Management of Lower Gastrointestinal Bleeding

Acute, overt lower gastrointestinal bleeding (LGIB) is described as hematochezia (passage of fresh blood from the anus, usually mixed with stool) originating from the colon or the rectum. LGIB ranges from scant bleeding to massive hemorrhage and is caused by a variety of anatomic, vascular, inflammatory, or neoplastic conditions. LGIB accounts for approximately 20% of all gastrointestinal bleeding. Most cases of LGIB are self-limiting and can be electively evaluated on an outpatient basis. Patients with recurrent bleeding, hemodynamic instability, and significant comorbid conditions should be hospitalized and evaluated urgently.

Causes

Causes of severe LGIB can be categorized as anatomic (diverticulosis), vascular (angiodysplasia, ischemia, radiation-induced), inflammatory (inflammatory bowel disease, infection), or neoplastic (colon or rectal cancer) (Strate, 2023).

Initial Assessment

Obtain a history, physical exam, and laboratory tests to assess bleeding severity, location, and etiology. Fluid resuscitation should be performed concurrently.

- History
  - Nature and duration of bleeding: hematochezia (red or maroon stool) is the predominant finding in acute LGIB. While melena (black, tarry stool) usually indicates upper GI bleeding, melena can also result from proximal colonic bleeding.
  - Change in bowel habits, weight loss, and associated symptoms that may suggest a specific source (e.g., abdominal pain and diarrhea are suggestive of colitis)
  - History of prior GI bleeds, abdominal and/or vascular surgeries, peptic ulcer or inflammatory bowel disease, or abdominopelvic radiation therapy
  - Comorbidities, which may include cardiopulmonary, renal, or hepatic diseases
  - Current medications, particularly those that increase bleeding risk such as nonsteroidal anti-inflammatory drugs (NSAIDs), antiplatelet agents, and anticoagulants
  - Results or copies of previous studies, such as colonoscopy and endoscopy
- Physical exam
  - Vital signs (including postural changes to assess for hypovolemia)
  - Cardiopulmonary, abdominal, and digital rectal examinations to detect potential bleeding sources and determine the color of the stool
  - Assessment for signs of circulatory shock such as altered mental status, diaphoresis, pallor, and dry mucous membranes
- Initial laboratory testing
  - Complete blood count (CBC)
  - Serum electrolytes
  - Coagulation studies
  - Type and crossmatch

Diagnosis

- Colonoscopy is the primary diagnostic modality (see below).
- **Computed Tomographic Angiography (CTA)** is now recommended for patients with severe LGIB, as it effectively identifies active bleeding sources and guides further management (Sengupta et. al, 2023).
- Hematochezia with hemodynamic instability may indicate an upper gastrointestinal bleed (UGIB) source, especially in high-risk patients (e.g., peptic ulcer or liver disease with portal hypertension, and patients on antiplatelet or anticoagulant medication).
    - An upper endoscopy should be performed urgently, after volume resuscitation.
    - Elevated blood urea nitrogen-to-creatinine ratio suggests an UGIB.
    - For moderate suspicions of UGIB, nasogastric aspirate/lavage can be used to assess a possible upper GI source. Bloody aspirate necessitates an upper endoscopy before considering a colonoscopy.
- Risk factors for poor outcomes include the following:
    - Hemodynamic instability (tachycardia, hypotension, and syncope)
    - Ongoing bleeding (gross blood on initial digital examination and recurrent hematochezia)
    - Comorbid illnesses
    - Age greater than 60 years
    - History of diverticulosis or angioectasia (vascular malformation)
    - Elevated creatinine and anemia (initial hematocrit less than or equal to 35%)
- Patients should be triaged to ICU or medical floor based on hemodynamic status and presence of risk factors.

Management of Hemorrhagic Shock

- Establish large bore I.V. access.
- Administer intravenous fluid resuscitation for patients with hemodynamic instability and/or suspected ongoing bleeding to normalize blood pressure and heart rate before endoscopy.
- Transfuse packed red blood cells (PRBCs) to maintain a hemoglobin above 7 g/dL.
    - Set a goal of 8 g/dL for patients with massive bleeding, significant comorbidities (especially cardiovascular ischemia), or if there may be a delay in therapeutic interventions.
    - Obtain CBC after every 2-3 units of PRBCs to guide the need for further transfusion and avoid over transfusion.

Management of Coagulation Defects

- Endoscopy may be performed in patients with an international normalized ratio (INR) of 1.5 to 2.5 with or before administering reversal agents.
- For patients experiencing life-threatening LGIB while on anticoagulants, the updated American College of Gastroenterology Guidelines recommend using reversal agents for both vitamin K antagonists and direct oral anticoagulants (Sengupta et. al, 2023).
- Transfuse platelets to maintain a platelet count of 50×10^9/L (50,000/µL) for patients with severe bleeding and those who require endoscopic hemostasis.
- Transfuse plasma and platelets for patients who receive massive RBC transfusions (patients requiring 3 or more units of PRBCs within 1 hour (Strate, 2023).

Colonoscopy

Bowel Preparation

- A colonoscopy should be performed after complete colon cleansing and when the patient is hemodynamically stable.
    - Administer 4 to 6 liters of a polyethylene glycol-based solution or the equivalent over 3 to 4 hours until the rectal output is clear of blood and stool.
- An unprepped colonoscopy/sigmoidoscopy is not recommended.
- A nasogastric tube may be inserted in high-risk patients who have ongoing bleeding, who are unable to tolerate oral intake, and who are at high risk for aspiration.
- Administer a prokinetic/antiemetic agent immediately before the colon preparation to reduce nausea and facilitate gastric emptying.
- Complications of colon preparation with polyethylene glycol include aspiration pneumonia and fluid and electrolyte abnormalities.
- Aspiration precautions should be taken, especially in older and/or debilitated patients.

Timing of Colonoscopy

- The updated American College of Gastroenterology Guidelines suggest that most patients requiring inpatient colonoscopy can undergo the procedure nonurgently. Performing colonoscopy within 24 hours has not demonstrated improved clinical outcomes, such as reduced rebleeding rates (Sengupta et. al, 2023).

Endoscopic Hemostasis Therapy

- Endoscopic therapy is performed during colonoscopy on patients with active bleeding (spurting and oozing), a nonbleeding visible vessel, or an adherent clot.
- Diverticular bleeding
    - May present as painless hematochezia, usually originating from a diverticulum
    - Treated with endoscopic clips which may be safer in the colon than contact thermal therapy (cauterization) and easier to perform than band ligation
- Angioectasia bleeding
    - Common in the right colon and in the elderly
    - Presents with occult bleeding or overt hematochezia, especially in patients on anticoagulant/antiplatelet therapy
    - Treated with noncontact thermal therapy
- Postpolypectomy bleeding
    - This can occur immediately, days, or weeks following polyp removal.
    - Risk factors include:
        - Large polyp size (greater than 2 cm)
        - Thick stalk
        - Right colon location
        - Resumption of antithrombotic therapy
    - Treated with mechanical clip or contact thermal therapy with or without the combined use of dilute epinephrine injection
- Epinephrine injection may be used to improve visualization and control actively bleeding lesions.
    - Should only be used with another hemostasis therapy such as mechanical or contact therapy to stop bleeding

- Ischemic colitis, colitis due to inflammatory bowel disease, and colorectal neoplasms do not respond to endoscopic hemostasis and are usually treated with supportive medical and/or surgical care.

Repeat Colonoscopy in Early Recurrent Bleeding

- Repeat colonoscopy with endoscopic hemostasis may be needed for patients with evidence of recurrent bleeding.
- Late rebleeding may be caused by:
    - Underlying comorbid conditions
    - Concurrent medication use (e.g., NSAIDs, antiplatelet agents, anticoagulants)
    - Reactivation of the source of the bleeding
    - Failure of the initial method of hemostasis

Non-Colonoscopy Interventions

- Consider radiographic interventions in patients with the following:
    - High-risk clinical features
    - Ongoing bleeding with a negative upper endoscopy
    - Inadequate response to hemodynamic resuscitation efforts (these patients are unlikely to tolerate bowel preparation and an urgent colonoscopy)
- Computed tomographic (CT) angiography should be considered if a diagnostic test is needed for localization of the bleeding site before angiography. CT angiography is useful in patients with ongoing bleeding who are not hemodynamically stable enough to withstand a bowel preparation before colonoscopy.
- Radionuclide imaging (also known as a tagged red blood cell scan) can detect focal collections of radiolabeled material. It can be performed relatively quickly and may help localize the general area of bleeding to guide subsequent endoscopy, angiography, or surgery. Radionuclide imaging can only detect active bleeding and is limited by the lack of therapeutic capabilities. Therefore, this modality has a complementary role in the evaluation of colonic or small bowel bleeding.
- Mesenteric angiography allows for interventions to stop localized intestinal bleeding such as injection of vasoconstrictors or super-selective embolization of distal arterial branches. It may be best suited for massive LGIB such that the patient cannot be stabilized to permit adequate bowel preparation and performance of colonoscopy. Angiography may be preceded by CT angiography, a tagged red blood cell scan, or capsule endoscopy to assist in localization of the bleeding site.
- Request a surgical consultation for high-risk patients with ongoing bleeding.
    - Consider surgery for acute LGIB after other therapeutic options have failed.
    - Localize the source of bleeding before surgical resection to avoid continued or recurrent bleeding from an unresected lesion.

Prevention of Recurrent Lower GI Bleeding and Cardiac Risk Factors

- Avoid NSAID use in patients with a history of acute LGIB.
- Do not discontinue aspirin for secondary prevention in patients with high-risk cardiovascular disease and a history of LGIB. Using aspirin for primary prevention of cardiovascular events should be avoided in most patients with LGIB.
- Recommendations for when to resume antiplatelet and anticoagulant medications after LGIB has ceased are based on bleeding severity and individual thromboembolic risk**.**

References:

Amin SK, Antunes C. (2023). Lower Gastrointestinal Bleeding. In: *StatPearls Publishing*; https://www.ncbi.nlm.nih.gov/books/NBK448126/

Farrar F. (2018). Management of Acute Gastrointestinal Bleed. *Critical care nursing clinics of North America, 30*(1), 55–66. https://doi.org/10.1016/j.cnc.2017.10.005

Ghassemi, K. & Jensen, D. M. (2013). Lower GI bleeding: epidemiology and management. *Current gastroenterology reports*, *15*(7), 333. https://doi.org/10.1007/s11894-013-0333-5

Sengupta, N., Feuerstein, J. D., Jairath, V., Shergill, A. K., Strate, L. L., Wong, R. J., & Wan, D. (2023). Management of Patients With Acute Lower Gastrointestinal Bleeding: An Updated ACG Guideline. *The American journal of gastroenterology*, *118*(2), 208–231. https://doi.org/10.14309/ajg.0000000000002130

Strate, L. (2025, January 15). Etiology of lower gastrointestinal bleeding in adults. *UpToDate.* https://www.uptodate.com/contents/etiology-of-lower-gastrointestinal-bleeding-in-adults