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Alimentary Tract

Applicability of the Rockall score in patients undergoing endoscopic therapy for upper gastrointestinal bleeding

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Abstract

Background. The Rockall score is used to assess the prognosis of patients with upper gastrointestinal bleeding.

Aim. To assess the applicability of the Rockall score in patients undergoing endoscopic therapy for upper gastrointestinal bleeding.

Methods. Retrospective evaluation of the Rockall score in the period 1995–2001. To evaluate the applicability of the Rockall system, two groups were created: group I (Rockall ≤ 5 points) and group II (Rockall ≥ 6 points).

Results. Two hundred and twenty-two patients were included. The median age of patients was 65 ± 17 years. Hypotension and associated diseases were present in 20 and 50% of patients, respectively. Re-bleeding occurred in 50 patients (23%) whose median score was 7, whereas the median score of patients without re-bleeding was 6 ($p = 0.14$). There were 20 deaths (9%) with a median score of 8, whilst the median score of surviving patients was 6 ($p < 0.001$). Sixteen patients in group I (18.4%) and 34 in group II (25.2%) re-bled ($p = 0.25$). All the patients who died belong to group II with a Rockall score ≥ 6 (15% versus 0% in groups II and I, respectively, $p < 0.001$).

Conclusion. The Rockall score can be used in patients who undergo therapeutic endoscopy for upper gastrointestinal bleeding to identify those with high risk for mortality.

Keywords: Gastrointestinal bleeding; Rockall score

1. Introduction

Acute upper gastrointestinal bleeding (UGIB) is a common cause of emergency hospital admission [1]. Although great advances in diagnostic and therapeutic techniques have improved the prognosis of those patients, the probability of mortality and re-bleeding has been estimated at around 4–14% and 10–30%, respectively [2–4]. For better management of patients with UGIB, a number of scoring systems have been developed during recent years [3–10], but the use of such scores is not unequivocally supported [11]. One of the most widely recognised was developed by Rockall et al. [5] by means of a multivariate analysis of information derived from a number of clinical and endoscopic factors in 4185 patients with UGIB.

Although the Rockall score was designed to predict mortality, Rockall et al. suggested that it could also be used for the prediction of re-bleeding. Although some studies have confirmed its predictive value [4,12,13], others have failed to observe any effectiveness in determining the probability of re-bleeding in bleeding peptic ulcers [14].

In recent years, the Rockall score has been used to select patients with a low risk of re-bleeding for early discharge [7,15–17]. Almost all patients in this low risk group belong to patients without any stigmata of recent haemorrhage (SRH). However, patients with an SRH are a high-risk group for further re-bleeding and also mortality [18,19]. It is therefore important to determine whether the Rockall score could be useful in patients who have undergone endoscopic therapy for

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UGIB, to identify high-risk patients and thus improve their management and outcome.

2. Materials and methods

From our computer database of patients with UGIB, we selected those patients with active bleeding; spurting or oozing (Forrest Ia and Ib, respectively), non-bleeding visible vessels (Forrest IIa) or adherent clots (Forrest IIb) treated endoscopically in the period between 1995 and 2001. Patients with tumoural ulcers were excluded from the analysis.

The Rockall score system was applied retrospectively to all patients. From the data accessed it was possible to calculate the score. The Rockall score system includes three clinical variables (age, shock and co-morbidity) and two endoscopic variables (diagnosis and major stigmata of recent haemorrhage), each categorised and scored with 0–3 points, to give a maximum of 11 points (Table 1). Based on that score, patients are categorised in three groups: low risk (scores 0–2), intermediate risk (scores 3–7) and high-risk (scores 8–11) groups.

All patients in the present study received endoscopic therapy with adrenaline plus polidocanol (peptic and non-peptic lesions). All endoscopic-treated patients received antisecretory therapy during the study period. Re-bleeding was defined as a new episode of bleeding during hospitalisation, after the initial bleeding had stopped, manifested as a recurrence of haematemesis, hematochezia or fresh blood in the nasogastric aspirate. Mortality was defined as death within the hospitalisation period.

All patients in the study had at least two points on Rockall score (the inclusion criteria was patients with SRH) (Table 1). Analysis was made in patients with Rockall score between 2 and 11 points. To discern the applicability of the Rockall score in the large intermediate group (scores 3–7), for the purpose of analysis we arbitrarily divided the patients into two groups (median dichotomization): patients with scores 5 or less (group I; from 2 to 5 points on Rockall score) and patients with scores 6 or above (group II; from 6 to 11 points on Rockall score).

2.1. Statistical methods

Continuous variables are expressed as median and means and were compared by means of the Student's *t*-test. Differences in relative frequency of re-bleeding and mortality were evaluated by means of the χ^2 test, applying the Yates' correction as appropriate. To determine the predictive value of the Rockall score, a uni- and multivariate analysis was made using COX regression analysis. Evaluated variables included age, sex, alcohol consumption, smoking habits, hemodynamic manifestations, clinical presentation (hematemesis or melenas), previous ulcer, comorbidity, NSAIDs ingestion, in-patient haemorrhage, shock (systolic blood pressure < 100 mmHg), tachycardia (heart rate > 100 bpm), haemoglobin, *Helicobacter pylori* infection, blood in upper GI tract, endoscopic risk stigmatas, pharmacological treatment and type, size and location of ulcer. A *p*-value of less than 0.05 was considered indicative of a statistically significant difference. All calculations were performed by using the SPSS software package (SPSS Inc., Chicago, IL, USA).

3. Results

Data were obtained from 222 consecutive patients, 161 males and 61 females. The most common endoscopic diagnoses were a duodenal or gastric ulcer (47.3 and 34.2%, respectively), a Mallory–Weiss tear (9%) and a Dieulafoy lesion (5%). Eighty-seven patients (39%) scored 5 or less (group I) and the remaining 135 patients (61%) scored 6 or above (group II). The distribution of scores for the sample is shown in Fig. 1. The five patients with 2 points on Rockall score were young patients without comorbidity or shock with a Mallory–Weiss tear with SRH. In 43% of cases an adherent clot was the major stigmata of recent

Table 1
The Rockall risk scoring system

Variable	Score			
	0	1	2	3
Age (years)	<60	60–79	≥80	
Shock	"No shock": pulse < 100 + systolic BP ≥ 100 mmHg	"Tachycardia": pulse ≥ 100 + systolic BP ≥ 100 mmHg	"Hypotension": systolic BP < 100 mmHg	
Comorbidity	No major comorbidity		Cardiac failure, ischaemic heart disease, any major comorbidity	Renal failure, liver failure, disseminated malignancy
Diagnosis	Mallory–Weiss tear, no lesion identified and no SRH/blood	All other diagnoses	Malignancy of upper GI tract	
Major SHR	None or dark spot only		Blood in upper GI tract, adherent clot, visible or spurting vessel	

SRH: stigmata of recent hemorrhage; GI: gastrointestinal; BP: blood pressure.