.15–33.26%], 96.47% [90.03–99.14%]) for AIMS65 scores (Table 5). Re-bleeding rates according to risk stratification of GBS and AIMS65 were given in the Figures 3 and 4 and multivariate logistic regression analysis results were given in Table 6.

Erythrocyte suspension (ES) replacement was not applied in 51 (21.2%) cases whereas 29 (12.0%) of them were given one unit of ES, 49 (20.3%) of them were given two units of ES, 44 (18.3%) of them were given three units of ES, 43 (17.9%) of them were given more than 3 units of ES. There was a statistically significant difference for re-bleeding rates between the patients which required ES replacement or not (p<0.001) (Table 3). There was not any difference for re-bleeding rate according to blood types (p=0.354, Chi-square test).

DISCUSSION

In this study, we evaluated the risk factors for re-bleeding in UGIB patients. Our results showed that a positive *H. pylori* test, non-endoscopic treatment modalities, hematocrit and urea levels, and ES replacement may predict the re-bleeding risk. Scoring systems can also predict re-bleeding risk, and GBS showed a better performance than AIMS65 in this regard. The re-bleeding risk of UGIB patients should be evaluated to reduce the mortality and morbidity of the patients. Although there are similar studies in the literature, studies with a high level of evidence specific to the Turkish population are limited.

Male sex is more common in patients with UGIB and reported between 71.2% and 75.0%.[8,9] The mean age of UGIB has been reported between 52.0 and 60.7 years.[8,9] Our results showed that the male gender was dominant, and the mean age was compatible with the literature. Therefore, the study sample could be compared with the existing literature.

Re-bleeding rate was reported between 10.7% and 27.9% in current literature.[8,10–12] There are several risk factors such as mechanical ventilation for over 48 h, and coagulopathy that increase the risk of re-bleeding in ICU patients, and 75–100% of UGIB patients have been reported to have mucosal lesions.[13] Re-bleeding risk was reported as 51.1% in critical care patients.[14] Our findings suggested that, the probability of re-bleeding was 32.0%. However, re-bleeding rates were reported at different rates in the literature, our results were compatible with the rates of ICU patients. Thus, the authors concluded that close follow-up of ICU patients for re-bleeding is essential.

Kim et al.[10] reported that the main complaints were melena and hematemesis in UGIB patients. In addition, the most common etiologies for UGIB are ulcers and varices.[10,11,15] Mallory-Weiss tears and Dieulafoy lesions are the main etiologies for non-ulcer UGIBs.[16] Our results showed similar etiologies compatible with literature.

European Society of Gastrointestinal Endoscopy (ESGE) guidelines recommend the investigation of *H. pylori* in UGIB cases, repeating the test in negative patients, and start the eradication treatment in positive patients.[17] *H. pylori* was positive in 48.5% of the patients, and *H. pylori* positivity was found to be

Table 4. Comparison of laboratory results of patients with and without re-bleeding

Parameters	Total	Re-bleeding negative	Re-bleeding positive	CI 95%	p
	n (Mean±SD)	n (Mean±SD)	n (Mean±SD)		
Hemoglobin (g/dL)	205 (9.57±2.25)	142 (9.50±2.37)	63 (9.40±1.34)	-2.12–2.32	0.928*
Hematocrit (%)	205 (28.70±6.75)	142 (29.99±6.43)	63 (25.81±6.58)	2.24–6.11	<0.001*
Albumin (g/dL)	241 (3.74±3.35)	164 (3.92±4.03)	77 (3.33 ± 0.63)	-0.32–1.50	0.282**
Urea (mg/dL)	241 (68.97±57.88)	164 (60.53±52.44)	77 (86.93±64.80)	-41.83–(-10.98)	<0.001**
Creatinine (mg/dL)	241 (1.23±1.22)	164 (1.13±0.99)	77 (1.45±1.59)	-0.65–0.02	0.393**
INR	241 (1.41±1.39)	164 (1.36±1.05)	77 (1.51±1.94)	-0.53–0.23	0.789**

CI: Confidence interval; INR: International normalized ratio; SD: Standard deviation *Student's t-test, **Mann-Whitney U test.

Table 5. Sensitivity, specificity, PPV, NPV, LR+, and LR− at the optimal cut-off values for hematocrit, urea levels, and AIMS65 and Glasgow-Blatchford scores

	Sensitivity (CI 95%)	Specificity (CI 95%)	LR+ (CI 95%)	LR - (CI 95%)	PPV (CI 95%)	NPV (CI 95%)
Hematocrit	50.79% (37.89%–63.62%)	61.97% (53.45%–69.98%)	1.34 (0.97–1.84)	0.79 (0.60–1.05)	37.21% (30.06%–44.97%)	73.95% (68.16%–79.01%)
Urea	63.64% (51.88%–74.30%)	60.37% (52.44%–67.91%)	1.61 (1.25–2.07)	0.60 (0.44–0.83)	42.98% (36.91%–49.27%)	77.95% (71.96%–82.97%)
AIMS65	19.15% (9.15%–33.26%)	96.47% (90.03%–99.27%)	5.43 (1.54–19.07)	0.84 (0.72–0.97)	75.00% (46.04%–91.34%)	68.33% (65.12%–71.38%)
Glasgow-Blatchford	91.11% (78.78%–97.52%)	36.88% (29.39%–44.85%)	1.44 (1.24–1.68)	0.24 (0.09–0.63)	28.87% (25.90%–32.04%)	93.65% (84.99%–97.46%)

CI: Confidence interval; LR+: Positive likelihood ratio; LR-: Negative likelihood ratio; NPV: Negative predictive value; PPV: Positive predictive value.

Table 6. Results of multivariate logistic regression analysis

Factors	Coefficients	Standard error	p-value	95% Confidence Interval	
				Lower	Upper
Age	-0.009	0.018	0.607	0.956	1.027
Hematocrit	-0.032	0.040	0.426	0.896	1.047
Urea	-0.004	0.006	0.518	0.985	1.008
Creatinine	0.010	0.223	0.965	0.652	1.563
Albumin	-0.081	0.289	0.779	0.523	1.625
International normalized ratio	0.041	0.121	0.735	0.822	1.321
Hepatitis B virus	0.396	1.265	0.754	0.125	17.722
Hepatitis C virus	0.796	0.801	0.320	0.462	10.645
Helicobacter pylori	-1.196	0.536	0.026	0.106	0.865
AIMS65 score	-1.908	0.886	0.031	0.026	0.843
Glasgow-Blatchford score	-2.486	1.169	0.034	0.008	0.824

associated with a high re-bleeding risk. Considering these findings, the importance of *H. pylori* test and eradication treatment is emphasized in the management of UGIB cases.

Jimenez Rosales et al.[18] reported that tachycardia and high creatinine levels were risk factors but, albumin levels were independent protective factor for re-bleeding. Hematemesis

and having insurance were also reported as risk factors for re-bleeding for UGIB patients.[10] For variceal bleedings, multiple comorbidities, lower hemoglobin levels, and lower SBP were reported as poor prognosis predictors.[15] Independent risk factors for re-bleeding in critical care patients were reported as anemia, hypoalbuminemia, hypoxia, and ES transfusion of three or more units.[14] Similarly, in our study, it was found that lower hematocrit, higher urea levels, and presence of ES transfusion may show high risk for re-bleeding.

Evaluation of the re-bleeding risk for UGIB patients is important for clinicians to plan specific care. The most commonly used scoring system is GBS, and it is used to predict whether an intervention will be required in acute non-variceal UGIB patients. The absence of poor clinical outcomes has been reported in patients with a Blatchford score of 0.[15] Moreover, a GBS of 0 is associated with no ES transfusion requirement.[14] Scoring systems are well-studied for mortality prediction but studies on re-bleeding are limited. Abusaada et al.[19] reported that GBS and AIMS65 shows good performance in mortality prediction but limited in prediction of re-bleeding. Budimir et al.[20] reported that GBS, pre-endoscopic Rockall score, and AIMS65 scores did not predict re-bleeding risk for variceal UGIB. We found that higher GBS and AIMS65 scores were associated with higher re-bleeding risk. While GBS showed a higher sensitivity for re-bleeding prediction, AIMS65 showed a higher specificity. We concluded that further studies in this field or the development of new scoring systems would be valuable.

Aspirin has been reported as a risk factor for UGIB, but ESGE has suggested that in low-risk patients aspirin prophylaxis for cardiovascular prophylaxis should be started immediately after the first endoscopy.[17] However, in high-risk patients, reintroduction of aspirin in the 3rd day after endoscopy is recommended in case of adequate hemostasis has been established.[17] It has been reported that mild to moderate anticoagulation does not increase the risk of re-bleeding, and additionally, warfarin use and INR values are not predictors for re-bleeding, transfusion requirement, length of stay, or mortality.[21] In our study, in accordance with the literature, no relationship was found between ASA and warfarin use and the risk of re-bleeding. Based on this information, if patients with UGIB are absolutely required to use ASA/warfarin in terms of cardiovascular prophylaxis, we suggest that clinicians may start these medications in the early period but studies with high level of evidence value may be beneficial for specific patient groups.

ESGE provides a treatment guideline for non-variceal UGIB, and this includes maintaining emergent hemodynamic stability, initializing intravenous crystalloid treatment in case of hemodynamically instability (tachycardia, hypotension), restricted ES transfusion to maintain a hemoglobin level of 7–9 mg/dL, use of GBS for pre-endoscopy risk stratification, high dose intravenous PPI load (80 mg) and continue with infusion (8 mg/h), and administration of single dose (250 mg) erythromycin 30–120 min prior to endoscopy.[17] Restrictive ES replacement is emphasized in the current literature.[14,22] Hosting institutions policies require the follow of the ESGE protocols, and loading of PPI, subsequent PPI infusion, and restricted ES transfusion are the mainstay treatment modalities additional to endoscopic interventions. The authors emphasize the importance of restrictive ES transfusion principle, recommend following current guidelines, and the use of limited blood/blood products.

Endoscopic interventions are essential in the treatment of UGIB patients. ESGE recommends planning the management strategy according to Forrest classification system. This requires the endoscopic hemostasis for high risk lesions including Ia, Ib, and IIa (spurting, oozing bleeding, non-bleeding visible vessel, respectively).[17] Endoscopic treatment is not always successful and an unsuccessful attempt is an independent risk factor for re-bleeding.[11] Our results showed that, nearly half of the patients undergone to an endoscopic intervention and that compatible with current literature, and it was a risk factor for re-bleeding. Therefore, we encourage the endoscopic treatment for UGIB patients. Surgery is the tertiary option for especially non-variceal UGIB patients and that may be associated with early diagnosis of the patient, specific medical treatment, and advanced endoscopic intervention techniques.

Mortality rates for UGIB were reported between 3.2% and 5.2%, and variceal bleedings are associated with higher mortality rates compared with non-variceal UGIB.[8,10,11] Our results are compatible with literature by means of mortality rates.

Limitations

The retrospective design and being a single-center study limit the generalizability of the results of the study. Pathologic examination reports were not obtained of the specimen obtained by endoscopic intervention.

Conclusion

According to the results of our study, hematocrit and urea levels, the presence of *H. pylori*, and ES replacement, as well as the absence of endoscopic intervention are predictive for re-bleeding. Scoring systems may also be predictive. GBS showed higher sensitivity; however, AIMS65 showed higher specificity. Consequently, the authors recommend that physicians must perform a comprehensive assessment of the re-bleeding risk in UGIB patients using laboratory results, risk factors, scoring systems additional to history, and physical examination.

Ethics Committee Approval: This study was approved by the Bagcilar Training and Research Hospital Ethics Committee (Date: 10.01.2020, Decision No: 2020.01.1.07.007).

Peer-review: Internally peer-reviewed.

Authorship Contributions: Concept: E.U.; Design: E.U.; Supervision: E.U.; Resource: E.U.; Data: E.U.; Analysis: Y.A.A.; Literature search: Y.A.A.; Writing: E.U., Y.A.A.; Critical revision: E.U., Y.A.A.

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ORİJİNAL ÇALIŞMA - *ÖZ*

Üst gastrointestinal kanaması olan hastaların özellikleri ve yeniden kanama riskini etkileyen faktörler

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AMAÇ: Üst gastrointestinal kanamalarında (ÜGİK) tekrar kanama riski mortal seyredebilen ve önemli bir komplikasyondur. Bu çalışmada tekrar kanama riskini öngörebilecek faktörlerin saptanması amaçlandı.

GEREÇ VE YÖNTEM: ÜGİK ile erişkin yoğun bakıma yatan hastalar geriye dönük olarak tarandı. Yaş ve cinsiyetin yanında hastaların başvuru yakınması, vital bulguları, komorbiditeleri, laboratuvar bulguları, kullandığı ilaçlar, endoskopi durumu ve tekrar kanama durumları kaydedildi. Bu bulgular ışığında hastaların Glasgow-Blatchford ve AIMS65 skorları hesaplandı. İstatistiksel inceleme için Predictive Analytics Software (PASW®, version 18, SPSS Inc., Chicago, IL) paket program kullanıldı.

BULGULAR: Toplam 241 hasta çalışmaya alındı. Hastaların ortalama yaşı 57.58±19.3 yıldı ve olguların 176'sı (%73.0) erkekti. Hastaların 77'sinde (%32.0) tekrar kanama olduğu ve 117'sinin (%48.5) H. pylori pozitif olduğu saptandı. Toplam 103 (%42.7) hastaya skleroterapi, beş (%2.1) hastaya elektrokoagülasyon, dört (%1.7) hastaya hemoklips uygulandığı ve endoskopi yapılan ve yapılmayan hastalar arasında tekrar kanama açısından anlamlı fark olduğu saptandı (p<0.001). Hematokrit ve üre değerleri ile Glasgow-Blatchford ve AIMS65 skorlarının tekrar kanama olan ve olmayan gruplar arasında istatistiksel olarak fark olduğu saptandı (sırasıyla, p=<0.00, <0.001, <0.001, 0.008). Glasgow-Blatchford ve AIMS65 skorlama sistemlerinin tekrar kanama riskini öngörmedeki performansının değerlendirilmesi için yapılan ROC analizinde AUC değerleri sırasıyla 0.700 (p<0.001, %95 Güven Aralığı-GA: 0.626–0.775) ve 0.557 (p=0.194, %95 GA: 0.469–0.645) olarak hesaplandı. Hastaların 5'inde (%2.1) mortalite görüldüğü saptandı.

TARTIŞMA: Üst GİS kanamasında tekrar kanama riski için laboratuvar değerlerinden hematokrit ve üre değerleri faydalı olabilirken, skorlama sistemlerinden Glasgow-Blatchford skorlama sisteminin AIMS65'e göre daha iyi performans gösterdiği saptanmıştır. Klinisyenler için daha spesifik öngörücü belirteçlerin faydalı olabileceği değerlendirilmiştir.

Anahtar sözcükler: AIMS65 skoru; Glasgow-Blatchford skoru; hematokrit; tekrar kanama, üre; üst gastrointestinal kanama.

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