

## ASGE Guideline: the role of endoscopy in the patient with lower-GI bleeding

*This is one of a series of statements discussing the utilization of GI endoscopy in common clinical situations. The Standards of Practice Committee of the American Society for Gastrointestinal Endoscopy (ASGE) prepared this text. In preparing this guideline, a MEDLINE literature search was performed, and additional references were obtained from the bibliographies of the identified articles and from recommendations of expert consultants. When little or no data exist from well-designed prospective trials, emphasis is given to results from large series and reports from recognized experts.*

*Guidelines for appropriate utilization of endoscopy are based on a critical review of the available data and expert consensus. Further controlled clinical studies are needed to clarify aspects of this statement, and revision may be necessary as new data appear. Clinical consideration may justify a course of action at variance to these recommendations.*

Lower-GI bleeding (LGIB) ranges from trivial to massive, life-threatening blood loss. LGIB accounts for an estimated 20% of all major GI bleeds.<sup>1,2</sup> The annual incidence of LGIB requiring hospitalization is approximately 21 cases per 100,000 adults in the United States.<sup>3</sup> It is predominantly a disease of the elderly, with a greater than 200-fold increase from the second to the eighth decade of life.<sup>3</sup> The mean age of patients ranges from 63 to 77 years.<sup>4</sup> Although the majority of patients have a self-limited illness and an uncomplicated hospitalization, the reported mortality rate ranges from 2% to 4%.<sup>4</sup>

This guideline represents an updated review of LGIB and its management.<sup>5,6</sup>

### DEFINITIONS

Acute LGIB is defined as bleeding that emanates from a source distal to the ligament of Treitz; that is of recent duration (arbitrarily defined as less than 3 days' duration); and that may result in instability of vital signs, anemia, and/or the need for blood transfusion.<sup>7-9</sup>

Chronic LGIB is the passage of blood per rectum over a period of several days or longer and usually implies intermittent or slow loss of blood. The patient with chronic bleeding can have occult fecal blood, occasional episodes of melena or maroon stools, or small quantities of visible blood per rectum.<sup>5</sup>

### ETIOLOGIES

#### Diverticular disease

Bleeding from colonic diverticula is the most common cause of acute LGIB, accounting for approximately 40% of cases<sup>10</sup> (see Table 1). The prevalence of diverticular disease increases with age, affecting up to two thirds of people over 80 years old.<sup>11,12</sup> The incidence of bleeding ranges from 5% to 50% in patients with diverticulosis.<sup>13,14</sup> Bleeding is arterial and can occur either at the dome or at the neck of the diverticulum. Clinical presentation generally is acute, painless hematochezia. The majority of diverticular bleeding is from the left colon (50%-60%) when diagnosed at colonoscopy and from the right colon (50%-90%) when angiography is positive.<sup>3,15,16</sup> Diverticular bleeding ceases spontaneously in most cases, with a reported recurrent bleeding rate of 14% to 38%.<sup>2,16,17</sup> Because bleeding frequently stops spontaneously, the diagnosis often is presumptive and based on the exclusion of other sources of bleeding.

#### Ischemic colitis

Ischemic colitis accounts for approximately 1% to 19% of LGIB.<sup>10,18</sup> Colonic ischemia results from a sudden, often temporary, reduction in mesenteric blood flow that most commonly arises from hypoperfusion of the mesenteric vasculature, vasospasm, or occlusion. The typical regions affected by nonocclusive colonic ischemia are the "watershed" areas of the colon: the splenic flexure and the rectosigmoid junction. A specific precipitating event or a vascular lesion on angiography often cannot be identified. Clinically, patients present with sudden onset of mild abdominal pain, usually accompanied within 24 hours by hematochezia or bloody diarrhea. Patients tend to be elderly, with advanced atherosclerosis or cardiac disease. Colonoscopic appearances that favor ischemia are the presence of bluish hemorrhagic nodules from submucosal bleeding, cyanotic or necrotic mucosa with hemorrhagic

ulcerations, and segmental distribution with abrupt transition between injured and normal mucosa. The finding of a single linear ulcer that runs along the longitudinal axis of the colon (“single-strip sign”) also is associated with ischemia.<sup>19</sup> Most cases resolve spontaneously with supportive treatment within several days to weeks.

### Vascular ectasias

Vascular ectasias (also known as angiodysplasias and angioectasias) account for approximately 11% of LGIB.<sup>10</sup> Vascular ectasias can occur anywhere along the GI tract but are predominantly located in the cecum and the ascending colon.<sup>16,20,21</sup> Lesions can be multiple and are incidentally found at colonoscopy in 2% of nonbleeding patients over 65 years of age.<sup>4,21,22</sup> The characteristic endoscopic appearance is of a red, flat lesion (2- to 10-mm diameter), with ectatic blood vessels radiating from a central feeding vessel. The use of narcotics during colonoscopy may mask the detection of these lesions by reducing mucosal blood flow.<sup>4,23</sup> The clinical presentation includes iron deficiency anemia with fecal occult blood, melena, or painless hematochezia that may be intermittent and clinically indistinguishable from diverticular bleeding.

### Hemorrhoids

Hemorrhoidal bleeding represents 5% to 10% of acute LGIB.<sup>24</sup> Blood loss tends to be intermittent and of low volume, with bright red blood seen on the toilet paper or coating the stool. Anorectal diseases, including hemorrhoids, are considered in another guideline.<sup>25</sup>

### Neoplasia

Approximately 1% to 17% of acute LGIB results from colonic neoplasms.<sup>4,10</sup> Bleeding may be either occult or overt but is rarely brisk. Clinical features of weight loss or change in bowel habits should raise the possibility of colonic neoplasia.

### Postpolypectomy

Postpolypectomy bleeding accounts for 2% to 6% of acute LGIB.<sup>4</sup> Complications of colonoscopy, including postpolypectomy hemorrhage are considered in another guideline.<sup>26</sup>

**Nonsteroidal anti-inflammatory drugs.** Nonsteroidal anti-inflammatory drug (NSAID) use is associated with an increased risk of lower-GI tract complications, including bleeding, especially diverticular bleeding.<sup>27</sup> The mechanisms involved in the induction of GI bleeding by NSAIDs are incompletely understood and may include platelet activity inhibition in susceptible individuals, as well as the concomitant use of warfarin, aspirin, or other antiplatelet agents. NSAID colopathy also can be associated with colitis and colon ulcers, colonic hemorrhage, or slow bleeding with iron-deficiency anemia, perforation, and stricture

**TABLE 1. Causes of lower-GI hemorrhage**

Diverticulosis
Ischemic colitis
Vascular ectasia
Hemorrhoids
Neoplasia
Postpolypectomy
Inflammatory bowel disease
Infectious colitis
NSAID-induced colopathy
Radiation colopathy
Dieulafoy's lesions
Colonic ulcerations
Meckel's diverticulum
Rectal varices
Aortoenteric fistula
Small-bowel sources

NSAID, Nonsteroidal anti-inflammatory drug.

formation.<sup>28</sup> NSAID use may exacerbate underlying inflammatory bowel disease.

### Other miscellaneous etiologies

A summary of causes of LGIB is presented in Table 1. As many as 11% of patients initially suspected to have LGIB are ultimately found to have an upper-GI source.<sup>29</sup>

## EVALUATION AND MANAGEMENT

### Occult fecal blood

Patients with chronic LGIB that presents with occult fecal blood should undergo colonoscopy.<sup>5</sup> If colonoscopy cannot be completed to the cecum, air-contrast barium enema should be obtained to evaluate the portions of the colon not visualized endoscopically. Virtual colonoscopy or CT colonography also can be used to rule out a proximal colonic lesion in patients who have had an incomplete colonoscopy.<sup>30-32</sup>

Upper endoscopy should be considered if a source is not identified on colonoscopy, particularly if there are upper-GI symptoms or anemia. Approximately 25% to 41% of patients with fecal occult blood can have significant findings (primarily peptic ulcer disease and esophagitis) on upper endoscopy, even in the setting of no symptoms.<sup>33-35</sup>

### Melena

The diagnostic evaluation of a patient with melena should begin with upper endoscopy, because an upper-tract

source is most likely in this setting.<sup>5</sup> If an upper-GI source is not identified, then colonoscopy should be pursued. Obscure GI bleeding is defined as bleeding of unknown origin that persists or recurs after an initial negative endoscopic evaluation, including upper endoscopy and colonoscopy. The evaluation and the management of obscure GI bleeding are discussed in another guideline.<sup>36</sup>

### Intermittent scant hematochezia

Chronic intermittent passage of small amounts of visible red blood is the most common pattern of LGIB. Because most patients with scant hematochezia have an anorectal or a distal colonic source of bleeding, the initial evaluation in young, healthy patients ( $\leq 40$  years of age) should be a digital rectal examination and sigmoidoscopy, with or without anoscopy.<sup>5</sup> Young, otherwise healthy patients with a convincing, benign source of bleeding on sigmoidoscopy, such as hemorrhoids or anal fissures, generally do not need to undergo colonoscopy for further evaluation. Patients over 50 years of age; those with anemia; those with significant risk factors for colorectal neoplasia; and/or those with worrisome symptoms, such as weight loss or change in bowel habits, should undergo colonoscopy. Please see the ASGE practice guidelines on the endoscopic therapy of anorectal disorders for the management of anorectal sources of hematochezia, including radiation proctopathy, internal hemorrhoids, and anal fissures.<sup>25</sup>

### Severe acute bleeding

Patients with severe LGIB should undergo clinical evaluation and stabilization as is done with upper-GI bleeding.<sup>37</sup> An annotated algorithmic approach to LGIB has previously been published.<sup>6</sup> The necessity of nasogastric (NG) tube placement and gastric lavage in the setting of acute LGIB to exclude an upper-GI source has not been studied prospectively. NG-tube placement should be strongly considered, especially in the setting of hemodynamic compromise. A clear NG-tube aspirate does not rule out an upper-GI source, whereas the presence of bile makes an upper source unlikely.<sup>38,39</sup> A positive aspirate should prompt emergent upper endoscopy. In patients with a previous history of peptic ulcer disease, a recent history of NSAID use, significant upper-GI symptoms, or a nondiagnostic NG lavage, upper endoscopy should be performed either before or after colonoscopy. Upper endoscopy also should be performed after colonoscopy in cases where a colonic source is not identified.

Colonoscopy is recommended in the early evaluation of LGIB.<sup>40</sup> The procedure should be performed after preparation of the colon by using polyethylene glycol-based solutions.<sup>41</sup> The preparation can be administered per NG tube or orally at a rate of approximately 1 L every 30 to 45 minutes. The colonic preparation facilitates endoscopic

visualization, improves diagnostic yield, and may improve the safety of the procedure by decreasing the risk of perforation.<sup>6</sup> The diagnostic yield of colonoscopy ranges from 48% to 90%.<sup>9</sup> The timing of colonoscopy after initial presentation varies among studies and ranges from 12 to 48 hours.<sup>42</sup> In a recent retrospective study, early colonoscopy was associated with a shorter hospital stay.<sup>43</sup>

Several endoscopic treatment modalities can be used to achieve hemostasis when a source of LGIB is identified at the time of colonoscopy. The identification of a visible vessel or a pigmented protuberance within a diverticular segment is rare and may denote those patients at high risk for persistent or recurrent diverticular bleeding.<sup>42</sup> Thermal contact modalities, including heat probe and bipolar/multipolar coagulation, and epinephrine injection can be used independently or together in the treatment of bleeding colonic diverticula.<sup>29</sup> In a large prospective study of urgent colonoscopy for diverticular hemorrhage,<sup>42</sup> treatment of bleeding and nonbleeding visible vessels and adherent clots achieved hemostasis without recurrent bleeding. Endoscopic metallic-clip placement also serves as an alternative treatment for diverticular hemorrhage.<sup>44</sup> Angiographic or surgical therapy may be necessary in cases of massive bleeding from a diverticulum that may not be amenable to endoscopic therapy.

Endoscopic therapy for vascular ectasia is widely accepted and is highly successful. Both thermal and injection methods can be used effectively. Successful cauterization rates of 87% have been described when using thermal therapy.<sup>45</sup> Lower power settings than those used for bleeding gastroduodenal ulcers are recommended because of the increased risk of perforation in the right colon.<sup>46,47</sup> Radiologic evaluation of patients with acute LGIB includes radioactive-labeled red-blood-cell scanning and angiography. Tagged-red-blood-cell scanning is positive in 45% of patients and has an overall accuracy of 78% for localizing the site of bleeding.<sup>46</sup> Intestinal bleeding rates as low as 0.1 mL/min can be detected with this technique.<sup>48</sup> Because angiography requires faster rates of bleeding for the identification of a bleeding source (rate of 1 mL/min), tagged-red-blood-cell scanning may be used by angiographers as a screening study to identify those patients with active ongoing bleeding who may benefit from angiotherapy. The sensitivity and the specificity of mesenteric angiography have been reported to be 47% and 100%, respectively.<sup>46,49</sup>

Initial control of hemorrhage with angiotherapy ranges from 60% to 100%. Previously, intra-arterial injection therapy with vasoconstrictors, e.g., vasopressin, was the primary angiographic method for the treatment of bleeding diverticula and vascular ectasia.<sup>50,51</sup> However, major complications of vasopressin arterial infusion can occur in 9% to 21% of patients and can include serious arrhythmias, myocardial ischemia, pulmonary edema, and hypertension.<sup>52,53</sup> Furthermore, the rate of recurrent bleeding after vasopressin infusion can be as high as 50%.<sup>53,54</sup>

Superselective arterial embolization with various agents (gelatin sponge, microcoils, polyvinyl alcohol particles, and balloons) has now replaced intra-arterial vasopressin for the treatment of LGIB.<sup>54</sup> Control of bleeding can be achieved in 44% to 91% of cases and is associated with fewer major complications compared with vasopressin infusion.<sup>55-57</sup> Potential complications of this technique include abdominal pain, fever, intestinal ischemia, and intestinal strictures.<sup>57,58</sup> The rate of recurrent bleeding with superselective embolization ranges from 7% to 33%.<sup>58</sup> Patients who fail angiographic therapy with ongoing or recurrent LGIB usually require surgery.

Surgery should be considered in patients with significant, ongoing hematochezia that requires the transfusion of more than 6 units of packed red blood cells in a 24-hour period or if bleeding recurs.<sup>42</sup> Preoperative 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 before surgery, as with an adenocarcinoma of the colon, or in a patient with diverticular disease limited to the left colon.

## SUMMARY

For the following points: (A), prospective controls; (B), observational studies; (C), expert opinion.

- LGIB is defined as bleeding emanating from a source distal to the ligament of Treitz and may present in multiple ways, including occult fecal blood, iron deficiency anemia, melena, intermittent scant hematochezia, or acute bleeding. (C)
- Colonoscopy is effective in the diagnosis and the treatment of LGIB. (A)
- NG-tube placement and/or upper endoscopy to look for an upper-GI source of bleeding should be considered if a source is not identified on colonoscopy, particularly if there is a history of upper-GI symptoms or anemia. (A)
- Colonoscopy is recommended in the early evaluation of severe acute LGIB. (A)
- Thermal contact modalities, including heat probe and bipolar/multipolar coagulation, and/or epinephrine injection can be used in the treatment of bleeding diverticula, vascular ectasia, or postpolypectomy bleeding sites. (A)
- Angiography and/or tagged-red-blood-cell scanning can be used in the setting of active, persistent bleeding or in cases of nondiagnostic endoscopic evaluation. (A)
- Preoperative localization of bleeding should be attempted in all patients before surgical intervention. (C)
- Aspirin and NSAIDs can be associated with lower-GI bleeding. If possible, these agents should be stopped and/or avoided in patients with a history of lower-GI bleeding. (C)

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