



# Bedside endoscopy of patients with gastrointestinal bleeding: early does not mean hurried

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Critically ill patients can develop gastrointestinal (GI) bleeding during treatment in the intensive care unit (ICU). The treatment approach to GI bleeding is as complex as the reasons for ICU admission.

Stress ulceration has been reported as an important complication in critically ill patients. Inflammation and altered circulation in the splanchnic region can easily reduce the GI mucosal defense mechanisms, triggering ulcerations, and related bleeding [1].

Because of underlying diseases, many critically ill patients use medications that can promote bleeding, such as antiplatelet and anticoagulant agents, as well as corticosteroids. Such patients are at high risk of venous thromboembolism, and prophylactic anticoagulation is recommended [2].

Mechanical ventilation and coagulopathy were identified as independent risk factors for GI bleeding in critically ill patients. Stress ulcer prophylaxis and medical correction are recommended in patients with these risk factors [3].

The optimal timing of endoscopic intervention for such patients is difficult to accurately define, as it depends on clinical features. Generally, endoscopic evaluation within 24 hours of bleeding is recommended, provided that the

hemodynamic status is stable. However, endoscopy to control bleeding may be urgently required if GI bleeding is life-threatening [4-7].

GI bleeding is categorized into upper and lower GI tract bleeding to direct patient evaluation and management. Overt symptoms (hematemesis, melena, or hematochezia) may help identify the location of bleeding. However, 10% to 15% of patients with severe hematochezia have a bleeding source in the upper GI tract; patients exhibiting hemodynamic instability require upper tract endoscopy to exclude acute upper GI bleeding [8]. Predictors of the outcomes of lower GI bleeding are not as well-established as those of upper GI bleeding, which stops spontaneously in 80% to 85% of patients and is associated with a relatively low mortality rate, of 2% to 4% [9]. Additionally, bowel preparation should be considered prior to endoscopic intervention for lower GI bleeding [4]. This may delay endoscopy in such patients.

In the current issue, Kim et al. [10] investigated the effectiveness of bedside endoscopy in terms of the diagnosis and treatment of GI bleeding in ICU patients. It is important to ensure optimal timing of bedside endoscopy. The authors mention limitations of the study that were considered to arise from the retrospective design. However,

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er, it is also important to review whether other important premises were handled appropriately.

The authors divided patients undergoing endoscopy into two groups, in terms of the timing. This should be analyzed in more detail. Although the authors did not analyze off-duty variables, they mention that endoscopy tended to be delayed during such periods. Unfortunately, no study has yet considered whether bleeding symptoms developing outside of the working hours of endoscopists delay treatment.

Additionally, bowel preparation before colonoscopy requires time. The authors mention that they generally managed patients with 4 L of oral polyethylene glycol solution (PEG). The reported ideal latency to colonoscopy after completion of bowel preparation using the split-dose method is 3 to 4 hours, and should be less than 8 hours [11,12]. With the full-dose PEG method, the recommended latency to surgery is 5 to 6 hours after the last PEG intake [13]. These points should be used to inform the timing of colonoscopy.

The patients enrolled in the present study exhibited inconsistent clinical characteristics. Compared to patients with lower GI bleeding, more patients with upper GI bleeding were managed via early endoscopy (73.9 vs. 52.2%,  $p = 0.01$ ). Moreover, patients with upper GI bleeding who were managed via early endoscopy exhibited higher Acute Physiology and Chronic Health Evaluation (APACHE) II scores than did those managed via late endoscopy ( $28.6 \pm 9.0$  vs.  $24.1 \pm 9.5$ ,  $p = 0.00$ ). The APACHE II score reflects mean arterial pressure, heart rate, and the hematocrit level, all of which are closely related to bleeding. Thus, it appears that endoscopy tended to be early in patients with more severe GI bleeding.

In both the upper and lower GI bleeding groups, many patients were on mechanical ventilation. This is closely associated with stress ulceration and GI bleeding of critically ill patients. The authors should analyze the effects of mechanical ventilation separately, comparing the bleeding characteristics and outcomes of ICU patients on and not on ventilation.

As the authors state, many confounding factors may have influenced the results, in addition to clinician subjectivity. However, the results are valuable in terms of the management of critically ill patients with GI bleeding. Consistently, early endoscopic intervention was helpful in patients with upper GI bleeding and the importance

of bowel preparation before colonoscopy was reaffirmed by this study. However, the present findings do not devalue the role of early colonoscopy in patients with lower GI bleeding: early endoscopy does not mean hurried endoscopy. Improving the outcomes of patients with GI bleeding requires accurate diagnosis via thoughtful endoscopy; preparation takes time. Also, endoscopy should not be delayed by clinician factors.

### Conflict of interest

No potential conflict of interest relevant to this article was reported.

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