Acute gastrointestinal bleeding: clinical evaluation and risk assessment by the primary care physician

GARY R. ZUCKERMAN, DO

Acute gastrointestinal bleeding is a common medical emergency that frequently results in hospitalization. Rapid initial assessment of clinical parameters such as estimated volume of blood lost, appearance of expelled blood, hypotension, mental status changes, and coagulopathy should all be evaluated as part of the outcomes prediction equation. For upper gastrointestinal bleeding, early endoscopy of the upper gastrointestinal tract will also provide important information to aid in efforts to predict risk. Endoscopic evidence of ongoing rapid bleeding or the presence of a “visible vessel” or adherent clot on the ulcer base are findings that are associated with a high likelihood of continued bleeding or recurrent bleeding. Endoscopic therapy can reduce the rates of recurrent bleeding, surgery, and length of hospital stay in patients with these “stigmata of recent bleeding.” Other endoscopic ulcer appearances such as brown or black pigment in the ulcer base or a clean ulcer base do not require endoscopic therapy, as rates of recurrent bleeding are very low for these lesions. Use of these clinical and endoscopic outcome predictors can also be useful in refining triage decisions as to which patients need to be in the intensive care unit, which need to be admitted to the hospital, and which can have early oral feeding and expedited hospital discharge or outpatient care.

(Key words: gastrointestinal bleeding, risk assessment)

Bleeding from the gastrointestinal (GI) tract is a common medical emergency that often eventuates in hospitalization. The disease spectrum ranges from massive exsanguinating hemorrhage to subacute bleeding superimposed on chronic anemia, with or without hemodynamic changes. The patient can best be served by a team approach involving the primary care physician, intensivist, endoscopist/gastroenterologist, surgeon, and nursing personnel. The role and degree of involvement of these participants will depend on each individual case scenario and communication between team members will be key to an optimal and efficient approach to this problem.

The principles of the initial clinical evaluation and risk assessment of patients with GI bleeding applies to both upper as well as lower intestinal bleeding, although these two forms of bleeding differ in frequency and severity. Upper GI bleeding has an annual incidence of 100 to 200 cases per 100,000, whereas the annual incidence rate of lower intestinal bleeding is estimated to be 20 to 30 cases per 100,000 population at risk. In general, upper intestinal bleeding accounts for 65% to 80% of all bleeding events. There is also evidence that upper GI bleeding presents with greater severity and acuteness than lower intestinal bleeding. Patients with lower intestinal bleeding are less likely to present with shock or orthostasis (19%) compared with patients with upper intestinal bleeding (35%). Patients with lower intestinal bleeding are also less likely to require blood transfusions (36%) compared with patients with upper GI bleeding (64%). For both upper and lower GI bleeding, the majority of patients will stop bleeding spontaneously. The following discussion reviews clinical and endoscopic features that may be helpful in distinguishing those patients who are more likely to have a problematic outcome (recurrent bleeding, surgery, prolonged hospital course, mortality) from those patients destined to a more benign course.

Clinical assessments
The first order of business will be an assessment of the degree and acuteness of blood loss. Hematemesis of a large volume of bright red blood will signal significant, if not massive, blood loss such as that found with bleeding esophageal varices, Mallory-Weiss tear, or gastric ulcer. Small-volume hematemesis in the patient with stable vital signs and hematocrit, however, implies a lesser degree of blood loss as can be found in patients with hemorrhagic esophagitis. If the quantity and character of the bleeding is not observed, an estimate should be ascertained by asking the patient or other observers such as family members or emergency medical technicians. “Coffee-ground” emesis or “coffee grounds” found with nasogastric lavage suggest that the bleeding has not stopped. Thus, the degree and acuteness of blood loss can often be obtained by estimating the color and volume of emesis and determining serial vital signs. The initial hemoglobin and hematocrit values are less helpful as the delay in intravascular equilibration will not always reflect real-time blood loss. An initial low hematocrit in the face of stable vital signs, however, may only represent chronic anemia or subacute bleeding rather than acute hemorrhage.

Bleeding through the rectum can be more difficult to evaluate for volume of
blood loss because of its admixture with stool. Blood acts as a laxative and continued large-volume bleeding is usually associated with the passage of repeated amounts of blood liquid stool or just blood. Maroon or black, solid stool implies that the volume of bleeding was less and that there is no ongoing bleeding.

The brightness or fresh appearance of blood can also be helpful in estimating acuteness of the blood loss, but again, this visual evaluation needs to be coupled with the clinical picture. The passage of a small volume of bright red blood by a patient who is hemodynamically stable will have a different connotation than the passage of fresh blood by a patient with tachycardia.

An objective color-confirmation test may also be helpful in categorizing the character of blood. Although it is a common clinical assumption that the rectal passage of bright red stool is consistent with lower intestinal bleeding and that black stool per rectum implies an upper GI source, this hypothesis has only been tested recently and only confirmed with objective color testing. It has been shown that subjective reporting of stool colors by physicians and patients is inconsistent and confusing.

Medical terms such as *melena* and *hematochezia* are not as helpful as objective color testing, and there is frequently a discrepancy between the color pointed to and the color verbalized by the patient. The greatest accuracy for correlating the location or level of bleeding to blood color is found when the patient points to a specific test color. The objective color that corresponds to maroon blood is not helpful in locating the level of bleeding.

**Risk factors and predictors of outcome**

Various clinical features can be helpful in predicting outcomes for patients with GI bleeding, in particular, nonvariceal upper GI bleeding. End points, other than mortality, include recurrent bleeding during the same hospitalization, prolonged hospital stay, and surgery for bleeding. Repeated bleeding within 72 hours of the initial bleeding episode occurs in about 25% of patients and is a marker for increased morbidity and mortality. Other independent risk factors for poor outcome include age older than 60 years, ongoing bleeding, and hypotension (systolic blood pressure <100 mm Hg) on presentation. Initial hypotension can be associated with a negative outcome, even in the face of successful resuscitation. A number of these risk factors have been grouped together in order to improve predictive ability. The criteria using the mnemonic BLEED is helpful (Figure 1: ongoing bleeding, low systolic blood pressure [<100 mm Hg], elevated prothrombin time, erratic mental status [change in mental status], and any comorbid disease that would warrant admission for intensive care event without the bleeding event [such as acute myocardial infarction]). Evidence of any one of the BLEED criteria places the patient in a poor outcome category. This outcome predictor applies to both lower and upper gastrointestinal bleeding.

Other risk or provocative factors for gastrointestinal bleeding include anticoagulation therapy and coagulopathy with elevated prothrombin time or thrombocytopenia. Aspirin and other nonsteroidal anti-inflammatory drugs are associated with GI ulceration and bleeding, and interdiction of such medications, if possible, will be important for prevention of recurrent bleeding.

Although the majority of patients with GI bleeding will stop bleeding, there still is an associated mortality, although not always directly related to the bleeding. Historically, the mortality rates have been higher for upper than lower GI bleeding. A recent outcomes study of both upper and lower GI bleeding found
mortality rates of 2% and 0.6%, respectively.4

Gastrointestinal bleeding that starts after hospitalization has been associated with higher morbidity and mortality rates compared with that for patients who are admitted to the hospital without a bleeding episode. A study of lower GI bleeding found a mortality rate of 23% for patients who started bleeding after hospitalization compared with a 2% mortality for patients admitted with GI bleeding.2

Outcome will also be related to the etiology of the bleeding with higher incidence of recurrent bleeding and mortality associated with variceal bleeding in a decompensated patient with liver disease compared with the relatively low morbidity and mortality in patients with a Mallory-Weiss tear.

These outcome considerations should be kept in mind when determining prognostic estimates.

### Endoscopic predictors of outcome

Visual signs of ongoing or recent bleeding from a peptic ulcer (stigmata of recent bleeding) or the lack of stigmata, is useful in categorizing the risk of an ulcer to bleed again or continue to bleed.5 These endoscopic appearances of ulcer and approximate frequencies are delineated in the Table. As expected, the ulcer with a clean white base has the lowest rate of recurrent bleeding (<5%), whereas active arterial bleeding has the highest likelihood of continued bleeding, or even if bleeding stops, a very high incidence of recurrent bleeding. The nonbleeding visible vessel has the appearance of a nipple in the ulcer base, and untreated, it is associated with recurrent bleeding in about half of patients with this endoscopic appearance. The primary care physician should expect a description of the ulcer’s appearance on the endoscopy report.

There exists an increasing trend to use these clinical and endoscopic risk parameters to optimize healthcare resources and reduce costs.6 Risk stratification may be helpful in identifying and triaging these patients into three levels of care:

- Patients who will require intensive care monitoring,
- Patients at the other end of the spectrum who can be safely discharged from the emergency department to home, and
- The larger patient population of non-intensive care unit (ICU) admissions.

Even the last group will consist of patients admitted in anticipation of an expedited discharge based on baseline and updated clinical evaluations. One guideline proposed for selecting patients with acute upper GI hemorrhage for outpatient care uses a combination of absolute and nonabsolute criteria.6 The absolute, or essential, criteria that must be present for a patient to be considered for discharge from the emergency department or hospital and outpatient care are endoscopic appearances. Such a patient would be considered for outpatient management only if there were no high-risk endoscopic features:

- No arterial bleeding,
- No nonbleeding visible vessel or sentinel clot, and
- No adherent clot on the base of the ulcer.

The aggressive discharge planning for patients at low risk is strengthened by the finding that patients with clean-based ulcers or nonbleeding Mallory-Weiss tears can be fed solid food without the need for a long observation period on a liquid diet. Further refinement of these clinical and endoscopic indicators of risk should improve our ability to optimize triage decisions.6

### Endoscopic therapy

Because of the high rate of continued or recurrent bleeding with an ulcer that is actively bleeding or has a nonbleeding visible vessel present, endoscopic therapy usually is indicated. This therapy is administered through the endoscope with the use of either thermal devices such as multipolar electrocoagulation or heater probes or by injection therapy, usually epinephrine, or a combination of both. Endoscopic therapy can significantly reduce recurrent bleeding rates for ulcers associated with active bleeding or ulcers with a nonbleeding visible vessel. Ulcers with a clean base or flat pigmentation have a good prognosis and do not require any endoscopic treatment. Although oozing of blood is usually treated with endoscopic therapy, the benefit, or lack thereof, is unknown. Controversy also exists regarding the endoscopic treatment of ulcers with adherent clots. An attempt is usually made to wash off or dislodge the clot as it may be overlying a visible vessel that will require endoscopic therapy.

The scientific literature supports the application of endoscopic therapy for peptic ulcers with high-risk endoscopic appearance. Such therapy has the potential to stop ongoing bleeding or decrease recurrent bleeding with resultant decrease in length of hospital stay, blood transfusions, and surgical rates.

### Table

**Appearance of Peptic Ulcer/Stigmata of Recent Bleeding**

<table>
<thead>
<tr>
<th>Appearance of ulcer</th>
<th>Occurrence, %</th>
<th>Recurrent bleeding, %</th>
<th>Recurrent bleeding after endotherapy, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active bleeding</td>
<td>12</td>
<td>85 to 95</td>
<td>25</td>
</tr>
<tr>
<td>Nonbleeding visible vessel</td>
<td>22</td>
<td>50</td>
<td>&lt;15</td>
</tr>
<tr>
<td>Adherent clot</td>
<td>10</td>
<td>12 to 30</td>
<td>...</td>
</tr>
<tr>
<td>Oozing</td>
<td>14</td>
<td>10 to 27</td>
<td>...</td>
</tr>
<tr>
<td>Pigment, flat</td>
<td>10</td>
<td>7</td>
<td>...</td>
</tr>
<tr>
<td>Clean base</td>
<td>32</td>
<td>&lt;5</td>
<td>...</td>
</tr>
</tbody>
</table>
Comment
Rapid initial assessment of clinical parameters such as estimated volume of blood lost, appearance of expelled blood, hypotension, mental status changes, and coagulopathy should all be evaluated as part of the outcomes prediction equation. For upper GI bleeding, early upper GI endoscopy can also provide important information to aid in risk prediction efforts. Endoscopic evidence of ongoing rapid bleeding or the presence of a visible vessel or adherent clot on the ulcer base are findings that are associated with a high likelihood of continued bleeding or recurrent bleeding. Endoscopic therapy can reduce the rates of recurrent bleeding, surgery, and length of hospital stay in patients with these stigmata of recent bleeding. Other ulcer appearances on endoscopy, such as brown or black pigment in the ulcer base or a clean ulcer base, do not require endoscopic therapy, as recurrent bleeding rates are very low for these lesions. Use of these clinical and endoscopic predictors of outcome can also be useful in refining triage decisions for who needs to be in an ICU, who needs to be admitted to the hospital, and who can have early oral feeding and expedited hospital discharge or outpatient care.

References