International Journal of Medical and Health Research
www.medicalsciencejournal.com
ISSN: 2454-9142
Received: 02-08-2023, Accepted: 17-08-2023, Published: 04-09-2023
Volume 9, Issue 5, 2023, Page No. 28-30

Risk stratification of patients with lower gastrointestinal bleeding – Most used scoring systems

D Zvezdov, I Kostov, S Evtimova
Departament of Gastroenterology, Clinic of Internal Diseases, Second Multiprofile Hospital for Active Treatment Sofia, Bulgaria

Abstract
Acute lower gastrointestinal bleeding is defined as bleeding from the GI tract below the ligament of Treitz. It is a common condition seen in gastroenterological and surgical medical practice. Despite its self-limiting course and advances in medicine and technology it remains a major cause for morbidity and mortality. In order to improve outcomes patients need to be stratified according to their risk. Several scoring systems have been developed for this purpose, some of which are the Oakland and the CHAMPS score. The purpose of this review is to summarize the advantages and disadvantages of the most widely used scoring systems.

Keywords: Lower gastrointestinal bleeding, risk scoring systems, assessing the risk, Oakland score

Introduction

Bleeding from the lower gastrointestinal tract (LGIT) is a frequent complication of gastroenterological diseases and occupies an important place in clinical practice as it represents a major medico-social problem. Bleeding from the digestive tract is defined as bleeding from the lower GI tract at a source located below the ligament of Treitzi. It accounts for 20% to 30% of gastrointestinal bleeding cases. The annual frequency of bleeding from the lower gastrointestinal tract is 1:4000 with a mortality rate of 2-4%. In contrast to bleeding from UGIT, the frequency of occurrence of bleeding from LGIT increases with age, with peak on average between the 6th and 7th decades. In this part of patients, the comorbidity index is higher and the use of anticoagulants and antiplatelets is more common, which in turn leads to a greater risk of upper and lower GI bleeding. The variation in the death rate is a result of different factors, the most important of which are comorbidity, nosocomial infections, comedication and particularly the increasing use of NSAIDs, anticoagulants and antiplatelet agents.

The clinical picture is different according to the localization of the source of bleeding. The most common types of GIT bleeding are:

Melena

Ground dark brown, black tarry stools with specific smell, caused by the hemoglobin in the blood that is changed by digestive enzymes and intestinal bacteria. Melena is one of the most common symptoms associated with upper GI bleeding.

Hematemesis

Vomiting of clear blood when the bleeding is recent or vomiting of dark brown gastric contents when the blood was in contact with the hydrochloric acid long time. Hematemesis is common symptom associated with upper GI bleeding (Oesophagus, stomach, duodenum).

Hematochezia

The presence of clear blood or blood clots in the stool [1, 6]

The most common primary sources of lower GIT bleeding are:

- Diverticulosis disease of the colon
- Vascular malformations (angiectasias)
- Colitis (ischemic coSlit)
- Radiation proctitis
- Iatrogenically induces bleeding
- Hemorrhoidal disease
- Colorectal neoplasias
- Use of NSAIDs
- Risk factors (alcohol consumption, smoking)

In 2-8% of the cases, the cause of acute bleeding in the lower GIT is postpolypectomy hemorrhage (early or late bleeding after endoscopic removal of colonic polyps [1].

When evaluating a patient with GI bleeding, it can be difficult to identify the location and more accurately classify the source as UGIT or LGIT. It is absolutely possible in patient with clinical manifestation as hematochezia to determine the origin of bleeding in UGIT or patient with melena and bleeding from the LGIT. However, nowadays, based on the improvement of the endoscopy and interventional radiology, it is absolutely possible in most of the cases to localize correctly the origin of bleeding and to realize endoscopic hemostasis in most cases. Indications for surgery are problematic patients with an unidentified origin of bleeding, failed endoscopic hemostasis and uncontrollable repetitive bleeding [11].

The medical literature has been expressed different opinions of the importance of many predictors for uncontrollable bleeding and conversion with surgical treatment in patient wit GIT bleeding. A number of diagnostic and prognostic emergency systems have been introduces to stratify patients at risk. These are: AIMS 65, complete and modified GBS and MGBS, Rockall, which are extremely suitable for evaluation in UGIT bleeding, but unfortunately do not have equivalent success in LGIT [1, 7].

Other scores are being developed to assess the risk among patients with GI bleeding. BLEED score (current bleeding, low systolic pressure, increasing prothrombin time, altered mental status, complications of comorbidities) was created to assess the risk in patients, in which there are complications set in during the hospitalization. NOBALDS

score (no NSAID use, no diarrhea or abdominal pain, systolic pressure 100 mmHg, antiplatelet use, serum albumin level – 3.0 g/dL, syncope) and Strate score were crated to assess mortality. Oakland score (age, gender, previous manifestation of GI bleeding, rectal examination result, heart rate, systolic blood pressure, hemoglobin level) [1, 4, 7].

BLEED

The BLEED model was created by Kollef and his team established as a prognostic acute bleeding risk assessment system for both upper and lower GIT. Its components include prolonged bleeding, low systolic blood pressure, high prothrombin time, unstable mental status and instability in comorbidities. This system classifies patient into a high-risk to low-risk group. Those in the high risk are characterized by in-hospital complications, the need for hemotransfusion and a longer hospital stay. The possibility od using this system with limited due to lack of validation and due to the fact that it is developed in patient needing intensive help and care [4, 5, 7].

NOBLADS score

NOBLADS prognostic score system consisting of eight predictors. Despite the many clinical factors used in the original study in Tokio, Japan (2016), the results are conclusive of the high accuracy of the score system in patients with acute bleeding from LGIT. The score gives information for the risk of hemotransfusion and death in hospitalized patients, but it is no authoritative in long time stay in hospital. The main components of this prognostic risk system are:

Table 1: Components of NOBLADS prognostic score system. Every factor gives 1 point. The risk of bad diagnose increases with result more than 4 points.

No abdominal pain
No diarrhea
NSAIDs use
Systolic BP </= 100
Albumin < 3 g/dL
Antiplatelet use (without Aspirin)
Charlson comorbidity index ≧ 2
Syncope

One of the most common causes of acute GI bleeding in adults is bleeding from colonic diverticulosis and 75% of the cases resolve spontaneously. In the 25% bleeding is acute and necessitates interventions. Although an endoscopic hemostasis is implemented, it is possible recurrence in 14-38% of the cases. Although NOBLADS score assesses the risk of bleeding from LGIT from many etiological factors such as: malignant processes, ischemic colit and hemorrhoidal disease which do not require endoscopic methods of hemostasis, it is applicable for bleeding from diverticula. In one of the most recent studies conducted in Japan using the NOBLADS score to predict endoscopic treatment for bleeding colonic diverticula, an important feature emerged, namely the treatment of the association of the score system to the patient's age. This is due to the fact that diverticulosis of the colon occurs more often in older patients. This leads to a higher score in elderly patients. The value increases if hemorrhage diagnosed by contrast – enhanced CT is added. Thus the result of the score in younger patients and older patients is divided by two – 3 and 4 points respectively. In clinical practice, the NOBLADS score would be more applicable, due to the fact that this part of patients has a higher index of comorbidity and intake of more medications, which gives a greater impact on the system's components. A known drawback would be the reflection of vagus response in young patients, which would cloud the calculation [3, 5].

At the first meeting with a young patient with acute bleeding from the LGIT in the Emergency Department, fibrocolonoscopy is the first choic, as he is more tolerant to invasive procedures. In adult patients with a NOBLADS score of 4 and evidence of hemorrhage from contrast-enhanced computer tomography, it is recommended to choose FCS. In the case of lower score, it is possible to undertake conservative therapy [3, 5].

In conclusion, the NOBLADS score is a prognostic scoring system that highly assesses the risk of GI bleeding (particularly in colonic diverticulosis). Its results can influence subsequent steps in the therapeutic process, namely CT with contrast, FCS of conservative therapy [5].

Oakland score

The Oakland score is relatively new, highly reliable scoring system that is the first to be designed entirely for GI bleeding. It was developed through a national prospective study with 2336 patients in the UK. The primary purpose is to identify patients with LGIT bleeding who can avoid hospitalization at a score threshold <8 or to predict the fastest time to discharge for a patient with LGIT bleeding who are at low risk for in-hospital recurrence of bleeding, need for hemotransfusion, therapeutic colonoscopy or laparotomy, an acute complication such as mesenteric thrombosis, outcome or need for re-hospitalization within 28 days of hospital discharge [4, 6, 7].

In the original study by Dr. Kathryn A. Oakland, in which the prognostic risk Oakland score system was validated in 288 patients with LGIT bleeding in two UK hospitals of whom 184 were safely discharged. Based on the data from this study, a conclusion is drawn, from which it is clear that Oakland score is superior to Rockall, Blatchford, AIMS-65, Strate, BLEED, and NOBLADS in the safe prehospital discharge of patients with acute GI bleeding [7].

A recent study of 170 patients hospitalized with GI bleeding who underwent fibrocolonoscopy also found the ability to predict acute and severe bleeding. In a UK study, on the threshold of 8 points of <8 points of the included population was identified as having a low risk of bleeding. When the immediate threshold is increased to 10 points or < 10 points, an obviously high percentage is reached- 96% [7].

The strength of the Oakland score lies in the simplicity of its components, demographic factors, vitals indicators and complete blood count, allowing the result to be fully calculated during the initial evaluation, which was a long period of research and the need for endoscopic information. This is particular importance for any Emergency Department, where almost every patient is referred in the presence of these problems. Although the system is well received in the UK, the number of patients and hospitals is still relatively small and needs more widespread practice [8].

A very important aspect that needs to be addressed is the one proposed in a Spanish study in which attention is paid to the lack of information about the coagulation status of patients Oakland score. As noted above anticoagulant treatment is much more common in older patients, where we also see more frequent GI bleeding [11].

Table 2: Components of the Oakland score

	Score component value
Age (years)	
<40	0
40–69	1
>70	2
Sex	
Female	0
Male	1
Previous lower gastrointestinal bleeding admission	
No	0
Yes	1
DRE findings	
No blood	0
Blood	1
Heart rate (bpm)	
<70	0
70–89	1
90–109	2
>110	3
Systolic blood pressure (mm Hg)	
50–89	5
90–119	4
120–129	3
130–159	2
>160	0
Haemoglobin (g/dL)	
36–69	22
70–89	17
90–109	13
110–129	8
130–159	4
>160	0

DRE=digital rectal examination.

Table 2: **A score to predict the safe discharge of patients presenting with acute lower gastrointestinal bleeding**

A known limitation is getting information for a previous episode if GIT bleeding as one of the components of the risk prognostic system. Another drawback is its high sensitivity, due to the fact that some patients who can be discharged are identified as requiring hospitalization. This possibility is extremely minor compared to potentially misclassifying a high-risk patient as a low-risk patient [4].

Conclusions from several studies present in a positive light the use of the Oakland score connection with the assessment of bleeding from LGIT in low-risk patients, as well as the safe discharge of such patients.

Champs scoring system

The champs score is a simple score based on six variables – Charlson comorbidity index (CCI), in-hospital onset, albumin <2.5gg/dl, altered mental status, ECOG >2 and steroid use. Maximum number of points is six. It can also be used for upper GI bleeding. In a study from Munehiko Tajika *et al* the CHAMPS score had high discriminative ability for predicting in hospital mortality in patients with LGIB [12].

Despite the listed developed risk prognostic scoring systems, there is a lack of definitive literature data on a clearly established risk-prognostic score for the management of lower GIT bleeding [13].

References

1. Tsonev Nikolay, Gastrointestinal bleeding. Assessment of the risk predictors for uncontrolled bleeding, conversion to surgery and lethality.
2. Noriaki Oguri, Takashi Ikeya, Daiki Kobayashi, Kazuki Yamamoto, Takaaki Yoshimoto, Ayaka Takasu, Takeshi Okamoto, Yasutoshi Shiratori, Shuhei Okuyama, Koichi Takagi, Kenji Nakamura§ and Katsuyuki Fukuda, Effectiveness of risk scoring systems in predicting endoscopic treatment in colonic diverticular bleeding.
3. Ayaka Takasu, Takashi Ikeya, Yasutoshi Shiratori, Zhehao Dai, Takaaki Yoshimoto, Kazuki Yamamoto, Takeshi Okamoto, Shuhei Okuyama, Koichi Takagi and Katsuyuki Fukuda Use of the NOBLADS Score to Predict Endoscopic Treatment in Patients with Colonic Diverticular Bleeding by Age Stratification.
4. Kathryn Oakland, Sandeepkumar Kothiwale, Edmund Jackson, Cliff Bucknall1, Michael Sey,Siddharth Singh, Vipul Jairath, Jonathan Perlin, external validation of the Oakland score in 38,067 patient with acute lower gastrointestinal bleeding.
5. Tomonori Aoki, Atsuo Yamada, Naoyoshi Nagata, Ryota Niikura1, Yoshihiro Hirata, Kazuhiko Koike, External validation of the NOBLADS score, a risk scoring system for severe acute lower gastrointestinal bleeding
6. Kathryn Oakland, MD; Sandeepkumar Kothiwale, PhD; Tyler Forehand; Edmund Jackson, PhD; Cliff Bucknall, MD; Michael S. L. Sey, MD, MPH; Siddharth Singh, MD, MS; Vipul Jairath, MD, PhD; Jonathan Perlin, MD, External Validation of the Oakland Score to Assess Safe Hospital Discharge Among Adult Patients With Acute Lower Gastrointestinal Bleeding in the US
7. Kathryn Oakland, Risk stratification in upper and lower GI bleeding: Which scores should we use?
8. Danielle Steker, MD, Oakland score identifies patients with lower GI bleed at low risk for adverse events
9. Kathryn Oakland, Georgina Chadwick, James E East, Richard Guy, Adam Humphries, Vipul Jairath, Simon McPherson, Magdalena Metzner, A John Morris, Mike F Murphy, Tony Tham, Raman Uberoi, Andrew McCulloch Veitch, James Wheeler, Cuthbert Regan, Jonathan Hoare, Diagnosis and management of acute lower gastrointestinal bleeding: guidelines from the British Society of Gastroenterology
10. Marine Camus, MD,*wz Dennis M. Jensen, MD,*wy Gordon V. Ohning, MD,*y Thomas O. Kovacs, MD,*wy Rome Jutabha, MD,*w Kevin A. Ghassemi, MD,*w
    Gustavo A. Machicado, MD,*wy Gareth S. Dulai, MD,*wy Mary E. Jensen, MD,*w and Jeffrey A. Gornbein, MD, DrPH8, Comparison of Three Risk Scores to Predict Outcomes of Severe Lower Gastrointestinal Bleeding
11. Pablo Cañamares[1], Enrique Alfaro, Angel Lanas, Digestive Diseases ervice, UniversityClinic Hospital Lozano Blesa, Zaragoza, Spain; [2]University of Zaragoza, Aragón Health Research Institute (IIS Aragón), CIBERehd, Zaragoza, Spain, Safe hospital discharge based on lower GI bleeding scores: a long way to go
12. Tajika, M., Matsuhashi, T., Shimodaira, Y. *et al*. Usefulness of the CHAMPS score for risk stratification in lower gastrointestinal bleeding. Sci Rep 12, 7587, 2022. https://doi.org/10.1038/s41598-022-11666-y
13. N Tsonev, D Gashkova, D Notev, E Ivanova. Advantages of prognostic score systems in assessing acute acute lower gastrointestinal bleeding, 2023, 63(06). AMJ, ISSN: 0005-2523.