

Approach to the Patient With Hematochezia



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Learning Objectives: On completion of this article, you should be able to (1) identify the key questions to ask a patient with hematochezia; (2) describe the differentiating physical examination findings; and (3) outline the appropriate investigations and treatment.

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Abstract

The evaluation of the patient with hematochezia can be complex because of the broad differential diagnosis and the number of management strategies available. In this article, a simplified approach to the history and physical examination is presented, with management illustrated in a case-oriented manner.

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Hematochezia, or the passage of bright red blood per rectum (BRBPR), is a common clinical presentation, present in up to 20% of adults,¹ and estimated to be responsible for an annual hospital admission rate of 21 per 100,000.² The underlying etiology can vary from life-threatening variceal bleeding to clinically insignificant hemorrhoidal bleeding. The most common etiology is diverticular bleeding, which accounts for 20% to 55% of cases, followed by intestinal ischemia, anorectal disorders, and neoplasia, which each accounting for around 10% of cases.³ A thorough history and focused physical examination are vital tools for the physi-

cian to evaluate patients with hematochezia. In this review, we present a concise and practical case-based approach to the patient with hematochezia. Although many aspects of this review are more applicable to the hospital setting, there are still a number of elements relevant to the outpatient setting.

5-STEP APPROACH TO HEMATOCHEZIA

A focused history, physical examination, and laboratory evaluation should be obtained at the time of patient presentation to assess the severity of bleeding and its possible location and etiology. We propose a 5-step approach

TABLE. Five-Step Approach to Hematochezia

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| 1. Evaluate for hemodynamic instability |
| 2. Clarify the nature of bleeding |
| 3. Ask about abdominal and pelvic pain |
| 4. Perform a rectal examination |
| 5. Consider obscure gastrointestinal bleeding in certain circumstances |

(Table) to help direct the work-up of the patient with hematochezia.

Evaluate for Hemodynamic Instability

A history of syncope at presentation, presyncope symptoms, or objective findings of tachycardia, hypotension, or orthostatic hypotension are all suggestive of hemodynamically substantial blood loss. In patients presenting with hemodynamic instability, stabilizing patients should take precedence over diagnostics. Aggressive intravenous (IV) fluid resuscitation should be commenced with the goal of normalization of blood pressure and heart rate before endoscopic evaluation. Patients with underlying cardiac and renal disease should receive more cautious fluid resuscitation. Packed red blood cells (RBCs) should be transfused to maintain the hemoglobin level above 7 g/dL or even higher in the presence of significant comorbidities (discussed below). Patients should be risk-stratified promptly and admitted to the intensive care setting if high-risk features are present. A recently developed risk-scoring system included systolic blood pressure less than 100 mmHg, syncope, and antiplatelet drug use as correlates of severe lower gastrointestinal bleeding (LGIB).⁴

In unstable patients with hematochezia, the first consideration should be that the blood is emanating from the upper gastrointestinal (GI) tract, given the associated high mortality.⁵ In this setting, up to 15% will have upper gastrointestinal bleeding (UGIB),⁶ with peptic ulcer disease (PUD) being the most common etiology.⁶ Other differential diagnoses include esophageal or gastric varices, aortoenteric fistula, and Dieulafoy lesion. Patients should be asked about nonsteroidal anti-inflammatory drug (NSAID) use, a strong risk factor for PUD.⁷ Liver disease, preexisting diagnosis of hepatitis, and alcohol consumption may point toward variceal hemorrhage. Isolated gastric varices may be seen in patients

with cirrhosis as well as in patients with acute or chronic pancreatitis.⁸ Known abdominal aortic aneurysm or prosthetic intra-aortic grafts increase the likelihood of an aortoenteric fistula.⁹ Although Dieulafoy lesion accounts for only 1% to 2% of acute GI bleeding, its serious nature necessitates inclusion in the differential diagnosis.¹⁰ At the time of examination, it is important to identify any peripheral stigmata of liver disease.

A nasogastric aspirate/lavage may be used to assess possible UGIB,¹¹ although it has failed to document superior outcomes.¹² The nasogastric tube can be left in situ to facilitate subsequent colon preparation. Other clues to a UGIB source include an elevated blood urea nitrogen (BUN)-to-creatinine ratio (likelihood ratio of UGIB with BUN-to-creatinine ratio >30:1 is 7.5).¹³ In recent years, mortality from acute UGIB has decreased, with recent epidemiological studies revealing a mortality rate of 4% (5.4% in variceal bleeding and 3.9% in nonvariceal bleeding),⁵ likely reflecting treatment advances. Nevertheless, given the associated mortality rate, emergent intervention with esophagogastroduodenoscopy (EGD) should be performed when UGIB is suspected.¹¹

Lastly, colonic diverticular bleeding should also be considered, as these can also result in hemodynamically significant LGIB. To this end, patients should be asked about diverticulosis on previous colonoscopy.

Clarify the Nature of Bleeding

The duration, frequency, volume, and color of blood may help identify the severity and location of bleeding. As outlined above, UGIB can present with hemodynamically significant bleeding (as hematochezia), rather than more modest bleeding (as melena). Patients with small bowel and colonic abnormality typically present with moderate visible bright red blood loss, often described in terms of “cupfuls.” Anorectal “outlet” bleeding may leave bright red streaks on the stool or be visible upon wiping, suggestive of internal or external hemorrhoids or anal fissure.¹⁴

Ask About Abdominal and Pelvic Pain

The presence or absence of abdominal or pelvic pain, and its associated features, is crucial in refining the differential diagnosis. Colorectal carcinoma, diverticular bleeding, colonic

arteriovenous malformations (AVMs), colon polyps, and internal hemorrhoids are typically painless and are differentiated on the basis of endoscopic findings. Radiation proctitis typically presents as painless bleeding and should be suspected in those with a history of abdominopelvic radiation therapy. Post-polypectomy bleeding is also usually painless and should be considered in those who underwent polypectomy within the past 30 days.¹⁴

The presence of abdominal or pelvic pain should increase the suspicion for PUD, bowel ischemia, and inflammatory bowel disease (IBD). Patients with PUD usually report a history of epigastric or right upper quadrant pain related to meals.⁷ Patients with colon ischemia (CI) present with mild-to-moderate cramping abdominal pain that can precede defecation by a number of hours.¹⁵ A history of systemic hypotension should be sought, as well as a review of current or recent medication use.¹⁵ The abdominal pain in acute mesenteric ischemia (AMI), by comparison, is much more dramatic. It is classically periumbilical and out of proportion to clinical findings.¹⁵ Patients with IBD will have chronic cramping abdominal pain that worsens acutely during exacerbations, along with accompanying symptoms such as diarrhea, weight loss, and disease complications (eg, bowel obstructions, perianal abscesses, and fistulae).¹⁶ In addition, solitary rectal ulcers account for 6% of LGIB and present with perineal pain during defecation, mucus drainage, constipation, and, rarely, rectal prolapse.¹⁷ Finally, patients with external hemorrhoids or anal fissures do not have abdominal or pelvic pain, per se, but usually have pain on defecation and a history of constipation.¹⁴

Perform a Rectal Examination

Digital rectal examination (DRE) is an essential step in evaluation and serves to identify anorectal lesions and confirm stool color. On inspection, large or irritated external hemorrhoids may provide a clue to the underlying etiology. The patient should be asked to perform the Valsalva maneuver, while the examiner observes for normal perineal descent. The absence of normal perineal descent suggests pelvic floor dysfunction resulting in chronic constipation, a risk factor for anal fissure and hemorrhoids. Examine for signs of perianal Crohn disease, such as skin

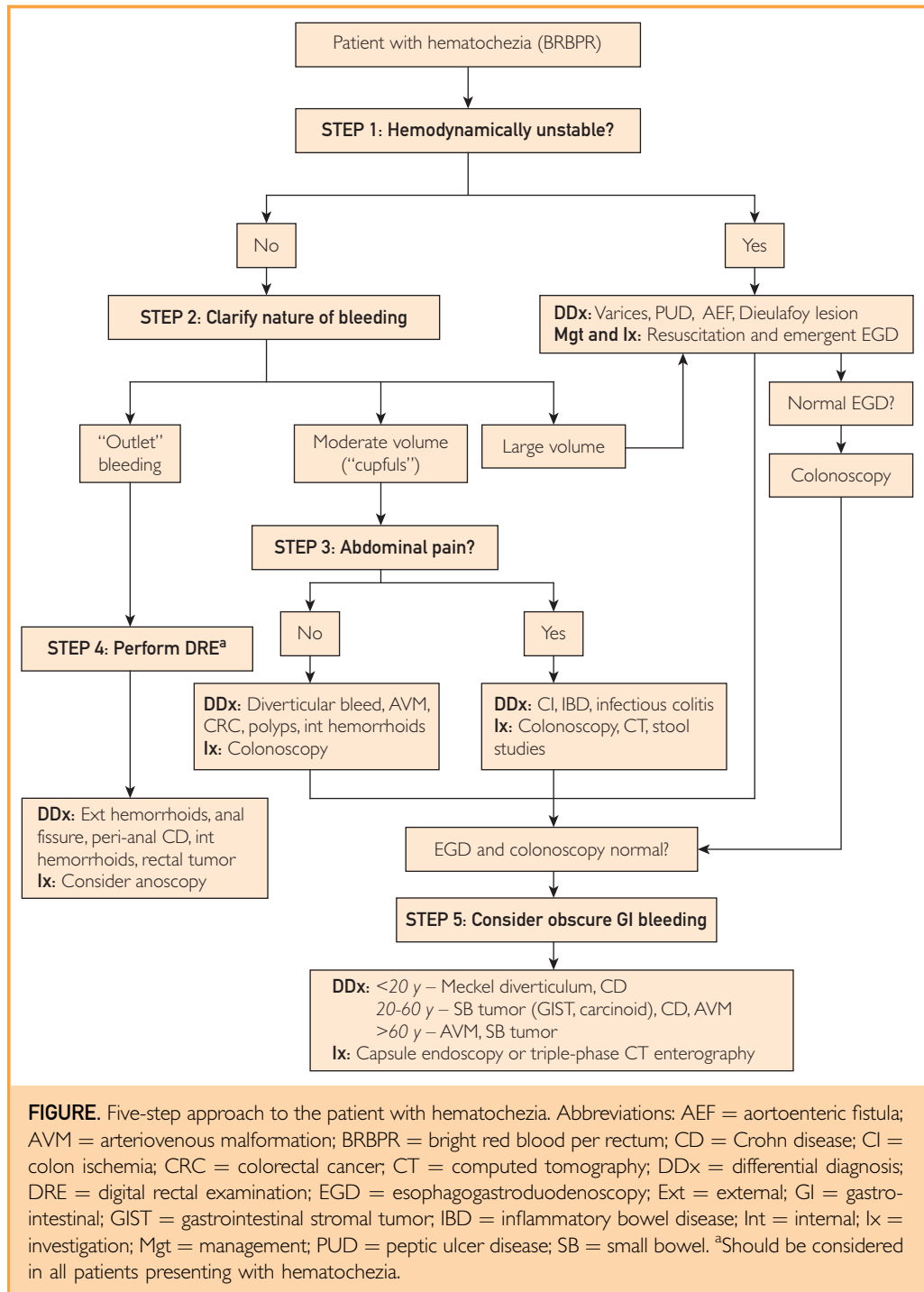
tags, fissure, perianal abscesses, or fistulae.¹⁶ The presence of exquisite tenderness upon digital insertion into the anal canal is suggestive of an anal fissure, external hemorrhoids, or a perianal abscess. Evidence of anal stenosis could also signify Crohn disease. The examiner should palpate internally to exclude internal hemorrhoids or a rectal mass and evaluate for puborectalis augmentation with valsalva (another means to evaluate pelvic floor dysfunction). Upon examination completion, the glove should be inspected for overt blood, with consideration being given to occult blood testing, should none be observed. The presence of gross blood is an independent predictor of severity of LGIB.¹⁸

Consider Obscure GI Bleeding in Certain Circumstances

In most patients in whom UGIB is not suspected, colonoscopy should be the initial diagnostic procedure after adequate colon preparation, unless the physician is confident of an anorectal "outlet" bleeding source.¹¹ Should colonoscopy be unrevealing, EGD should be considered (Figure). If both investigations are normal, obscure GI bleeding should be entertained. This is defined as ongoing and unexplained bleeding, despite previously normal EGD and colonoscopy, and accounts for 5% of LGIB.^{19,20} Although it may be due to pathology not identified during previous endoscopic evaluations, it is usually due to a small bowel bleeding source.²⁰

The differential diagnosis is dependent on the age of the patient (Figure). In younger patients (<20 years old), potential causes include Meckel diverticulum or Crohn disease. In middle aged patients (20-60 years old), vascular small bowel tumors (GI stromal tumor and carcinoid tumor), Crohn disease, and AVMs should be considered. In older patients (>60 years old), the primary considerations are AVMs and vascular small bowel tumors.²¹ Small bowel varices are also possible in those with known liver disease.²⁰

Therefore, investigations depend on the age of the patient and the quality of previous studies. Potential diagnostic approaches include repeat upper or lower endoscopy, video-capsule endoscopy, and triple-phase computed tomography (CT) enterography.²⁰



CASE 1

A 50-year-old man presents with sudden-onset, large-volume BRBPR without abdominal pain. He feels lightheaded when standing upright and collapsed briefly before presentation. The patient does not have a history of liver disease or PUD and

takes no medications. He has consumed 1 bottle of vodka daily for the past 15 years. On examination, he has orthostatic hypotension with multiple spider angiomas observed on his torso. His abdomen is nontender, and DRE confirms the presence of BRBPR.

Applying the first step of the 5-step approach, we note that the patient has evidence of hemodynamic instability and prompt management is vital. The finding of spider angiomas in conjunction with the long-standing alcohol abuse suggests that the patient likely has alcoholic cirrhosis and therefore may be bleeding from esophageal or gastric varices. When varices are suspected to be the source, the patient should be managed expediently and admitted to an intensive care unit. Resuscitation should include placement of 2 large-bore IV cannulae, IV fluid administration, and a type and cross-match. Intravenous octreotide infusion, proton pump inhibitor therapy, and antibiotics (to decrease the likelihood of systemic infection) should be concomitantly administered.¹¹ Endotracheal intubation may be considered to facilitate proceeding with safe emergent EGD.¹¹

A restrictive packed RBC transfusion strategy, using a threshold of hemoglobin level less than 7 g/dL, has been associated with better outcomes,²² possibly explained by reduced likelihood of exacerbating bleeding in patients with existing portal hypertension.^{22,23} However, certain patients, particularly those with cardiovascular disease or active severe hemorrhage, may suffer adverse events using this strategy and clinical judgment should be applied on a case-by-case basis, with a higher transfusion threshold of 9 g/dL generally recommended in these patients.^{11,21,24} Platelet transfusion should occur when a patient is actively bleeding with a platelet count below $50 \times 10^9/L$ and be considered in the setting of massive RBC transfusions, as should administration of fresh frozen plasma.^{11,22} Reversal agents should be considered before endoscopy in patients with an international normalized ratio greater than 2.5.¹¹ The management of anticoagulants and antiplatelet medications in the setting of LGIB requires consideration of the risk of ongoing bleeding and the risk of thromboembolic events and therefore requires an individualized approach.

Our patient was resuscitated and underwent emergent EGD with endoscopic banding performed on actively bleeding esophageal varices, with hemostasis achieved successfully.

CASE 2

An 80-year-old man presents to the emergency department having passed stool with what he

describes as 4 “cupfuls” of blood. He awoke with a dull left lower abdominal pain. This was present for approximately 2 hours, after which he had a desire to defecate. A colonoscopy 6 months before his presentation revealed diverticulosis. His comorbidities include coronary artery disease, hypertension, hyperlipidemia, and type 2 diabetes. His vital signs are normal. On examination, he has modest left lower abdominal tenderness without peritoneal signs. DRE was negative, except for a small amount of BRBPR on the examining finger.

Applying the 5-step approach, we note that the patient is hemodynamically stable and has had a first episode of moderate hematochezia, suggestive of LGIB. The presence of abdominal pain makes diverticular bleeding less likely. The initial presentation of IBD would be unusual in an 80-year-old man. His recent colonoscopy was negative for neoplasia. Given the patient’s significant vascular comorbidities and age, CI is the most likely diagnosis.

Colon ischemia is usually caused by hypoperfusion in the distribution of the inferior mesenteric artery, leading initially to mucosal ischemia/infarction (causing pain) followed by mucosal sloughing (causing hematochezia).¹⁵ The diagnosis may be confirmed by colonoscopy.¹⁵ Colon ischemia usually resolves spontaneously following provision of supportive management.¹⁵ Colon ischemia needs to be distinguished from AMI, which can be a life-threatening GI emergency, usually caused by abrupt disruption of blood flow in the superior mesenteric artery distribution due to embolism or acute thrombosis, leading to small bowel ischemia or infarction. Emergent CT or magnetic resonance angiography is indicated if AMI is suspected clinically, and if confirmed, emergent interventional radiology and vascular surgery input should be obtained.¹⁵

Colonoscopy confirmed the diagnosis of CI in our patient, and he recovered with supportive management.

CASE 3

A 75-year-old woman presents with moderate-volume BRBPR after awakening with a desire to defecate. This has occurred 5 times over the past 3 hours. She has no abdominal

pain, lightheadedness, or recent pain with defecation. She does not take aspirin or NSAIDs. She underwent colonoscopy 1 year earlier, at which time she had 3 small polyps removed, and diverticulosis was noted. Her vital signs are normal, and abdominal examination is unremarkable. DRE reveals perianal blood staining, no external hemorrhoids, and a nontender anal canal.

Applying the 5-step approach, we note that the patient is stable. Clarifying the nature of her bleeding, we note that moderate-volume BRBPR is suggestive of an LGIB source. Applying step 3, we note that the patient reports no abdominal pain, in comparison to case 2. This narrows our differential diagnosis to colonic AVMs, colorectal neoplasia, a colon polyp, and diverticular bleeding. Considering her recent colonoscopy findings, diverticular bleeding is the most likely diagnosis.

Diverticular bleeding commonly presents with at least moderate volume hematochezia. Patients with diverticular bleeding generally seek medical attention, as they are alarmed by the amount of blood they have passed. Occasionally, diverticular bleeding may be associated with hemodynamic compromise, especially in patients taking anticoagulants. Although the yield of colonoscopy for a specific bleeding site in cases of diverticular bleeding is low, it has the added benefit of excluding alternate pathology. Should colonoscopy fail to identify the bleeding source and ongoing blood loss is a concern, CT angiography can be considered for localization and characterization of bleeding, with conventional mesenteric angiography reserved for patients with CT evidence of active contrast extravasation or hemodynamic instability due to massive hemorrhage.²⁵

In our patient, colonoscopy was performed, revealing multiple diverticulae without an active bleeding site, but the bleeding was still suspected as being diverticular in origin.

CASE 4

A 30-year-old woman presents with a 3-week history of intermittent BRBPR associated with painful defecation. The blood is often present only on toilet paper with wiping. She has a history of constipation resulting in excessive

straining and a sense of incomplete evacuation. Her vital signs are normal, and abdominal examination is unremarkable.

This history is most suggestive of anorectal bleeding, particularly as the patient describes small amounts of bright red blood with defecation. In this scenario, step 4 is crucial to elicit the diagnosis. DRE revealed no evidence of external hemorrhoids; however, digital insertion produced exquisite tenderness in the anal canal, suggestive of an anal fissure. Assessment of pelvic floor excursion and puborectalis muscle was deferred because of the concern that the presence of pain may lead to unreliable findings.

Sometimes it is not possible to see an anal fissure on DRE, and the diagnosis may need to be confirmed by anoscopy. Anal fissures are most commonly associated with constipation, and therefore treatment of the underlying constipation with dietary fiber, adequate hydration, daily exercise, and supplemental fiber is important. In addition to treating the underlying constipation, topical therapies aimed at decreasing anal sphincter tone are used, as localized mucosal ischemia due to heightened sphincter tone also plays a role in the development of anal fissure. Nifedipine ointment applied twice daily is generally better tolerated than topical nitrates, which are often associated with headaches.²⁶ If pelvic floor dysfunction is suspected, this can be confirmed by anorectal manometry and is best treated by pelvic floor retraining and biofeedback therapy.²⁷

CASE 5

A 50-year-old man presents with a 6-month history of recurrent hematochezia. On each occasion, he has BRBPR lasting for a day and then resolving spontaneously. He does not have abdominal pain with these episodes, but does report occasional midabdominal cramping pain with nausea, 2 to 3 hours after eating a large meal. He recently received a diagnosis of severe anemia, requiring transfusion of 2 units of blood on 2 occasions. He does not take NSAIDs or anticoagulants. He does not have known liver disease or risk factors for liver disease. Investigations have included unremarkable upper endoscopies and colonoscopies on 2 separate occasions. A small bowel capsule endoscopy study was

also normal. The patient appears well with normal vital signs. Abdominal examination and DRE are unremarkable.

Using the 5-step approach, we note that the patient is hemodynamically stable and has recurrent moderate volume bleeding. The absence of abdominal pain and performing a DRE is less useful in narrowing the differential in this case, as the patient has had 2 normal upper and lower endoscopies. The final step is to consider obscure GI bleeding, typically from a small bowel source. Our patient's episodes of hematochezia occur in association with delayed postprandial crampy abdominal pain, raising concern for a small bowel lesion causing coexisting intermittent partial small bowel obstruction and bleeding. Given his age and obstructive symptoms, the primary concern is for a small bowel vascular tumor.²⁰

Although a small bowel capsule may be considered for the evaluation of obscure GI bleeding, it should not be performed in patients with possible small bowel obstructive symptoms. In such circumstances, multiphasic CT enterography is preferred.^{20,28} Surgical resection is the intervention of choice for patients with localized GI stromal or carcinoid tumors of the small intestine.²⁹

Our patient received a diagnosis of localized carcinoid tumor and underwent a curative surgical resection.

CONCLUSION

This concise review offers a practical approach to 5 clinical presentations of hematochezia, ranging from hemodynamically significant life-threatening UGIB to anorectal "outlet" bleeding. We believe that the 5-step approach offered, on the basis of patients' clinical history and presentation, will be useful to physicians, both in the ambulatory and in the hospital setting.

Abbreviations and Acronyms: AMI = acute mesenteric ischemia; AVM = arteriovenous malformation; BRBPR = bright red blood per rectum; CI = colon ischemia; CT = computed tomography; DRE = digital rectal examination; EGD = esophagogastroduodenoscopy; GI = gastrointestinal; IBD = inflammatory bowel disease; IV = intravenous; LGIB = lower gastrointestinal bleeding; NSAID = nonsteroidal anti-inflammatory drug; PUD = peptic ulcer disease; RBC = red blood cell; UGIB = upper gastrointestinal bleeding

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