

THE PREDICTIVITY OF RISK SCORES IN UPPER GASTROINTESTINAL BLEEDINGS

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Abstract: *Upper gastrointestinal bleedings are still a challenge for gastroenterologists as well as for physicians in the emergency departments. They are one of the most frequent causes for admission in the world. As a result, numerous risk assessment scores were described, some including accessible variables, some others including the need for upper gastrointestinal endoscopy to quantify the risk of mortality, the implementation of emergency endoscopy, the risk of rebleeding, and the necessity of blood transfusion.*

Key words: *upper gastrointestinal bleedings, risk scores, Glasgow-Blatchford score, Full Rockall score.*

1. Introduction

Even nowadays, upper gastrointestinal bleedings are one of the most frequent causes of hospitalization in the world. Despite the improvements in diagnosis methods and pharmaceutical, endoscopic, and surgical treatments, the mortality rate is relatively constant.

Patient stratification into risk groups and the recognition of those with a high risk of death and rebleeding is to be aimed in order to implement proper and cost-efficient management.

There are numerous risk assessment scores, some easier to use and others more complicated, that were created as tools to achieve this goal, but recent studies

underline the disadvantages and the need for parameter adjustments by providing new criteria or establishing new scores.

The complexity of risk scores depends on the variables and the need for upper endoscopy intervention. Hence, there are scores that include only clinical and biological variables (AIMS65, pre-endoscopic Rockall score, Glasgow-Blatchford score [GBS], T-score) and scores that are calculated using endoscopic variables also (post-endoscopic Rockall score, Baylor Bleeding Score [BBS], Progetto Nazionale Emorragia Digestiva Score [PNED], Cedar-Sinai Medical Center Predictive Index [CSMCPI]). [1].

A disadvantage of scores based on

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endoscopic findings is that such complementary investigations are not available in all emergency departments, which decreases the compliance in score calculation. On the other hand, an advantage is that these scores include in variables endoscopic findings and thus they allow a complete assessment of patients with upper gastrointestinal bleedings.

Many guidelines advise using risk scores, but their utility and applicability are limited, especially in variceal haemorrhages. However, the most recommended scores are the Glasgow-Blatchford and pre-endoscopic and post-endoscopic Rockall scores.

2. Scores that Include only Clinical Variables

Glasgow-Blatchford score is calculated using variables such as heart rate, systolic blood pressure, levels of haemoglobin, blood urea, and takes into consideration the presence of comorbidities, melena or syncope occurrence, and liver or heart conditions [1-5].

It was created 21 years ago to determine patients presenting upper gastrointestinal bleedings who would require admission to hospital, blood transfusions or would have a high risk of rebleeding and death [2], [6], [7].

Patients with a Glasgow-Blatchford score > 2 are considered patients with low risk and are eligible for outpatient treatment, and thus the score is a useful tool in managing upper gastrointestinal bleedings [8].

Glasgow-Blatchford has similar results to Full Rockall score in assessing the necessity of endoscopic or surgical intervention and at the same time is has

better results compared to clinical Rockall score (pre-endoscopic) [9].

Glasgow-Blatchford score is superior to pre-endoscopic and post-endoscopic Rockall score regarding the predictivity of the need for blood transfusions and emergency endoscopic intervention. At the same time, it has better results in identifying those patients who present a high risk of rebleeding, complications and require admission to intensive care units [10], [11].

During a prospective multicentric study, similar results were obtained with regard to the predictivity of Glasgow-Blatchford score in identifying the patients suffering from upper gastrointestinal bleeding who required endoscopic intervention or medication as compared to Full Rockall score [8].

Moreover, during another multicentric study, it was not observed major differences between pre-endoscopic Rockall scores and Glasgow-Blatchford regarding the assessment of patients with high risk of rebleeding [12].

Glasgow-Blatchford and AIMS65 scores have similar results in assessing the need for endoscopic intervention and the risk of death during hospital stay, but Glasgow-Blatchford score has superior results in determining the necessity of transfusions [13].

AIMS65 incorporates a small number of variables that can be obtained easily even in smaller hospitals: age, mental health alteration, levels of albumin, INR, systolic blood pressure [1], [3-5].

AIMS65 score developed by Saltzman et al. has accessible variables, is easy to use and has the advantage of not including changeable parameters and is based on biological variables that are collected when the patient arrives at the emergency department [10], [14], [15].

AIMS65 score has similar results as pre-endoscopic and post-endoscopic Rockall score and MELD score (Model for End-Stage Liver Disease) regarding in-hospital mortality and the assessment of hepatic disease severity, but it is superior to MELD score regarding the prediction of rebleeding during hospital admission [15-17].

The results of AIMS65 are comparable to those of Glasgow-Blatchford regarding the prediction of mortality risk at 30 days and rebleeding. AIMS65 is superior to Glasgow-Blatchford score regarding the risk of mortality for hospitalised patients and the length of hospital stay. An AIMS65 score comprised between 0-1 indicates low-risk patients, while a score between 2-5 identifies patients with a high risk of mortality [3], [9], [18].

Glasgow-Blatchford score is superior to AIMS65 score in determining the risk of rebleeding and the need for blood transfusions. Glasgow-Blatchford score and Rockall score are superior to AIMS65 score in assessing the risk of rebleeding as well as determining patients with a low risk of complications who do not need endoscopic intervention and could be discharged safely [10], [14], [19].

Albumin-Glasgow-Blatchford score and modified AIMS65 score (by modifying the threshold value of albumin) had a similar result in predicting mortality. All three scores (AIMS65, modified AIMS65, Glasgow-Blatchford score, full Rockall score) were highly accurate in assessing the need for transfusion. The best assessment for the need for endoscopic intervention was observed at modified AIMS65 score, Glasgow-Blatchford score, full Rockall score, while AIMS65 did not show any significant results. It was shown that albumin as an independent variable

had a high predictive value regarding mortality [15], [19], [20].

T-score considers the overall health, heart rate, systolic blood pressure, and haemoglobin levels. [1], [3]

T-score has similar results to Glasgow-Blatchford in determining the occurrence of stigmata of haemorrhage during endoscopy, the risk of rebleeding and mortality in patients presenting upper gastrointestinal bleeding [1], [9].

Furthermore, with the help of T-score it can be established the need for emergency upper gastrointestinal endoscopy (in the first 12 hours after the patient's arrival at the emergency service). A score < 6 indicates those patients who have a high risk and need urgent endoscopic intervention while for a score > 10 upper gastrointestinal endoscopy can be postponed [1], [3].

Clinical scores are useful in identifying the high-risk patients who would need endoscopic intervention and in differentiating low-risk patients who can receive treatment at home.

3. Scores that Include Endoscopic Variables also

Rockall score is one of the oldest and more used scores, it includes the following variables: age, presence or absence of shock, comorbidities, endoscopic findings, stigmata of haemorrhage [1-4].

The predictivity of Full Rockall score regarding mortality is superior to that of Glasgow-Blatchford, but the results are not as satisfying for the prediction of rebleeding risk [3].

Studies show that pre-endoscopic and post-endoscopic Rockall score <3 has a high predictivity in identifying low-risk patients, a score > 3 requires

hospitalisation, and a score >8 indicates a high risk of mortality [3], [21].

Baylor Bleeding score (BBS) can be used as a pre-endoscopic score as well as a post-endoscopic score. It was initially created to quantify the risk of rebleeding post endoscopy procedure in patients presenting non-variceal upper gastrointestinal bleeding. A value >11 indicates a high predictivity for rebleeding after endoscopy and a score >10 corresponds to a low risk of rebleeding. Even though it is demonstrated that the score has good results in distinguishing the patients with a risk of rebleeding after undergoing endoscopic therapy, the score is not used on a large scale [1], [3], [4].

Cedar-Sinai Medical Center Predictive Index (CSMCPI) was developed to estimate the length of hospitalisation in patients with upper gastrointestinal bleeding. It includes endoscopic findings identified at presentation, comorbidities, symptoms, and hemodynamic instability. A result of CSMCPI >3 indicates the need for hospitalisation. The score identifies patients with high risk and decreases the risk of premature discharge, but just like Baylor Bleeding score, its usage is still low [1], [3], [7].

Progetto Nazionale Emorragia Digestiva (PNED) score is employed for assessing the risk of death in patients presenting non-variceal upper gastrointestinal bleeding. It includes clinical variables and laboratory parameters as well as the failure of endoscopic treatment [1], [7].

4. Conclusions

Scores that require only clinical and laboratory parameters are an essential tool for patient stratification into risk groups, especially at the initial triage.

Glasgow-Blatchford is used on a large scale and is included in numerous speciality guidelines having good results in identifying the low-risk patients as well as the need for urgent endoscopic, radiologic, or surgical intervention and being superior to other scores in identifying the need for blood transfusions.

AIMS65 score incorporates variables that are easy to calculate and does not include endoscopic parameters, it can be used in emergency departments as well as in smaller hospitals where the access to superior endoscopy is limited, thus enabling an appropriate triage.

Rockall score is the most employed score that includes endoscopic variables and it is highly accurate in identifying patients with a high risk of death. It is a tool that helps clinicians in managing patients in a severe stage.

The simultaneous use of several risk scores improves the accuracy in emergency departments, where the number of patients is high, as well as during hospital admission. However, the use of scores that are easy to calculate for an initial triage has many advantages regarding costs as well as proper and efficient treatment.

The aim for using such scores is to improve the management of patients presenting upper gastrointestinal bleedings, to reduce the days of hospitalisation, and to carry out prompt and efficient treatment. There are necessary prospective studies on large groups of patients including scores that are less used and less recommended by the most important medical guides.

At the moment, there is no ideal risk assessment score nor a 'gold standard' that can respond to all requirements, and

thus further studies are needed to quantify and enhance the predictivity of existing scores.

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