Acute gastrointestinal bleeding: safety and timing of endoscopy

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Abstract

Acute gastrointestinal (GI) bleeding is a common medical emergency that frequently results in hospitalization and is associated with a significant mortality rate. Currently, GI bleeding mortality is strongly influenced by increased age and age-related comorbidities. Some questions should be addressed in the management of patients presenting with acute GI bleeding: who should care for the bleeder? What is the optimal timing for endoscopy? Is it possible to stratify the patients according to a bleeding risk profile? In this paper we highlight all those topics by reviewing the most important studies published on this matter.

Introduction

Acute gastrointestinal (GI) bleeding is a common medical, potentially life-threatening, emergency. Acute GI bleeding is associated with a significant mortality rate (6-13%), and is more common among males and old people. Incidence rates vary according to geographic region ranging from 48 to 160 cases per 100,000 inhabitants.[1] The underlying main causes of GI bleeding are peptic ulcer bleeding accounting for 50% of cases and ruptured oesophageal varices accounting for another 30%, followed by hypertensive gastropathy, gastric and duodenal erosive disease, severe oesophagitis, Mallory-Weiss tears, hemobilia, malignancies, Dieulafoy's lesions. As highlighted by Holster and Kuipers in their recent review, overall GI bleeding mortality has remained stable over the past years.[1] Currently, GI bleeding mortality is strongly influenced by increased age and age-related comorbidities. Some questions should be addressed in the management of patients presenting with acute GI bleeding: who should care for the bleeder? What is the optimal timing for endoscopy? Is it possible to stratify the patients according to a bleeding risk profile?

Timing of endoscopy

The optimal timing for endoscopy has not been clearly established. Literature is scarce and the question is still under discussion. In a systematic review including 23 papers, Spiegel *et al.*[2] state that early endoscopic intervention is associated with significant shorter hospital stay, lower hospital costs and reduction in blood transfusion requirements. No significant complications are shown at 1-month follow-up for any outpatients managed with early endoscopy. The authors conclude that early endoscopy is safe and effective for all risk groups of patients.

The American Society for Gastrointestinal Endoscopy practice guidelines for the management of acute non-variceal upper GI bleeding recommend early endoscopy (within 24 h of presentation).[3] A study by Sarin *et al.*[4] assessing the timing of endoscopy (within 6 h, at 6 to 24 h or beyond 24 h) with respect to the morbidity and mortality of upper gastrointestinal bleeding did not show any significant differences in mortality or need for surgery when comparing endoscopy performed within 6 h with endoscopy performed within 24 h, at 6 to 24 h. These results are consistent with those previously presented by Targownik *et al*. in their retrospective review.[5]

The timing of endoscopy should depend on clinical factors. Very early or urgent endoscopy (performed within 12 h of presentation) seems not to provide a significant reduction in rebleeding rates, surgery or mortality. However, urgent endoscopy (within 12 h of presentation) is indicated in patients with severe digestive bleeding, *i.e.* in case of patients presenting with hematemesis and/or melena, and signs of hypovolemia including hypotension, tachycardia and shock, and a hemoglobin level <8 g/dL, or a hemoglobin drop ≥2 g/dL within 12 h, requiring 2 or more units of blood products, and with high probability of variceal bleeding or with a history of malignancy.[3,6] These patients have a severe prognosis. Comorbidities further impact the mortality rates (up to 36%). An Italian report on endoscopy[7] lists the following pros and cons of the variable timing for endoscopy. Early endoscopy is related to a higher diagnostic accuracy. Active bleeding is successfully treated during upper GI endoscopy in a high number of cases with low complication rates. Patients with active bleeding or rebleeding benefit from better outcomes (rebleeding rates, length of hospital stay, transfusions, mortality rates). In low-risk patients (*e.g.* young adults without comorbid conditions) early upper GI endoscopy results in earlier discharge, shorter hospital stay and lower costs. Patient's condition, working time of the endoscopic unit, the on-call endoscopist's and on-call nurse's experience, the availability of a second nurse and an anaesthesiologist team are the topics mentioned against an early endoscopy.

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Nasogastric tube in patients with upper gastrointestinal bleeding

Whether all patients with suspected acute upper GI bleeding require nasogastric tube (NGT) placement is still controversial. In practice, when it is unclear if the patient has ongoing bleeding the nasogastric aspirate may facilitate the assessment of the bleeding activity. The nasogastric aspirate (clear, coffee ground or black material, red blood) significantly predicts whether the bleeding is caused by a high-risk lesion. The NGT may furthermore facilitate endoscopy by gastric lavage and thus removal of fresh blood and clot debris from the stomach and may prevent aspiration during endoscopy.[8,9]

Predictors of rebleeding and mortality

Endoscopic, clinical and laboratory parameters can be used for risk stratification of GI bleeding patients in low- and high-risk cate-

gories for rebleeding and mortality. The Rockall scoring system is a post-endoscopy score, inclusive of endoscopic data. The Baylor rebleeding score as well is based upon clinical and endoscopic features. Conversely, the Blatchford score is not based upon endoscopic stigmata; in fact, it takes into account only clinical and laboratory results and can thus be used at hospital admission when the patient first presents.Many studies attempted to validate the above mentioned scores. In a prospective validation study of the Rockall score involving 247 patients with major peptic ulcer bleeding the authors drew the conclusion that after endoscopic therapy for GI bleeding, the Rockall scoring system can identify patients at high mortality risk but it is inadequate for the prediction of rebleeding.[10]

Admission to the hospital

Another crucial aspect of the management of a GI bleeding patient presenting at the emergency department is where the bleeder should be admitted (internal medicine department, or gastroenterology department, or ICU, or surgical department). Endoscopy is a decisive point. In fact, patients identified as low-risk may safely be admitted to the gastroenterology or a medical department, whereas patients stratified as high-risk should be hospitalized in surgical or intensive care units. In an ideal scenario, the creation of a dedicated multidisciplinary gastrointestinal bleeding team, would be best directed at reducing the morbidity associated with acute bleeding and rebleeding , the need for surgery and overall costs of care. On the other hand, endoscopy permits to select patients suitable for early discharge or oupatient care: *i.e.* patients without high-risk stigmata of recent hemorrhage, signs of portal hypertension, hypovolemic shock or orthostatic vital sign change, serious concurrent disorders (Rockall's score ≤2), and need for blood transfusion, and with normal coagulation values and easy access to hospital and adequate home support. A randomized controlled trial by Cipolletta *et al*.[11] demonstrated that outpatient care of patients at low risk for recurrent nonvariceal upper GI bleeding is safe and can lead to significant savings in hospital costs.

Variceal upper gastrointestinal bleeding

Bleeding in patients with portal hypertension leads to a totally different scenario. In this setting management guidelines and recommendations are dictated by the reports of the Baveno consensus workshops, in particular by the current report of the Baveno V consenus workshop drawn in 2010.[12]

The incidence of oesophageal varices in patients affected by liver cirrhosis reaches 40%. Despite the progress achieved over the last decades, the 6-week mortality due to variceal bleeding is still in the order of 10-20%. Endoscopic hemostasis of active bleeding is successfully achieved in 85-90% of cases and allows to prevent rebleeding in high risk patients, resulting in improved morbidity and reduced mortality.

With regard to timing of endoscopy – according to the Baveno position paper patients – with GI bleeding and features suggesting cirrhosis should have upper endoscopy as soon as possible after admission (within 12 h). Endoscopic therapy is recommended in any patient who presents with documented upper GI bleeding and in whom esophageal varices are the cause of bleeding. Endoscopic variceal ligation (EVL) is the recommended form of endoscopic therapy for acute esophageal variceal bleeding, although sclerotherapy may be used in the acute setting if ligation is technically difficult.

Data concerning the treatment of bleeding junctional or oesophageal varices with cyanoacrylate injection are scarce. Gastric varices (GV) can be a life-threatening cause of upper GI bleeding. Gastric variceal bleeding is often more severe and associated with high mortality. Gastric varices approximately occur in 20% of all unselected patients with portal hypertension. About 25% of GVs bleed during lifetime. Endoscopic therapy with tissue adhesive (*e.g.* N-butyl-cyanoacrylate) is recommended for acute bleeding from isolated gastric varices (IGV). This treatment is highly successful with success rates up to 100%.

We briefly report over our experience at the emergency department of the University Hospital *Agostino Gemelli* over 12 months. Ninety-one patients presented to the emergency department with upper GI bleeding. Data refer to the night and overtime work during non-working days when the endoscopist is on call. Gastroduodenal peptic ulcers accounted for 47% of upper GI bleeding cases. Oesophageal and GVs were found in 13% of cases. Three out of all patients who received endoscopic treatment needed a surgical treatment of their upper GI bleeding: one patient had a large duodenal ulcer, another presented with bleeding oesophageal tumor, and the third patient had several adherent clot molds that were thoroughly interfering and preventing the endoscopist from viewing the underlying gastric surface.

Conclusions

Ideally, GI bleeding should be managed by a multidisciplinary team, in order to optimize the effectiveness of the treatments and reduce mortality. Early endoscopy – within 24 h – in patients with acute GI bleeding, is strongly recommended and safe.

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