American Society For Gastrointestinal Endoscopy

AN ANNOTATED ALGORITHMIC APPROACH TO ACUTE LOWER GASTROINTESTINAL BLEEDING

DEFINITIONS

Acute lower gastrointestinal bleeding (LGIB) is defined as bleeding emanating from a source distal to the ligament of Treitz, that is of recent duration (arbitrarily defined as less than 3 days duration), and that results in instability of vital signs, anemia, and/or need for blood transfusion.[1-3] Occult blood loss, chronic bleeding of obscure origin, or obvious self-limited bleeding not accompanied by a change in vital signs or anemia, are considered in other guidelines.[4]

RESUSCITATION AND EVALUATION

Signs of hemodynamic compromise include postural changes, fatigue, pallor, palpitations, chest pain, dyspnea, tachypnea and tachycardia. An orthostatic drop in systolic blood pressure of >10 mm Hg or an increase in heart rate of >10 beats/minute is indicative of at least a 15% acute loss of blood volume.[5-6] Resuscitation efforts are an integral part of the initial evaluation. Secure venous access and hemodynamic stabilization should be initiated prior to endoscopy. Initial laboratory testing should include a complete blood count, electrolytes, coagulation profile, and a sample for type and crossmatch. Complicating comorbid medical conditions, clotting disorders and the use of anticoagulants are important historical factors that should be identified.

EVALUATION OF THE UPPER GI TRACT

As many as 11% of patients suspected initially to have lower GI bleeding are ultimately found to have an upper gastrointestinal source.[7] For the patient with hematochezia and hemodynamic compromise, a briskly bleeding upper source should be included in the differential diagnosis and placement of a nasogastric tube should be considered. While the presence of frank blood from the aspirate confirms an upper GI bleed, a negative aspirate does not rule this out, although the presence of bile without blood makes an upper source unlikely.[8,9] A positive or non-diagnostic aspirate (no blood or bile), a history of non-steroidal anti-inflammatory drug use or previous peptic ulcer disease, or a patient with massive bleeding may prompt performance of upper endoscopy prior to evaluation of the colon.

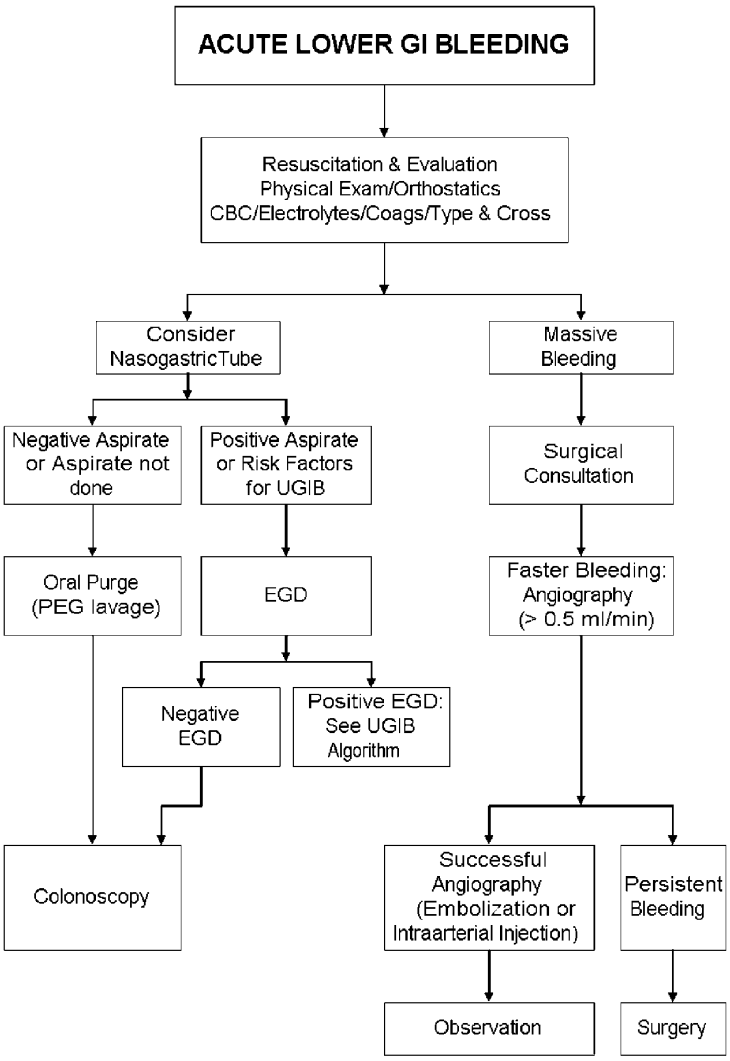
COLONOSCOPY

Colonoscopy after a rapid oral purge is recommended for evaluation of LGIB.[10] The overall yield is 69-80%.[7,11-13] Bleeding diverticula and vascular ectasia are the most common findings in the majority of large series, with a maximum reported frequency of 40% and 30% respectively.[14-16] Colitis, either from radiation, ischemia, or inflammatory bowel disease is found in approximately 20% of cases of LGIB, colonic neoplasia in 14%, and anorectal causes in 10%. Bleeding from upper gastrointestinal sites, including the small bowel, make up the remainder of causes. When no colonic source is found, upper endoscopy should be performed. If that is also unrevealing, examination of the small intestine should be considered. Intubation of the terminal ileum at the time of colonoscopy may be useful, particularly when there is blood throughout the colon, as fresh blood emanating from the ileum is indicative of small intestinal bleeding.

Colonoscopy plays both a diagnostic and therapeutic role in the management of acute hematochezia, particularly in the treatment of vascular ectasia, bleeding diverticulosis and radiation colitis.[17-20] A colonic purge prior to colonoscopy facilitates a more thorough examination and does not increase the likelihood of rebleeding. Complications such as perforation are actually more common in the uncleansed colon due to the poor visibility.[7] The combination of an overall higher diagnostic yield and a lower rate of complications make colonoscopy more attractive than angiography as the initial test in most circumstances.[7,21]

ENDOSCOPIC THERAPY

The identification of a visible vessel or pigmented protuberance within a diverticular segment at the time of colonoscopy may denote those patients at high risk for persistent or recurrent diverticular bleeding.[22] Examination of resected specimens may show erosion of an artery into either the dome or the orifice of the diverticulum. Thermal contact modalities (heater probe and bipolar/multipolar coagulation) or epinephrine injection may be used, independently or together, for control of bleeding. Laser therapy is less practical due to its non-portable nature of the appa-



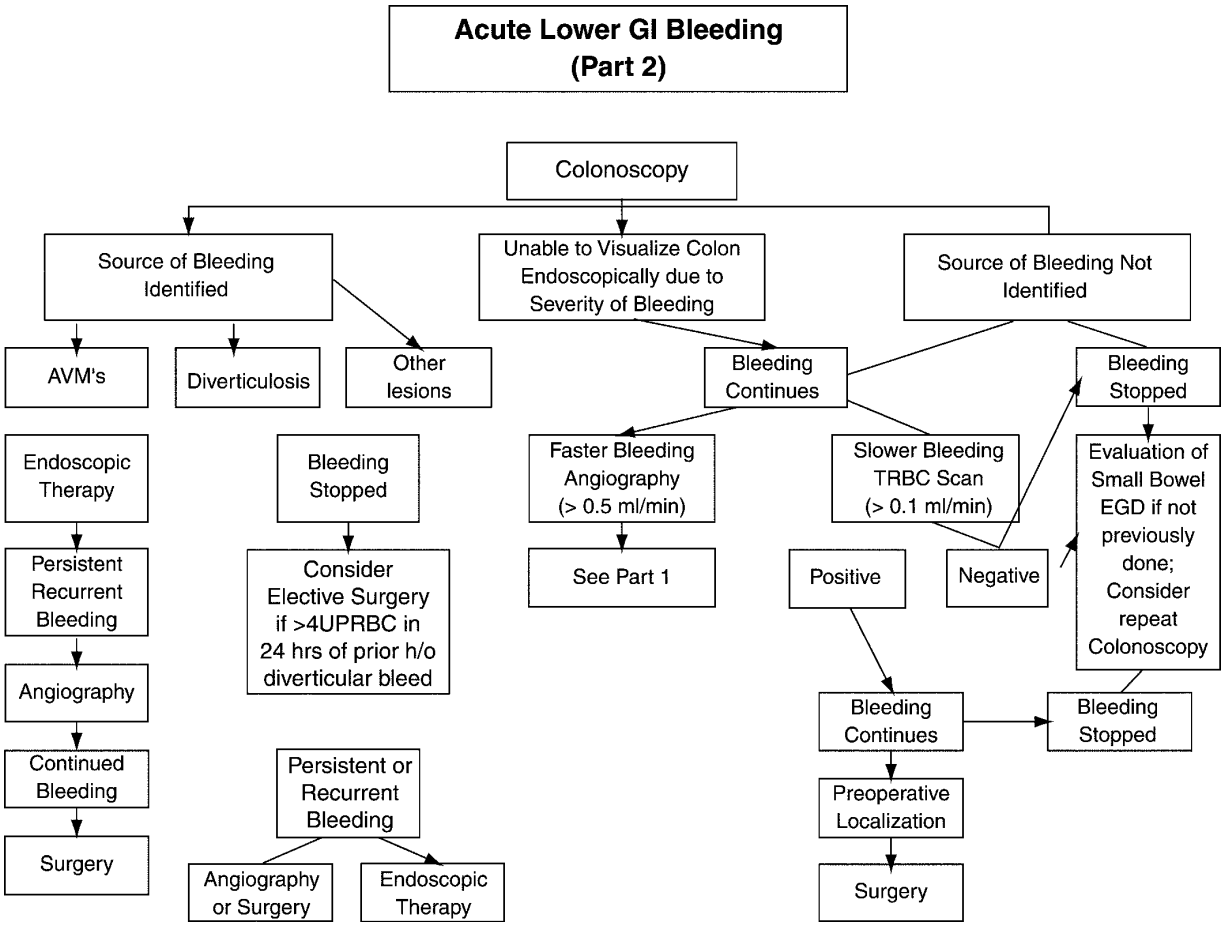
ratus and a higher rate of complications. Endoscopic placement of metallic clips may also be used to provide hemostasis.[23] Among patients with severe hematochezia and diverticulosis, up to 20% have definite diverticular hemorrhage. A recent prospective series suggests that endoscopic hemostasis may prevent recurrent bleeding and reduce the need for hemicolectomy.[24] Massive diverticular bleeding may not be amenable to endoscopic therapy because of poor visualization of the colon, or endoscopic therapy may be unsuccessful at controlling hemorrhage, necessitating radiographic or surgical therapy.

Endoscopic therapy for vascular ectasia is widely accepted and frequently successful. These lesions are often found in the cecum and right colon and usually represent acquired arteriovenous malformations. Good success can be obtained using both injection and thermal methods. The periphery of the lesion should be treated before the center to obliterate the feeder vessels. Successful cauterization rates of 87% have been described[25] using thermal therapy. Lower power settings than those used for bleeding gastroduodenal ulcers are recommended due to the increased risk of perforation in the right colon.[26-27]

Bleeding from multiple telangiectatic lesions in the distal colon produced by local radiation (radiation colitis) can also be effectively treated with thermal contact probes, laser therapy, or non-contact modalities such as the argon-plasma coagulator.

Hemorrhage after polypectomy may occur immediately or weeks after the procedure and in the majority of cases will stop spontaneously.[28,29] A number of modalities are available for persistent bleeding, including electrocautery, with or without epinephrine injection, endoscopic band ligation of the polypectomy site, metallic clip placement, and the argon plasma coagulator. Surgical or radiological intervention is rarely necessary.

Anorectal sources account for less than 10% of acute lower intestinal bleeding and consist primarily of hemorrhoids and anal fissures.[30] Endoscopic treatment in the form of injection with epinephrine or a



sclerosant as well as band ligation of internal hemorrhoids may be used,[31] although more proximal etiologies should be carefully excluded.

RADIOLOGIC EVALUATION

Angiography may be appropriate as the initial diagnostic test in patients with massive bleeding that precludes colonoscopy, or after a colonoscopy fails to identify a bleeding site. The overall yield of angiography is 40%-78%.[32] Diverticular disease and vascular ectasia are the most common findings.[20,32-35] A bleeding rate of 1 mL/min during angiography is generally required for a positive result, although rates as low as 0.4 ml/min have been detected.[36] Some angiographers require that a bleeding scan (99m Tc-pertechnate labeled red blood cell scan) be obtained prior to angiography since slower rates of bleeding (as low as 0.1 ml/min) may be detected with this technique.[37-39] Barium enema has no role in the initial evaluation of patients with LGIB.[40-41]

RADIOLOGIC THERAPY (ANGIOTHERAPY)

The intermittent nature of GI bleeding in many patients poses a problem for the angiographer as active bleeding at the time of injection is required for a positive study. Initial control of hemorrhage ranges from 60% to 100%, although recurrent bleeding may be as high as 50%.[42-43] Intra-arterial injection therapy using a vasoconstrictor like vasopressin is employed mainly for diverticular-associated bleeding and vascular lesions and is associated with a major complication rate of 10% to 20%,[44,45] including arrhythmias, ischemia, pulmonary edema, and hypertension. Transcatheter embolization with various agents (gelatin sponge, microcoils, polyvinyl alcohol particles and balloons) may be an alternative when vasopressin is unsuccessful or contraindicated but is also associated with a significant rate of complications, including abdominal pain and intestinal infarction.

ROLE OF SURGERY

Pre-operative localization of lower GI bleeding is crucial to avoiding extensive surgical intervention ("blind colectomy") and in ensuring that the bleeding is truly arising from the lower GI tract. Directed segmental resection is possible when the bleeding site is identified pre-operatively, as with an adenocarcinoma of the colon, or a patient with diverticular disease limited to the left colon with persistent or recurrent bleeding. A transfusion requirement of greater than 4

units of packed red blood cells in a 24 hour period, and recurrent diverticular bleeding - which may be seen in as many as 30% of patients - are commonly felt to be indications for surgical intervention.[46] However, other factors such as comorbid disease and individual surgical practices play a significant role in this decision.

Summary

Colonoscopy is the procedure of choice for the evaluation of acute LGIB. Upper endoscopy should be performed when an upper source is suspected or when evaluation of the colon is negative. If colonoscopy and upper endoscopy fail to reveal a bleeding source, evaluation of the small bowel should be considered. Angiography and/or a bleeding scan may be appropriate in the setting of massive bleeding, persistent bleeding, or a non-diagnostic colonoscopy. Pre-operative localization of bleeding should be attempted in all patients prior to surgical intervention except in rare circumstances when massive hemorrhage necessitates emergent sub-total colectomy.

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