

Acute Upper Gastrointestinal Bleeding Risk Stratification Using Complete Rockall Score

Abbas Faraj Khalaf, Sabiha AL Bayati ***

ABSTRACT:

BACKGROUND:

Complete Rockall risk score uses clinical criteria and endoscopy to identify patients at risk of adverse outcomes after acute upper gastrointestinal haemorrhage.

AIM:

To Identify patients at risk of adverse outcome following acute upper gastrointestinal bleeding.

METHODS:

An observational descriptive hospital-based study conducted on about 65 patients with acute upper gastrointestinal bleeding. Data from history, physical examination and oesophagogastroduodenoscopy were collected and entered into a Complete Rockall score.

RESULTS:

65 cases were identified (43 men and 22 women; mean age 50.1 years). Patients considered to be at low risk of adverse outcomes were 25(38%), while patients considered to be at high risk of adverse outcome were 40(62%).

CONCLUSIONS:

The majority of the patients who were admitted to hospital with upper gastrointestinal bleeding are of high risk group and of male gender.

KEYWORDS: Complete Rockall score, upper gastrointestinal bleeding, OGD.

INTRODUCTION:

Acute upper gastrointestinal tract (GIT) bleeding is a common and life-threatening condition and requires prompt assessment and aggressive medical management ⁽¹⁾. It originates proximal to the ligament of Treitz and forms 85 % of all GIT bleeding episodes ⁽²⁾. It may present with hematemesis (vomiting of blood), melena (passage of black tarry stools due to the presence of altered blood), and systemic shock typically ensues upon loss of 15% or more of the circulating blood volume. The color of the vomitus depends on its contact time with hydrochloric acid in the stomach ⁽³⁾. If vomiting occurs early after the onset of bleeding, it appears red; with delayed vomiting, it is dark red, brown, or black. Coffee-ground emesis results from the precipitation of blood clots in the vomitus. Hematochezia (red blood per rectum) usually indicates bleeding distal to the ligament of Treitz. Occasionally, rapid, profuse bleeding from an upper gastrointestinal bleeding source may

result in hematochezia ⁽⁴⁾. Table 1 shows the main source of bleeding in patients hospitalized for upper gastrointestinal bleeding in large series in United State ⁽⁵⁾. Table 2 shows the main sources of upper GIT bleeding in Iraqi patients, taken from a study done by Murtadha et al ⁽⁶⁾.

The approach to upper gastrointestinal bleeding consists of maintenance of hemodynamic stability and determination of the amount and localization of bleeding ⁽⁷⁾. The prognosis of GIT bleeding is variable, from mild to life-threatening bleeding ⁽⁸⁾. As in all life-threatening conditions in an emergency department (ED), physical examination, diagnostic procedures, and therapeutic efforts should be simultaneously initiated, and patients should be resuscitated and stabilized in upper GIT bleeding ⁽⁷⁾.

In patients with upper GIT bleeding a triage system for decisions regarding emergency vs delayed endoscopy may shorten hospital stay and cut costs, although this is not always the case. Thus, triage and scoring systems together may categorize patients into low-risk and high risk groups based on 5 admission criteria prior to endoscopy and may prove more practical ⁽⁹⁾.

*Internal Medicine Specialist Al Karama Teaching Hospital in Kut City. Wasit, Iraq

**AL-Mustansyria College of Medicine. Baghdad, Iraq

Table 1: Causes of Upper GIT Bleeding in United States.

DIAGNOSIS	Percentage (%)
Gastric and duodenal ulcer	38
Gastric or esophageal varices	16
Erosive esophagitis	13
No GIT cause	8
Upper GIT tumor	7
Upper GIT angioma	6
Mallory-Weiss tear	4
Gastric or duodenal erosions	4
Dieulafoy's lesion	2
other	2

Table 2: Sources of Upper Gastrointestinal Bleeding Karbala, 2012.

DIAGNOSIS	Number of cases	Percentage (%)
Peptic Ulcer	95	63.3
Gastric erosion	28	18.7
esophageal varices	10	6.7
Malignancy	7	4.7
Vascular anomalies	3	2.0
Mallory Weiss tears	2	1.3
No identified cause	5	3.3
Total	150	100

Several risk stratification scores have been described for the assessment of upper GIT bleeding. They aim to separate patients into low and high risk of adverse outcome, which can help optimize patient management and direct resources accordingly (10).

The Rockall score was created following a UK audit in 1993, which collected data on the management and outcome in 4185 patients with

UGIB (Table 2). Both non-variceal and variceal causes of bleeding were included (11). A numerical score was constructed consisting of five variables that were shown to be independent predictors of mortality: the “admission Rockall” which consists of three pre-endoscopic variables (age, shock and comorbidity) and the “full Rockall” which requires a further two endoscopic variables for calculation (diagnosis and stigmata of recent haemorrhage).

Table 3: Complete Rockall Score (7).

Variable	Score			
	0	1	2	3
Age, y	< 60	60–79	>= 80	
Shock	No shock Systolic BP > 100 mm Hg Pulse < 100 beats/min	Tachycardia Systolic BP > 100 mm Hg Pulse > 100 beats/min	Hypotension Systolic BP < 100 mm Hg	
Comorbidity	Nil major		Cardiac failure, ischemic heart disease, any major comorbidity	Renal failure, liver failure, disseminated malignancy
Diagnosis	Mallory–Weiss tear, no lesion, and no SRH	All other diagnoses	Malignancy of upper-GI tract	
Major SRH	None, or dark spot		Blood in upper-GI tract, adherent clot, visible or spurting vessel	

PATIENTS AND METHODS:

This is an observational descriptive study that included 65 consecutive patients with acute UGIB admitted to the emergency room and inpatient ward of Al-Yarmouk teaching hospital from July 2015 through December 2015. The median age of the patients was 50.1±19.5 (range: 13-90) and 43 were men and 22 were women.

The inclusion criteria:

Any patients presented to the hospital through the emergency room with one or more of the following: hematemesis, melena or coffee ground vomiting.

Endoscopies were performed to confirm the diagnosis within 24-48 h after admission, and the complete Rockall score was calculated. A Rockall score > 2 was used to define „high risk“.

The exclusion criteria:

Patients with no endoscopy whether it is due to refuse, noncompliance or death.

Data analysis was performed using the available statistical package of SPSS-22 (Statistical Packages for Social Sciences- version 22). The presentation of data was in simple measures of frequency, percentage, mean, standard deviation, and range (minimum-maximum values).

RESULTS:

Of the 65 patients, 43 was males, 22 was females, mean age was 50.1, at range of 13-90 years, at percentage of 66 and 33 for male and female respectively. Patients below 60 were 38 at percentage of 58.5. Patients from 60-79 were 21 at percentage of 32.3%. Patients 80 and above were 6 at percentage of 9.2. Table 4 summarizes age and gender of The Patients.

Table 4 :Age and Gender of The Patients.

		No	%
Age (years)	<40	20	30.8
	40---49	11	16.9
	50---59	7	10.8
	60---69	18	27.7
	70---79	3	4.6
	=>80	6	9.2
	Mean±SD(Range)	50.1±19.5 (13-90)	
Gender	Male	43	66.2
	Female	22	33.8

Table 5 shows pulse rate and blood pressure (systolic and diastolic) for each patient. Nine patients were having hypotension (systolic blood pressure below 100) at percentage of 13.8%. Twenty-five patients were having tachycardia (pulse rate 100 and above) at percentage of 38.5%.

Table 5 :Vital Signs distribution.

		No	%
SBP (mmHg)	<100	9	13.8
	100---	8	12.3
	110---	10	15.4
	120---	14	21.5
	=>130	24	36.9
	Mean±SD(Range)	118.3±19.8 (80-170)	
Pulse rate (beat/minute)	<90	14	21.5
	90---	26	40.0
	=>100	25	38.5
	Mean±SD(Range)	95.3±10.2 (70-110)	

Figure 1 summarize distribution of comorbidities between the patients. Of the patients 17 were having diabetes mellitus and another 17 were having hypertension. Four patients were having peptic ulcer disease, CKD and chronic liver disease.

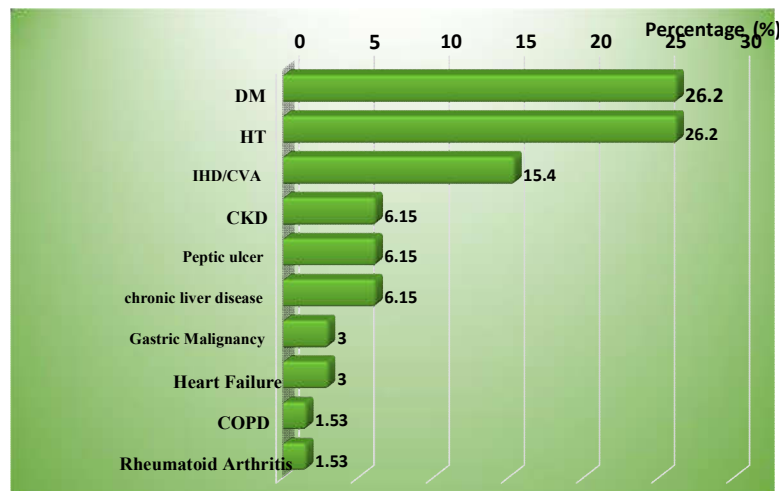


Figure 1: Distribution of Comorbidities.

Table 6 shows a complete Rockall score with number and percentage of each risk variable. The highest risk score was 1 and 4 followed by 5 then 2 and 3. The least score was zero and 8. The mean score was 3.4 with ±2.0 standard deviation and range of 0-8.

Table 6 Complete Rockall Score and Risk Variables.

		No	%
Age score	<60	38	58.4
	60---79	21	32.3
	=>80	6	9.2
Shock score	No shock (SBP>100 PR<100)	36	55.4
	Tachycardia (SBP>100 PR>100)	25	38.4
	Hypotension (SBP<100)	9	13.8
Comorbidity score	Nil major	33	50.8
	Cardiac failure, IHD, any major	25	38.5
	Renal, liver failure and other	7	10.8
Diagnosis score	Mallory-Weiss tear, no lesion, no SRH	8	12.3
	All other diagnosis	55	84.6
	Upper GIT malignancy	2	3.1
Major SRH score	None or dark spot	55	84.6
	Upper GIT blood, adherent clot visible or spurting vessel	10	15.4
-SRH (Stigmata of recent haemorrhage)			

The causes of acute upper GIT bleeding in decreasing frequency were duodenal ulcer, erosive gastritis, gastric ulcer, esophageal and gastric varices, erosive esophagitis, Erosive duodenitis, Mallory Weiss syndrome and gastric malignancy as shown in table 7.

Table 7: Causes of Upper Gastrointestinal Bleeding in our study, 2016.

Source of bleeding	Number of the patients	Proportion of the patients
Duodenal ulcer	21	32.3
Erosive gastritis	11	16.92
Gastric ulcer	10	15.38
Esophageal and gastric varices	8	12.3
Erosive esophagitis	3	4.61
Erosive duodenitis	3	4.61
Mallory Weiss syndrome	2	3.07
Gastric malignancy	2	3.07
No cause identified	4	6.15
Cameron ulcer*	1	1.53

*Cameron lesions are erosions that may lead to ulcerations in the gastric mucosa located at the diaphragmatic hiatus in patients with hiatal hernia (12).

Figure 2 represents the percentage of the patient with low and high-risk scores. High risk group was 40 patients and represent 62%. Low risk group was 25 patients and represent 38%.

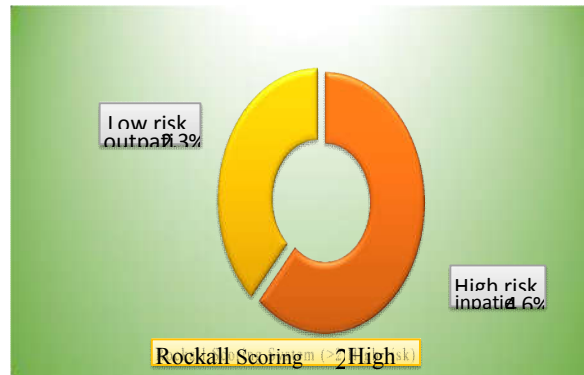


Figure 2: Percentage of the Patient with Low and High-Risk Scores

DISCUSSION:

Our study revealed that the majority of acute upper gastrointestinal bleeding patients (62%) that present to Al-Yarmouk teaching hospital and who were admitted to the medical ward are high risk group in respect to their calculated complete Rockall score (figure 2). Most of our patients were males at percentage of 66%. This finding may prompts us to do a study about a gender as a risk factor for upper gastrointestinal bleeding in Iraqi people.

In a study conducted in England 1996, there was 321 patients with low risk score (27%) and 859 patients were high risk score (73%)⁽¹³⁾.

Comparing our results with a study which was done by E M Vreeburg and et al in Amsterdam 1998, the sample size was 951, 12.4 % of them were low risk score, while 87.6 % were high risk score⁽¹⁴⁾.

A recently published study, 2018, conducted by Dewan et al revealed 21% of patients were of low risk score, while 79% were of high-risk group⁽¹⁵⁾.

From all above studies we notice a more of low risk group patient, which may necessitate another study and this particular point could be one of its goals

While another study which was done through 2004-2005 on 181 patents and published in April 2008 by American Society for Gastrointestinal Endoscopy, showed low risk group were only 19%, high risk patients were 81%, 41% of the patients were males, and another study published by World Journal of Gastroenterology on 2013

June 14, that enrolled 341 patients admitted to the emergency room and Intensive Care Unit of Xuanwu Hospital of Capital Medical University with non-variceal upper gastrointestinal bleeding in Beijing, China. The median age of the patients was 72.85 ± 7.11 years (range: 60-85 years) and 181 were men and 160 were women. The score identified 114 of 341 patients as low risk (≤ 3); representing 33%, 227 of 341 patients as high risk (≥ 4); representing 67%⁽¹⁶⁾.

And another study between February 2011 and December 2013, 158 (Aged 63 ± 16 years, male 1166) consecutive patients from eight hospitals (in Daegu-Gyeongsang, South Korea) were enrolled in the study. Low risk score patients were 309(19.5%); high risk score patients were 1275 (80.5%)⁽¹⁷⁾.

A retrospective study has evaluated the significance of the clinical Rockall Score in identifying low risk patients at 2004. Gralnek and Dulai found that the clinical Rockall Score identified 12% of patients who were at low risk. They found that no patient classified as being at low risk had recurrent bleeding or died. After they calculated the complete Rockall Score in their cohort after endoscopy, the number of low-risk patients increased to 30%⁽¹⁸⁾.

We looked for similar studies regarding Rockall score risk stratification or validation in our country and nearby countries but we did not find such studies.

The use of the clinical Rockall Score may reduce the need for urgent endoscopy in low-risk patients, which can instead be carried out on a more elective outpatient basis. However, this approach may not be applicable to those suspected of having variceal hemorrhage.

CONCLUSION:

The majority of the patients who present to hospital with acute upper gastrointestinal bleeding are of high risk group and males.

Recommendation

1. To perform larger, multicenter studies including large sample size for validation of Rockall score in Iraqi patients.
2. To perform other studies to compare this score with other risk stratification scores of acute upper GIS bleeding.

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