Commentary

Clinical risk stratification for gastrointestinal hemorrhage: still no consensus

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Abstract

A lack of consensus exists in the pre-endoscopic risk stratification of patients with upper or lower gastrointestinal hemorrhage. The work by Das and colleagues in the previous issue of *Critical Care* serves to externally validate the BLEED criteria. Their results suggest that hemodynamically stable patients without evidence of ongoing bleeding or unstable comorbidities may be at lower risk for hospital complications. While their results reinforce previous studies, further investigation is needed before comprehensive practice guidelines can be established.

In the previous issue of *Critical Care*, Das and colleagues [1] evaluated variables from the BLEED criteria [2] for their ability to predict short-term complications from upper gastrointestinal hemorrhage (GIH) and lower GIH.

GIH has an annual incidence of 120 hospitalizations per 100,000 cases [3,4] and consumes a significant amount of intensivist resources. With spontaneous resolution of bleeding in up to 80% of cases [5], some workers advocate that a proportion of patients may be discharged home to have outpatient endoscopic evaluation [6]. Another study reported that as many as 50% of patients with GIH were inappropriately admitted to intensive care units (ICUs) [7]. A proportion of patients, however, may have hemodynamic decompensation and may even require surgical intervention. Mortality rates can approach 9% to 12% [2,7-9] for those patients with ongoing bleeding. GIH is therefore a disease entity in which intensive care monitoring is not compulsory for all patients, and enhanced accuracy in triage could lead to more efficient use of critical care resources.

Despite the prevalence of GIH, there is lack of consensus in the literature for pre-endoscopic methods to risk-stratify this diverse population [6]. Early endoscopy is often impractical in the Emergency Department, thus necessitating the promulgation of sensitive clinical variables to determine illness severity. Prognostic factors indicative of hemodynamic stabilization or decompensation have been evaluated in patients with a presumed upper GIH [10,11] or a presumed lower GIH [12,13].

Kollef and colleagues, in the original BLEED study, classified patients presenting with GIH as at high risk to develop significantly greater rates of inhospital complications if they had bleeding, hypotension, an elevated prothrombin time, or erratic mental status [2]. Afessa found an independent association of hepatic cirrhosis, high Acute Physiologic and Chronic Health Evaluation II scores, active GIH, and end-organ dysfunction with similar complications [8]. Inayet and colleagues identified a correlation between ICU admission and an elevated prothrombin time, hypotension, Acute Physiologic and Chronic Health Evaluation II score >15, and acute neurologic change [7]. They reported a sensitivity of 88% and a specificity of 74% for subsequent instability. Their study highlighted the importance of identifying patients who would not just bleed, need surgery, or die, but those patients who would actually warrant hemodynamic stabilization in an ICU.

Das and colleagues' scientific questions in their manuscript are therefore important [1]. The design was a derivation and validation study testing the original BLEED criteria, with the additional development of a triage simulation model. The authors recognized many of the challenges facing Emergency Department providers and designed their study to incorporate objective data routinely available in the Emergency Department. They also included patients with either upper

BLEED criteria = ongoing bleeding, low systolic blood pressure, elevated prothrombin time, erratic mental status, unstable comorbid disease; GIH = gastrointestinal hemorrhage; ICU = intensive care unit.

Table 1

Pre-endoscopic variables that may risk-stratify patients with gastrointestional hemorrhage

B	**B**ase-deficit abnormal
A	**A**ntiplatelet or **A**nticoagulation agents being taken by patient
D	**D**ecrease in serial hematocrit measurements
U	**U**rine output impaired
P	**P**resyncope or syncope
P	**P**ostural hypotension
E	**E**lectrocardiogram with ischemic changes
R	**R**educed central venous pressure (ultrasound or via catheter)
L	**L**actic acidosis
O	**O**rgan failure
W	Low **w**edge pressure (echocardiogram or via catheter)
E	**E**levated shock index
R	**R**acing tachycardic heart
G	**G**eriatric patient
I	Strong **i**on difference
B	Ongoing **b**leeding
L	**L**ow blood pressure
E	**E**levated coagulation factors
E	**E**rratic mental status
D	Comorbid **d**isease

Adapted from Kollef and colleagues [2].

GIH or lower GIH, also of value to Emergency Department providers since in an acute presentation the culprit lesion may be unknown in almost 20% of patients [2,8].

Das and colleagues' data suggest that visible signs of ongoing bleeding or an elevated prothrombin time may be associated with their defined complications of death or rebleeding. Although limited by a small sample size, their study serves to externally validate components of the prior Kollef and colleagues' trial [2]. Like prior literature [7], however, their reported sensitivity of 73% to 83% to rule out complications in GIH ideally needs to be higher.

Prior to the generation of consensus guidelines using pre-endoscopic variables to determine whether patients need ICU monitoring, overall sensitivity in the cumulative existing literature needs to be improved in order to ensure that patients triaged to routine medical floors will not hemodynamically decompensate. Designing an appropriate study to establish clinical triage criteria for patients with upper GIH or lower GIH is challenging. Ideally a derivation and validation study would need to be appropriately powered, multicentered, and implemented in either a randomized or before–after design, with a gold standard of early endoscopy, clinical variables, and short-term outcome. Das and colleagues are to be commended for extending their analysis to look at other variables (that is, the shock index), and future investigation should more broadly encompass other clinical variables (Table 1) that have been utilized in other settings to discern bleeding patients at risk for escalation of care (that is, the trauma and cerebral hemorrhage literature) [14,15].

Das and colleagues are therefore to be applauded for their publication's contribution to the growing number of studies evaluating clinical and pre-endoscopic factors risk-stratifying patients with GIH. Further investigation, however – either from future studies or from the pooling of investigator databases – needs to comprehensively look at all clinical variables involved in the GIH triage process in order to more accurately, and with higher sensitivity, determine who needs ICU monitoring prior to endoscopy.

Competing interests

The authors declare that they have no competing interests.

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