Guidelines

for the Management of

Lower Gastrointestinal Bleeding

By

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Setting Clinical and Professional Excellence

Lower gastrointestinal bleeding (LGIB) is defined as an abnormal loss of blood beyond the ligament of Treitz & accounts for about 20% of cases of acute gastrointestinal bleeding (GI). On the other hand; 15% of patients with acute severe haematochezia have an upper GI source of bleeding identified on upper endoscopy.
Acute LGIB is defined as being of recent duration (less than 3 days). Chronic LGIB is the passage of blood from the rectum over a period of several days or longer.
LGIB can be subdivided into two main clinical categories: clinically overt GI bleeding (melena, hematochezia) or clinically occult bleeding, identified by an unexplained iron deficiency and/or positive fecal occult blood testing result.
80% of all LGIB stops spontaneously, and as compared with acute upper GI bleeding, patients with acute LGIB are significantly less likely to experience shock, require fewer blood transfusions, and have a significantly higher hemoglobin level.
Bleeding from the small bowel represents a distinct entity and GI bleeding can be divided into three categories: upper, middle, and lower bleeding.
Small bowel sources account for 0.7-9.0% of cases of severe hematochezia.

Initial evaluation and resuscitation

All patients with rectal bleeding should have a full history taken, abdominal examination and should undergo digital rectal examination and proctoscopy
♦Ask for: family history, past medical, surgical or drug history (NSAIDs or anticoagulants), past bleeding episodes, associated symptoms (weight loss, changes in bowel habits).
♦The duration of bleeding, frequency of bleeding episodes and stool color are of further importance. *Hematochezia* is indicated by bright red or maroon blood per rectum and must be differentiated from *melena*, the passage of tarry stool, the presence of which is suggestive of an upper GI bleeding source (although bleeding from the cecum and right-sided colon and massive upper GI bleeding may cause passage of bright red blood, the last is usually associated with hemodynamic instability the presence of blood in nasogastric tube aspirates, although this source cannot be excluded if blood is absent from the aspirate).
♦Physical examination aimed to assess the severity of bleeding to stratify patients and to look for co-morbid conditions.
Blood loss of <200 ml has no effect on heart rate or blood pressure; loss of >800 ml causes a drop in blood pressure of 10 mmHg and an increase of 10 heart beats/ min.
Extensive blood loss >1500 ml might induce shock.
♦Careful digital rectal examination should be performed to exclude ano-rectal pathology and to confirm the patient's description of stool color.
♦The initial laboratory evaluation should involve a complete blood count, coagulation profile, serum chemistry, liver function tests and a sample for blood type and cross match.
♦The patient's age affects the clinical approach to LGIB
In *children and young patients*, cow milk allergy, polyps, Meckel's diverticulum, inflammatory bowel diseases, and anal diseases should be especially considered.
Older patients are more likely to have anal diseases, diverticular disease, colorectal tumors, non-steroidal anti-inflammatory drug (NSAID)-induced lesions, ischemic diseases, angiodysplasia, inflammatory bowel diseases, and lesions from prior radiotherapy.
Young women could be affected by endometriosis, and when bleeding is episodic or chronic colonoscopy would be better scheduled for menstruation days.

Risk classification

These scores can be helpful in clinical decision-making, but none comes close to being an ideal risk score:

- Heart rate ≥100/min;
- Systolic blood pressure ≤115 mmHg;
- Syncope;
- Non-tender abdominal examination;
- Bleeding per rectum during the first 4 h of evaluation;
- History of acetylsalicylic acid use;
- More than two active co-morbid conditions;

Using these criteria; patients were stratified into three risk groups: low (no risk factor), moderate (1–3 risk factors), and high (>3 risk factors). The magnitude of the risk score is significantly correlated with major clinical outcomes including surgery, death, blood transfusions, and length of hospitalization.

Massive LGIB is defined as follows:

- Passage of a large volume of red or maroon blood through the rectum
- Hemodynamic instability and shock
- Initial decrease in hematocrit level of 6 g/dL or less
- Transfusion of at least 2 U of packed red blood cells (RBCs)
- Bleeding that continues for 3 days
- Significant re-bleeding in 1 week

Variables in acute LGIB that are associated with higher mortality include:
age (≥70 years versus), sex (male), the occurrence of intestinal ischemia, two or more co-morbidities, bleeding while hospitalized for a separate process, a coagulation defect (or chronic anticoagulant usage), hypovolemia, transfusion of packed red cells.

Patients with clinical evidence of ongoing or aggressive bleeding, those with a transfusion requirement of greater than two units of packed red blood cells, and those with a significant co-morbidity should be monitored in an intensive care unit (ICU) setting, while a young healthy non-anemic patient with scant bleeding can be managed as an outpatient.
The target of hemoglobin concentration/ hematocrit depends on the patient's age, rate of bleeding, and any co-morbidities. A young otherwise healthy person will tolerate a hemoglobin concentration of 7–8 g/dl (hematocrit 20–25%), whereas high risk patient (elderly patient with coronary heart disease) should be maintained at hemoglobin concentration around 10 g/dl (hematocrit 30%).
Coagulopathy (defined as an international normalized ratio of prothrombin time >1.5) or thrombocytopenia (<50,000 platelets/μl) should be treated using fresh frozen plasma or platelets, respectively. In patients receiving warfarin, the anti-coagulation should be reversed with vitamin K, although the onset of action is delayed compared with the use of fresh frozen plasma or prothrombin complex.

Patients with hemodynamic compromise and bleeding per rectum should at least have a nasogastric (NG) tube placed and if the NG aspirate is bilious, an upper GI source of bleed is unlikely. If the aspirate is non diagnostic (no blood or bile), or if there is a strong suspicion of an upper bleeding source (history of previous peptic ulcer disease or frequent NSAID use), then an upper GI endoscopy should be done. High blood urea nitrogen: creatinine ratio (30 or greater) has also been shown to be helpful in predicting an upper GI source of bleeding.

Endoscopy

♦ Esophagogastroduodenoscopy (eGD) should be performed first in patients with hematochezia and concurrent hemodynamic instability, to exclude an upper gastrointestinal bleeding source; also, eGD should be carried out in patients with iron- deficiency anemia if colonoscopy fails to detect the source of bleeding.

♦ Otherwise, colonoscopy is recommended as the first step in the evaluation of cases of both acute & chronic LGIB.

♦ If both colonoscopy and eGD fail to localize the source in acute and chronic GI bleeding, additional endoscopic methods can be performed to examine the small intestine. Using Push enteroscopy or wireless video capsule endoscopy, the small bowel can be completely visualized in about 80% of cases.

Technique of colonoscopy in acute LGIB

There are three main aims underlying colonoscopy:

♦ Determination of the location and type of bleeding;

♦ Identification of patients with ongoing haemorrhage or at high risk for re-bleeding;

♦ Potential for endoscopic intervention;

Restoration of hemodynamic stability is the most important first step; and ideally; colonoscopy should be performed as early as possible preferably within the first 12–24 hours of admission. Bowel cleansing can begin as fluid resuscitation is being carried out.

This can be done be giving a polyethylene glycol (PEG) solution either orally or through a nasogastric tube with the instillation of 3–4 liters of polyethylene glycol (PEG) solution at a rate of 1 liter every 30 minutes until the intestinal effluent becomes clear. It usually provides adequate colon cleansing within 3–4 hours. This is preferred to sodium phosphate (phospho-soda 45 ml dose; repeated after 6hrs) because of the ability to titrate the amount of cleansing solution needed and because of the potential electrolytic effects of sodium phosphate, particularly in elderly patients with impaired renal blood flow.

Intravenous prokinetics (metaclopramide) may be used in order to avoid vomiting and to assure the purge progression.

The following criteria have been suggested for identifying site of bleeding on colonoscopy:

▪ Active colonic bleeding

▪ Non bleeding visible vessel

▪ Adherent clot

▪ Fresh blood localized to a colonic segment

▪ Ulceration of diverticulum with fresh blood in adjoining area

▪ Absence of fresh bleed in terminal ileum with fresh blood in the colon

If colonoscopy does not identify the site of bleeding and the active bleeding persists, then radiological investigations using angiography, radionuclide scintigraphy and computed tomography (CT) angiography are warranted.
These tests are performed in patients with very brisk bleeding who cannot be hemodynamically stabilized for colonoscopy or for ongoing bleeding of obscure etiology.
In contrast to colonoscopy; there is no need for bowel preparation but these investigations require active bleeding at the time of examination for diagnosis and treatment.

Scintigraphy is a sensitive method but less specific than angiography for detecting GI bleeding at a rate of 0.1 ml/min (vs. ≥0.5 ml/min for angiography).
A negative ^{99}mTechnetium labeled red cell scan rules out active bleeding.
When scans are positive within 2 h after injection of the labeled erythrocytes, localization is correct in 95–100% of cases, but when scans are positive after more than 2 h after injection, the accuracy decreases to 57–67%.
Scintigraphy might be useful, especially for recurrent bleeding, when other methods have failed as it can detect a slower bleeding rate and may provide information that guides subsequent angiographic diagnosis and therapy, allowing the radiologist to more selectively evaluate the suspected bleeding vessel. For this reason radiologists may request a bleeding scan before performing angiography.
On the other hand; scintigraphy has some limited values as often the bleeding slows to the point where it cannot be detected leading to poor accuracy in locating a bleeding site, another problem is colonic motility, which can move blood in either the peristaltic or the anti-peristaltic direction so as example; bleeding from a redundant sigmoid may appear in the right lower quadrant, suggesting bleeding in the right colon.
Generally, the results of scintigraphy can be difficult to interpret and are poor predictors of subsequent angiogram results. It is strongly recommended that every positive radionuclide imaging should be confirmed by colonoscopy or angiography before definitive therapy (e.g. emergency surgery) is considered.

Angiography should be reserved for patients who have massive bleeding that precludes colonoscopy, or for those who have undergone repeated endoscopies without identification of the source of bleeding. It only detects active bleeding when the rate is at least 0.5–1 ml/min and may miss lesions that bleed intermittently.
The specificity of this procedure is 100%, but sensitivity varies.
Angiography allows both diagnosis and potential therapy when brisk bleeding persists.
Angiographic therapy can be provided, by means of intra-arterial vasopressin or terlipressin infusions. Intra-arterial vasopressin infusion reduces or stops the bleeding in 70%–80% but the effect is not permanent and has a significant risk of causing local ischemia and cardiac effects that may limit its use.

CT angiography with high-speed, high-resolution scanners can identify both vascular abnormalities that may be bleeding and soft tissue abnormalities that can be diagnostic.
When this technology is available it may obviate the need for angiography & scintigraphy.
Ct angiography is highly sensitive and specific for diagnosing colonic angiodysplasia.

Investigation with the more rapid and more widely available multi-detector CT (MDCT), followed by either directed therapeutic angiography or surgical management, may represent a reasonable algorithm for the early evaluation and management of acute LGIB in which an active bleeding source is strongly suspected.

Other radiological studies

There is no role for barium studies in the detection of acute LGIB but plain abdominal radiography and/or Ct scan might be carried out, depending on the clinical presentation and suspected etiology (such as ischemic or inflammatory colitis, or in cases where bowel obstruction or perforation are suspected).

Endoscopic hemostasis

Endoscopic treatment modalities for LGIB include injection, contact and noncontact thermal coagulation, and mechanical devices such as metallic clips and band ligation.
The use of these techniques depends on the site and the features of the bleeding lesion, the clinician's personal experience with the devices, and access to the bleeding site.

Surgery

The usual indications for an operation in acute LGIB are :

- hemodynamic instability
- clinical deterioration
- transfusion requirements >6 units
- persistent or recurrent hemorrhage

Most patients with LGIB will not require surgery, although this is the therapy of choice in patients with bleeding related to neoplasia or recurrent diverticular hemorrhage.
Older patients or those with co-morbidities should also be considered for earlier surgery, to avoid the complications of multiple transfusion, prolonged hemodynamic instability, cardiovascular impairment or coagulation disorders.
Surgery should also be considered in patients for whom a bleeding source has clearly been identified and conservative therapies have failed.
Surgical intervention should be a last resort for the treatment of continued vigorous acute LGIB. Every effort should be made to identify the bleeding segment of bowel prior to surgery, as empiric hemicolectomy has a significant risk of missing the bleeding lesions.

Pharmacotherapy

Vasopressin was the first therapeutic modality employed during angiography, and it controlled bleeding in up to 91% of cases but major complications occurred in 10% -20% of patients and included arrhythmias, pulmonary edema, hypertension and ischemia. Moreover, re-bleeding occurred in up to 50% of patients after cessation of the infusion and therefore it often was used to stabilize a patient before surgery rather than as a definitive intervention
Hormonal therapy of angiodysplasia using estrogen and progestagen has not been successful.
Somatostatin and its analog, octreotide, have been reported to reduce blood loss from intestinal angiodysplasias and in a patient with bleeding from portal colopathy.

Small Bowel bleeding

Capsule enteroscopy is considered the gold standard for evaluating patients with obscure gastrointestinal bleeding, video capsule endoscopy is best utilized after a negative colonoscopy, but others recommend its earlier use as a first-step procedure for cases of mid-gut bleeding.

Push enteroscopy and capsule endoscopy have been used for the assessment of obscure bleeding. New double- and single-balloon technologies are employed in an improved method, which can be considered for the assessment of acute LGIB; these single- or double-balloon enteroscopes have replaced the push enteroscope where they are available.

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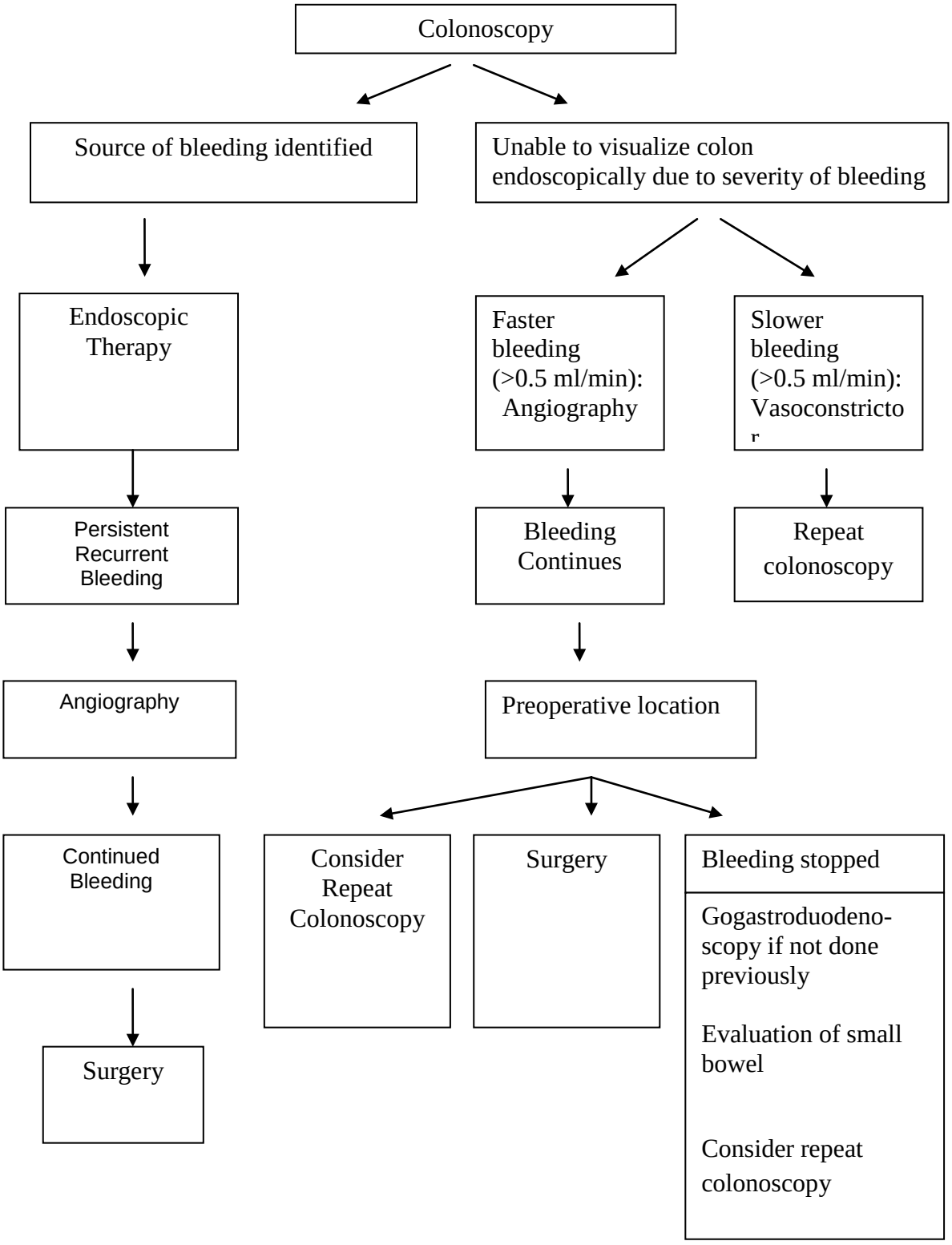
Management algorithm for lower gastrointestinal bleeding (LGIB) based on colonoscopy findings



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