

Risk assessment in patients with gastrointestinal bleeding

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CASE

A 59-year-old woman presents to the emergency room with 2-3 weeks of increasing weakness. She has also noted an occasional melanic stool. Her past history is unremarkable. Her vital signs include a pulse rate of 102 bpm and a systolic blood pressure of 96 mmHg. Her significant labs were: hemoglobin 10 gm/dl, BUN 28 mg/dl, and INR 1.4. How can we assess this patient?

DISCUSSION

Upper gastrointestinal (GI) bleeding is one of the most common medical problems needing hospital admission. To provide adequate medical care and appropriate medical resource utilization, several clinical and endoscopic scoring systems have been developed, implemented, and internally and externally validated. The initial evidence suggests that these scoring systems can improve clinical decision-making.

GI bleeding can be classified into two groups based on the anatomical location of bleeding - upper GI bleeding and lower GI bleeding. This classification uses the ligament of Treitz, located between the 4th part of the duodenum and jejunum. Based on endoscopic finding, upper GI bleeding can be further categorized into variceal bleeding or non-variceal bleeding. This approach can guide physicians to what treatment is needed for individual patients. Patients with GI bleeding can present with vague or non-specific symptoms until overt and massive bleeding, such as hematemesis, melena, or hematochezia, occurs.

Hospital admissions for GI bleeding in the United States account for up to 10% of all hospitalizations and cost 3,180-8,990 US dollars per admission.^{1,2} The severity of GI bleeding affects mortality and hospital cost.³ Furthermore, elderly patients will have worse outcomes and higher mortality rates since they often have multiple comorbidities.⁴ To provide the best medical care and to use resources optimally in some hospital settings, several researchers developed tools for risk stratification by identifying and distinguishing between high-risk patients and low risk patients. The goal is to anticipate the risk of re-bleeding within 30 days, hospital mortality, urgent endoscopic treatment, and the need for ICU admission. Also, these tools could provide prognostic information regarding the length of hospital stay.⁵ The literature suggests that the mortality of patients with non-variceal GI bleeding admitted to a GI service is lower than those admitted to an internal medicine service.⁶ Therefore, the evaluation of severity of GI bleeding is important to identify who will receive the most benefit from hospitalization for close monitoring and aggressive resuscitation.

GI BLEEDING RISK ASSESSMENT TOOLS

Clinical evaluation, including the presence or absence of postural symptoms and the assessment of hemodynamic status by monitoring vital signs, urine output, level of consciousness, and estimated blood loss, is very important when managing patients with upper GI bleeding. In addition, clinical presentation, age, and comorbidities are important factors. As a standard of care for the treatment of GI bleeding, patients with hemodynamic compromise need immediate resuscitation and endoscopy within 24 hours after admission.¹

The best-established GI bleeding scoring sys-

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tems include the Rockall score⁷ and the Glasgow-Blatchford score (GBS).⁸ Recently, the AIM65 was also found to be useful.⁹

Some studies have demonstrated that clinical decisions made by certified emergency physicians are also important and perhaps more useful than using a GI bleeding score tool in triage decisions either to admit the patient or to discharge the patient to out-patient evaluation.^{10,11} However, there has only been one clinical study in the US regarding the use of a GI bleeding scoring system to triage into an ICU or non-ICU bed.¹²

UPPER GI BLEEDING SCORING SYSTEMS

1. Pre-endoscopic Rockall score and complete Rockall score
2. Glasgow-Blatchford score (GBS)

1. PRE-ENDOSCOPIC ROCKALL SCORE AND COMPLETE ROCKALL SCORE⁵

This scoring tool may help predict the risk on in-hospital bleeding and/or mortality. At the initial evaluation before endoscopy, patients can be evaluated using the pre-endoscopic Rockall score. Patients are assigned point values for each of the clinical variables (age, shock, and comorbidity) and endoscopic variables (diagnosis and stigmata of recent hemorrhage). The Rockall score is equal to the sum of the points assigned. Scores can range from 0-7 for the pre-endoscopic score and 0-11 points for the complete score. Patients with complete Rockall scores of 2 or less are considered low risk for developing adverse outcomes (rebleeding 4%, mortality <0.1%). Patients with a pre-endoscopic Rockall score of 0 are considered low risk. This scoring system may help anticipate the risk of in-hospital bleeding and mortality.

Rockall Scoring System				
Variable	Score=0	Score =1	Score =2	Score =3
Age (years)	<60	60-79	>80	
Comorbidity			Congestive heart failure, ischemic heart disease	Renal failure, liver disease, metastatic disease
Shock	No shock	Pulse > 100 bpm	Systolic BP <100 mmHg	
Source of bleeding	Mallory-Weiss Tear	All other diagnoses: e.g., esophagitis, gastritis, peptic ulcer disease, varices	Malignancy	
Stigmata of recent bleeding	None		Adherent clot or spurting vessel	

2. GLASGOW-BLATCHFORD SCORE¹⁰

Patients with upper GI bleeding who have a total **GBS of 0** are considered **low risk**. These patients can be discharged from the emergency room without admission and/or in-hospital intervention. Instead, early out-patient endoscopy would be a more

effective option. This scoring system has also been shown to anticipate the risk of intervention (blood transfusion, endoscopic or surgical therapy) and death. Many studies have found it to be a simple and useful scoring system when applied to triage patients in emergency rooms awaiting endoscopic results.¹³

Glasgow-Blatchford Scoring System			
BUN (mg/dL)	<18	0	BUN (mmol/L)
	18-22	2	6.5-<8
	23-27	3	8-<10
	28-70	4	10-<25
	>70	6	>25
Hemoglobin (men, g/dL)	>13	0	
	12-12.9	1	
	10-11.9	3	
	<10	6	
Hemoglobin (women, g/dL)	>12	0	
	10-11.9	1	
	< 10	6	
Systolic blood pressure (mmHg)	> 110	0	
	100-110	1	
	90-99	2	
	< 90	3	
Other markers	Pulse > 100 bpm	1	
	Presentation of melena	1	
	Presentation of syncope	2	
	Hepatic disease	2	
	Cardiac failure	2	

REMARK:

** Hepatic disease = known history or clinical/laboratory evidence of chronic or acute liver disease

** Cardiac failure = known history of clinical/echocardiographic evidence of cardiac failure

3. AIMS65 SCORE

Patients with upper GI bleeding who have the total **AIMS65** of 1 or less are considered at **low risk**.

Clinical parameters	Score value
Albumin level <3.0 g/dL	1
INR level > 1.5	1
Altered mental status	1
SBP ≤ 90 mmHg	1
Age > 65	1

COMPARISON OF GI BLEEDING SCORING TOOLS

Gralnek, et al. concluded that the complete Rockall score helps identify more low risk patients (complete Rockall score less than 2) than the pre-endoscopic Rockall score or GBS.¹⁴ However, another study demonstrated that the GBS is more effective than the pre-endoscopic Rockall score.¹¹ Since the complete Rockall score requires endoscopy results for its scoring, it cannot be utilized in the clinical settings where endoscopy cannot be performed soon after evaluation in the emergency room. Clinical evaluation and the use of a clinical scoring system such as the pre-endoscopic Rockall score would help triage this group of patients.⁵ The GBS can better predict clinical outcomes of death, the need for blood transfusion, endoscopic therapy, or surgery than the complete Rockall score.^{15,16} Another study reported that the GBS identified high risk patients with variceal hemorrhage needing intervention; however, it was not useful in predicting mortality.¹⁷

CASE REVIEW USING SCORING TOOLS

Our patient presents with symptomatic anemia, most likely from GI bleeding given the melanic stools. She has a low BP and tachycardia likely secondary to blood loss. Her estimated blood loss would be 15-30% since she is tachycardic but there is no other information regarding orthostasis. She needs immediate fluid resuscitation and hospitalization for evaluation.

Using the upper GI bleeding scoring systems discussed, her calculated pre-endoscopic Rockall score would be 3 from tachycardia (pulse > 100 bpm) and low blood pressure (< 100 mmHg). Her GBS would be 9 from her BUN level, hemoglobin level, heart rate, systolic blood pressure, and presentation of melena. Therefore, this patient would be stratified as high risk by both scoring systems, requiring immediate resuscitation and urgent endoscopic evaluation.

Scoring system	Clinical Rockall score	Glasgow- Blatchford score
	Age of 59 (<60) =0	BUN 28 (28-70) = 4
	No underlying comorbidities = 0	Hemoglobin 10 (female 10-11.9) = 1
	Pulse > 100 bpm =1 Systolic BP 96 mmHg (<100) = 2	Systolic BP 96 mmHg =2
	No information about source of bleeding = NA	Pulse > 102 bpm = 1
	No information about stigmata of recent bleeding = NA	Melena = 1
		No known cardiac/hepatic disease = 0
Total score	3	9

RECOMMENDATIONS

Upper GI bleeding scoring systems are useful instruments to help evaluate patients with upper GI bleeding. However, clinical acumen is also important and necessary to provide the best level of medical care to patients with upper GI bleeding. With the use of a scoring system, low risk patients can be identified more effectively and triaged to less costly care.

KEY POINTS

1. Detailed clinical evaluation and hemodynamic assessment can risk stratify patients with upper GI bleeding.

2. Upper GI bleeding scoring tools can assist physicians in the triage of patients. However, the scoring system cannot substitute for clinical acumen. In order to provide the most appropriate level of medical care, incorporating an upper GI bleeding scoring system into a clinical practice should allow internists to evaluate patients with GI bleeding requiring hospitalization more effectively.

3. Low risk criteria in the different upper GI bleeding scoring system are listed below.

- Pre-endoscopic Rockall score of 0 and complete Rockall score of 2 or less
 - Predict the risk of further bleeding and death
- GBS of 0
 - Predicts the risk of intervention and death
- AIMS65 of 1 or less

4. Patients with upper GI bleeding who have the total GBS of 0 are considered low risk, and they can be discharged from emergency department safely with < 1% chance of requiring an immediate intervention after discharge.

KEY WORDS- Upper gastrointestinal bleeding, upper GI bleeding scoring system Rockall score, Glasgow Blatchford score

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