Management of acute lower gastrointestinal bleeding

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Abstract

The purpose of this mini-review is to summarize the management of Lower Gastrointestinal Bleeding (LGIB). This entity represents approximately 20% of all cases of gastrointestinal bleeds. The annual incidence is estimated to be between 20 and 27 cases per 100,000 populations, but this data is observed to be increased 200-fold in the elderly. This pathology is mainly self-limited and has a relatively low mortality rate (2-4%). The initial management includes investigate about the form of presentation, color and characteristics of the hemorrhage, the age of the patient, presence of coagulopathy, disease or cardiovascular risk factors, use of Nonsteroidal Anti-Inflammatory Drugs (NSAIDs), antiaggregants or anticoagulants, previous episodes of hemorrhage, pelvic radiotherapy, endoscopy, polypectomy or previous surgery, change of the recent intestinal rhythm, etc. However, this process must not delay the initiation of hemodynamic resuscitation in patients with patients with ongoing bleeding.

Diagnosis is realized through endoscopy, which has diagnostic rates of 74% to 100%, or radiographic imaging techniques. The last one includes Computed Tomographic [CT] angiography and radionuclide technetium-99m–labeled red-cell scintigraphy. Both techniques allow definitive treatment. In fact, CT angiography is highly accurate at localizing the site of bleeding (nearly 100%), and can be used immediately before angiography treatment.

Definitive treatment may be realized during the diagnosis via endoscopic therapies as well as angiography. If both of them fail, surgical treatment is indicated preferring segmental resections compared to subtotal colectomy.

Introduction

Lower Gastrointestinal Bleeding (LGIB) is the loss of blood through the gastrointestinal tract whose origin is below the Treitz angle [1]. This entity represents approximately 20% of all cases of gastrointestinal (GI) bleeds [2]. The annual incidence is estimated to be between 20 and 27 cases per 100,000 populations, but this data is observed to be increased 200-fold in the elderly [3].

This pathology is self-limited in 80-90% of cases [4]. Its mortality is relatively low (2-4%) and is more related to decompensation of underlying diseases than to the hemorrhage itself [5].

Classically, acute LGIB manifests as hematochezia (maroon or red blood passed through the rectum). Uncommonly, LGIB can manifest as melena (black, tarry stools) [6].

The purpose of this mini-review is to summarize the initial management of an acute LGIB, especially in the Emergency Department.

Anamnesis and initial management

The 2 main objectives are to determine the severity as well as the prognosis of the hemorrhage, and to localize the location of the lesion [7]. It includes investigate about the form of presentation, color and characteristics of the hemorrhage [8]. In example, anorectal origin is usually observed as blood of bright red color, which covers the stool or appears after defecation of stools of normal appearance. It often manifests as a drip or stain on the toilet paper when cleaned. On the other hand, LGIB of non-hemorrhoidal origin is usually manifested as dark red or garnet blood, mixed with feces or as the only component of defecation. Finally, Upper Gastrointestinal Bleeding (UGIB) is usually observed as black or tarry stools (manes) [9].

It is also important during the anamnesis process to attend to the age of the patient, presence of coagulopathy, disease or cardiovascular risk factors, use of Nonsteroidal Anti-Inflammatory Drugs (NSAIDs), antiaggregants or anticoagulants, previous episodes of hemorrhage, pelvic radiotherapy, endoscopy, polypectomy or previous surgery, change of the recent intestinal rhythm, etc. [10]. Associated symptomatology is also important: abdominal pain with diarrhea may suggest inflammatory, ischemic, or infectious-type colitis, whereas altered bowel habits, iron-deficiency anemia, or unexplained weight loss may suggest colorectal cancer [11]. Table 1 summarizes the prevalence of main causes of acute LGIB.

Anamnesis is too important to clarify the LGIB type. However, patients with ongoing bleeding, significant blood loss, hemodynamic inestability, or high-risk features must receive hemodynamic resuscitation simultaneously [12]. Intravenous fluid resuscitation with crystalloids should be started on presentation. Initially should be administered 1-2 liters of crystalloids solutions [12-14]. Blood transfusion is also recommended, but this recommendation is based on acute UGIB meta-analysis. Hemoglobin level should be upper tan 7 g/dl, with consideration of a transfusion in patients with clinical significant coexisting illness and red blood cell count of 9 g/dl or delayed therapeutic intervention [15,16]. Coagulopathy should be corrected with fresh frozen plasma and/or platelet transfusion. Vitamin K can be given if the coagulopathy is secondary to use of vitamin K antagonists or prothrombin complex concentrates. The last one may also be useful in the reversal of coagulopathy from novel anticoagulant agents, such as Factor Xa antagonists [17].

Diagnosis

Endoscopy: Colonoscopy is the initial procedure in patients with LGIB due to its diagnosis as well as potentially therapeutic benefits. However upper endoscopy should be also considered in patients with hematochezia and hemodynamic instability due to the possibility of represent a brisk upper gastrointestinal bleeding event. The diagnostic rates of colonoscopy are approximately 74% to 100% [12,13].

This technique should be performed within 24 hours after patient presentation, after hemodynamic resuscitation and adequate colon cleansing [18,19]. Adequate preparation of the colon is important for endoscopic visualization, diagnosis, and treatment. It includes at least 4 liters of a polyethylene glycol solution or the equivalent, administered over a period of approximately 4 hours [12,13]. However, selected cases including bleeding from the distal left colon without preparation could be realized with careful cleaning and inspection of the colon during the procedure [20].

In addition, patients with ongoing bleeding where the delay of preparation solution cannot be assumed, the short-term placement of a nasogastric tube may be considered [6]. Complications rates in emergency colonoscopy are extremely low (0.6%). The major complication is colon perforation [21].

Radiographic imaging

Noninvasive diagnostic imaging methods including Computed Tomographic [CT] angiography and radionuclide technetium-99m–labeled red-cell scintigraphy may be performed during the diagnosis of LGIB. These techniques should be considered before colonoscopy in patients with ongoing brisk bleeding and hemodynamic instability despite resuscitation efforts or in patients in whom colonoscopy was nondiagnostic [6,13]

Multidetector CT angiography has a bleeding detection rate threshold (0.3 ml per minute) similar to that of scintigraphy (0.1 ml). CT angiography is highly accurate at localizing the site of bleeding (nearly 100%), and can be used immediately before angiography treatment. This technique should be used carefully in patients with preexisting renal insufficiency due to the risk of nephrotoxic effects because of the use of intravenous contrast material.

If scintigraphy or CT angiography is positive for bleeding, angiography should be performed as soon as possible to determine the precise location of bleeding and then deliver angiographic therapy, because active lower gastrointestinal bleeding is intermittent in nature [6,22].

Treatment

There are different treatments attending to the hemodynamic status of the patient as well as the bleeding characteristics. Hereby, we summarize the different treatments and purpose an algorhitm of treatment (Figure 1).

Endoscopic therapy

Endoscopic hemostasis methods for acute LGIB includes epinephrine injection, contact and noncontact thermal devices (bipolar electrocoagulation, heater probe, and argon plasma coagulation), and mechanical therapies (endoscopic clips and band ligation) [6,12,13]. Diluted epinephrine injection facilitates primary hemostasis, but should be used in combination with a second method to achieve definitive hemostasis [6,12,13]. This

technique is mainly used in diverticulosis, angioectasias, and postpolypectomy bleeding with a great evidence of the efficacy and safety [18,21,23].

Attending to specific pathologies, endoscopic clips are preferred for diverticular bleeding because this treatment reduce the theoretical risk of transmural colonic injury associated with contact thermal therapy [23]. Colonic angioectasias, including radiation proctopathy, are usually treated with Argon plasma coagulation due to its safety profile [24]. Postpolypectomy bleeding treatment includes mechanical devices (clipping or band ligation) and contact thermal coagulation with or without dilute epinephrine injection. The use of clips is preferred due to the less tissue injury generated [12,13].

However, this technique is not useful in bleeding caused by ischemic colitis, inflammatory ulcerative colitis, or colorectal cancer [6]

Angiography and endovascular therapy

Angiography allows both bleeding-site localization and therapeutic intervention. However, this technique may generate negative false results if the bleeding is slow (<0.5 ml per minute) or intermittent. The objective of selective transcatheter endovascular therapy is to decrease arterial perfusion to the bleeding site, which facilitates healing of the injured vessel. Studies observed high rates of successful embolization (73-100%) and clinical success (63-96%), but with a great variaty of rebleeding rates of (11-50%) [6,25,26]

Major complications with this technique occur in 17% of patients, including bowel infarction, nephrotoxicity, hematomas, and vascular dissections [21]. Due to that, this treatment should be reserved to cases of severe bleeding in which colonoscopy is not feasible or failed to localize a bleeding source. If this therapy is unsatisfactory, an emergent surgical therapy is indicated [9].

Surgery

Surgical treatment is indicated in patients with ongoing lower gastrointestinal where both endoscopic and radiographic treatment has failed [13]. Previous to this treatment, it is necessary to localize the bleeding lesión to prevent the need for subtotal colectomy and to prevent recurrent bleeding after surgery. Subtotal colectomy is associated with higher morbidity and mortality compared to segmental resection [6].

Conclusion

LGIB represents approximately 20% of all cases of GI bleeds. This pathology is self-limited in 80-90% of cases and has a relatively low mortality rate (2-4%). A correct anamnesis to determine the severity as well as the prognosis of the hemorrhage and to localize the location of the lesion is necessary, but this not may delay the initiation of hemodynamic resuscitation. Both main diagnosis tests (endoscopic and radiographic imaging) should be realized as soon as possible. In addition, both of them provide the possibility to perform a definitive treatment. If these therapies fail, surgical treatment is indicated.

Tables

Table 1: Etiologies and prevalence of the lower gastrointestinal bleeding. NSAIDs: nonsteroidal anti-inflammatory drugs.

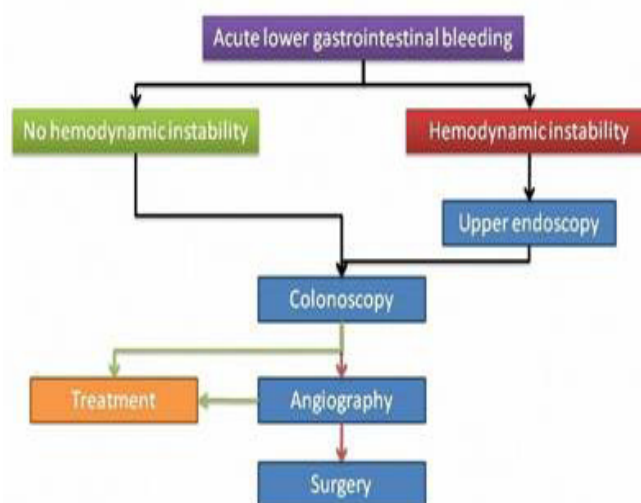| ETIOLOGY	PREVALENCE
Diverticulosis	30-65%
Ischemic colitis	5–20%
Hemorrhoids	5–20%
Colorectal polyps or neoplasms	2–15%
Angioectasias	5–10%
Postpolypectomy bleeding	2–7%
Inflammatory bowel disease	3–5%
Infectious colitis	2–5%
Stercoral ulceration	0–5%
Colorectal varices	0–3%
Radiation proctopathy	0–2%
NSAIDs-induced colopathy	0–2%
Dieulafoy's lesion	Rare

Figures

Figure 1: Algorithm treatment for acute lower gastrointestinal bleeding. Green lines mean succesful managemetn whereas red lines are defined as the next decission to be realized after an unsatisfactory diagnosis test/therapy.

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