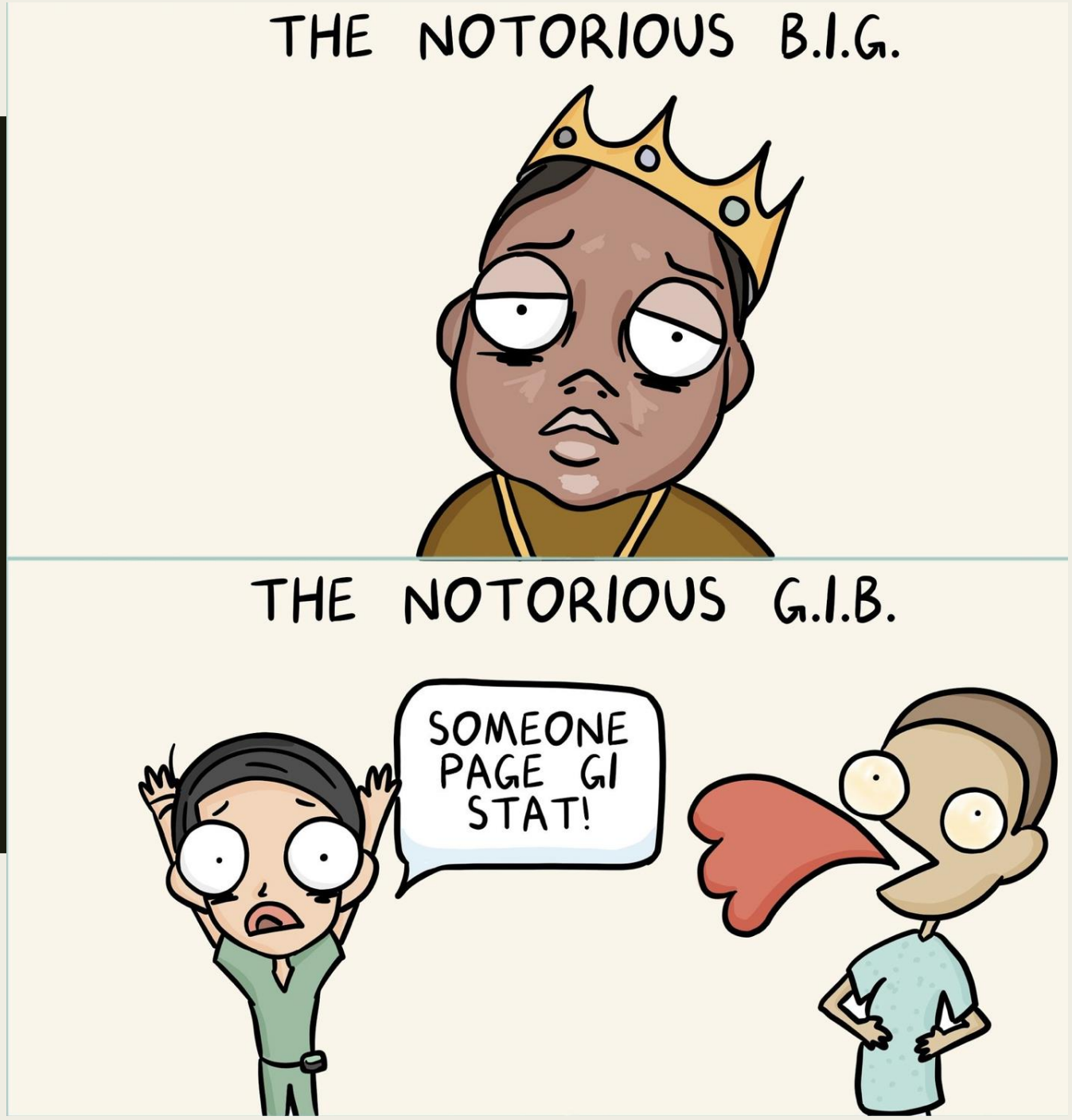

Paul Gomez, MD

Gastroenterology Fellow, PGY4

Objectives

- List the 3 most common causes of upper GI bleeding
- List 3 features of ulcers that increase risk for recurrent bleeding and warrant endoscopic treatment.
- In addition to resuscitation and endoscopic therapy, describe the 2 primary pharmacologic therapies for acute variceal hemorrhage and their role.
- With regards to lower GI bleeding, describe/compare and contrast the clinical characteristics of diverticular bleeding, angiodysplasia and ischemic colitis.

Introduction

- **GI bleeding is the most common GI presentation in hospitalized patients**
- The annual rate of hospitalization for any type of GI hemorrhage in the United States is estimated to be 350 hospital admissions/100,000 population
- **$4.85 billion in costs annually**
- **Mortality** of severe Upper GI bleeding ranges from **7% to 10%**
- Despite advances in medical therapy, ICU care, endoscopy, and surgery, the mortality rate of severe UGI bleeding has not changed since the 1970s???

3 most common causes of upper GI bleeding?

3 most common causes of upper GI bleeding?

1. Peptic ulcer disease
2. Gastroesophageal varices
3. Mallory-Weiss Tear

Definitions

- Overt GI bleeding :

Overt bleeding implies visible signs of blood loss from the GI tract

- Occult GI bleeding :

subacute bleeding that is not clinically visible

- Obscure (small bowel) bleeding:

bleeding from a site that is not apparent after routine endoscopic evaluation with esophagogastroduodenoscopy (upper endoscopy) and colonoscopy

Definitions

- Hematemesis

-defined as vomiting of blood, which is indicative of bleeding from the esophagus, stomach, or duodenum

-includes vomiting of bright red blood and dark material (coffee-ground emesis)

-Not all CG vomiting is GIB

-Gastric outlet obstruction or bowel obstruction can have dark vomiting

Definitions

- Melena

defined as black tarry stool and results from degradation of blood to hematin or other hemochromes by intestinal bacteria.

-Resembling tar means : BLACK, SHINY, STICKY !!!

-**Non-GIB causes of black stool include: ????**

-Melena occurs with 50-80 ml of fresh blood

-Melena indicates bleeding that occurred ≥ 14 hours earlier

Definitions

- Hematochezia

refers to bright red blood per rectum and suggests active UGI or small bowel bleeding or distal colonic or anorectal bleeding.

1 L of Blood per NGT: Bloody stool in 4-17 hours

Remember that color relates more to timing in GI tract and not location

A 68-year-old male with a history of atrial fibrillation on therapeutic warfarin and aspirin 81 mg daily presents to the Emergency Department with two hours of severe large volume bright red blood per rectum. Vital signs reveal an irregular heart rate at 138 bpm, blood pressure 80/56 mmHg. Examination reveals a soft non-tender abdomen without distension and no stigmata of liver disease on examination. Labs reveal INR 2.2, hemoglobin 7.4 g/dL, platelets 220,000/uL. Intravenous access is established and crystalloid resuscitation is initiated.

What is the next best step in management of this patient?

1. Urgent Colonoscopy
2. Urgent Flex Sig
3. Urgent EGD
4. CT angiography

Initial assessment of UGIB

- History

-Characteristics of bleeding, onset and duration of bleeding, associated symptoms.

-Medication history: Aspirin, Plavix, NSAIDs, Coumadin, Heparin, others.

-PMH:H/o dyspepsia or prior PUD, GERD, cirrhosis, heart dz., etc.

-PSH: Prior surgical repair of an abdominal aortic aneurysm with synthetic graft, recent ERCP with sphincterotomy

-DON'T FORGET: hx of epistaxis, nasopharyngeal malignancy, respiratory symptoms and cough

Increased risk of rebreeding and death in patients with upper gastrointestinal bleeding

- Tachycardia (pulse rate >100min)
- Hypotension (SBP <100mmHg)
- Age >60
- Major comorbid medical conditions

Tachycardia-supine– 10-15% blood loss

Orthostatic changes-supine to standing- 20-25% loss

Hypotension supine; shock i.e. weak pulse, cold clammy extremities, disorientation--
>40% loss

Is it hemoptysis or hematemesis

- Occasionally hemoptysis or vomiting of swallowed blood from epistaxis can be confused with hematemesis.
- A careful history usually resolves this confusion.
  - ***Hemoptysis is associated with coughing and is bright, foamy red in color.***
  - ***The patient with profuse epistaxis is almost invariably aware that a nosebleed has occurred.***

Do not forget to examine your patient

- Physical exam

-Signs of chronic liver disease

Jaundice, ascites, edema, spider angiomas implicate bleeding due to portal hypertension

- Abdominal exam: masses, Bruits, hepatosplenomegaly, Increased peristalsis, tenderness, guarding, rebound?

-Rectal exam: Extremely important—DO NOT OMIT!!- Melena? Bright red? Fissures? Masses? Hemorrhoids? Empty?

Initial assessment of UGIB

- Labs

-CBC, INR, BUN, serum creatinine, LFT, and cross-matching

-Hemoglobin is a poor early indicator
it takes over 24 to 72 hours for the vascular space to equilibrate with extravascular fluid, and hemodilution results from intravenous administration of saline.

-UGIB is suggested by a BUN/Cr ratio > 30:1

this is due to pre-renal hypovolemia and absorption of blood in the small bowel.

Question 1

An 82-year-old male with a history of recent MI on aspirin 325 mg daily and clopidogrel presents with massive hematemesis for one hour. Initial vital signs in the Emergency Department reveal heart rate 115 bpm and blood pressure 72/40 mmHg. Hemoglobin is 6.8 g/dL

What is the most appropriate initial step in management of this patient in the Emergency Department?

A) Placement of two large-bore 18 gauge IVs and administration of crystalloid solution

B) Initiate continuous IV proton-pump inhibitor infusion

C) Transfuse packed red blood cells and platelets due to severe anemia and use of anti-platelet agents

D) Nasogastric lavage to evaluate for grossly blood aspirate to confirm upper GI bleed

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Initial management

- Resuscitation

- 2 large-bore (14- or 16-gauge) catheter should be placed intravenously
- Normal saline is infused as fast as needed to keep SBP>100, HR<100

Question 2

- A 68-year-old woman is admitted to the hospital after having three episodes of hematemesis. The most recent episode occurred two hours ago. Her vital signs remain normal. She is not on anticoagulation. She denies chest pain or shortness of breath. She has no history of liver disease. Labs notable for a hemoglobin of 8.2 g/dL which is down from a recent baseline of 11. which of the following hemoglobin thresholds should you begin transfusing packed red blood cells?

A) 10

B) 9

C) 8

D) 7

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D) 7

UGIB

- Why do we start patients on IV PPI BID???

Pre-endoscopic tx- PPIs

- Mechanism of action

  -Acute elevation of the gastric pH which optimizes platelet aggregation and clot formation

  -pH less than 5.4 almost abolishes platelet aggregation and plasma coagulation

- No difference between continuous infusion and intermittent dosing

Pre-endoscopic tx

- Prokinetics (Erythromycin or Metoclopramide)

--improved visualization and reduced need for second look endoscopy

- small series suggest that erythromycin is more beneficial.

Paging Night Float

- Cirrhotic patient in ER with hematemesis

Patients with cirrhosis

- Octreotide gtt (72 hours)
  - *Somatostatin analogue that decreases splanchnic blood flow and lowers portal pressure*
- IV PPI
- Ceftriaxone 1gm Q24hr (5-7days)
  - *Nearly 50% of patient with cirrhosis who are hospitalized with cirrhosis have a bacterial infection*

- Goal Hg>7 and plt >50

Question 3

- An 84-year-old woman presents to the ED after having several episodes of coffee-ground emesis earlier in the day. She takes a daily aspirin and uses ibuprofen several days a week for arthritis pain. Her blood pressure is 98/70 mmHg and her heart rate is 88 bpm. A digital rectal exam reveals dark brown stool in her rectal vault. The Emergency Department physician asks if you would like her to perform nasogastric lavage. Which of the following statements regarding nasogastric lavage in this context is most accurate?

A) The result of a nasogastric lavage is unlikely to change this patient's management

B) Nasogastric lavage is generally well tolerated by patients

C) NG tube insertion carries a high risk of complications like aspiration and sinus perforation

D) A lavage that reveals coffee grounds is highly predictive of a high-risk endoscopic lesion

E) NG lavage is likely to improve mucosal visualization during upper endoscopy

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Use of NG tube

- NG tube and lavage is not required for diagnosis, prognosis, visualization, or therapeutic effect.

Timing of Endoscopy

- Emergency endoscopy (within 12 hours) → poor outcomes (possibly due to inadequate resuscitation in patients undergoing emergency endoscopy)

- within 24 hours for most patients with upper GI bleeding, but only after adequate resuscitation has been provided

- suspected variceal bleeding → within 12 hours of presentation.
  - *May decrease transfusion needs, mortality*

Question 5

- A 57-year-old male presents with 3 days of melena and a few episodes of blood-tinged emesis. His Hb is noted to be three grams down from his baseline. He is hemodynamically stable. He does not take any medications of any kind and had no symptoms until his melena started three days ago.

  What is the most likely source for this patient's upper GI bleeding?

A) Esophagitis

B) Erosive Gastroduodenitis

C) Peptic Ulcer Disease

D) Mallory-Weiss Tear

E) Esophageal Varices

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UGIB management after endoscopy

- Endoscopic features are key in assessing risk and guiding further management

Question 6

A 64 Y/O F presents to the ED with 24 hours of melena. PMH includes rheumatoid arthritis on naproxen. On presentation, vital signs were stable. Relevant lab studies include hemoglobin 8.2 g/dL and BUN 28 mg/ dL, creatinine 1.4 mg/dL. Two large bore IVs are placed, resuscitation with IV crystalloid solution is initiated, along with an IV pantoprazole drip. The patient then undergoes an upper endoscopy.

Which of the following is the best endoscopic management strategy for this findi

A) No endoscopic therapy indicated

B) Epinephrine injection monotherapy

C) Heater probe coagulation to area of ulceration

D) Hemoclip placement to area of ulceration

E) Epinephrine injection in combination with heater probe coagulation

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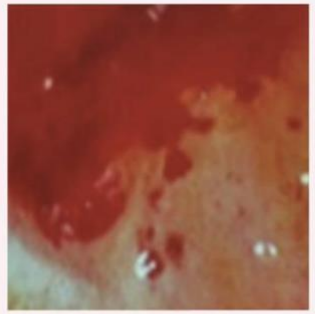
Forrest classification

- Active spurting bleeding (Forrest IA)
- Oozing bleeding (Forrest IB)
- Nonbleeding visible vessel (NBVV [Forrest IIA])
- Adherent clot (Forrest IIB)
- Flat pigmented spot (Forrest IIC)
- Clean-based ulcer (Forrest III).

Forrest Classification

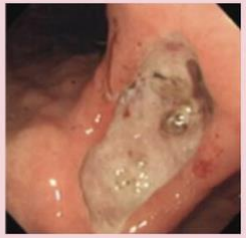
Acute Hemorrhage

1a
Active Spurting
Rebleeding Risk:
60 to 100%

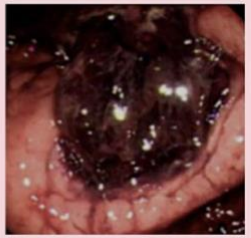


1b
Active Oozing
Rebleeding Risk:
50%

Signs of Recent Hemorrhage



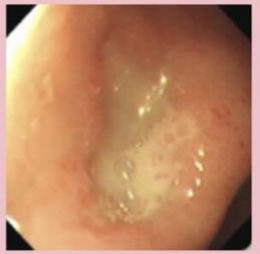
IIa
Non-Bleeding Visible Vessel
Rebleeding Risk:
40 to 50%



IIb
Adherent Clot
Rebleeding Risk:
20 to 30%

IIc
Flat Spot in Ulcer Base
Rebleeding Risk:
7 to 10%

Lesions without Active Bleeding



III
Clean-Based Ulcer
Rebleeding Risk:
3 to 5%

@enrrikke

Images from Alzoubaidi, et al, 2018

- First described in 1974 by J.A. Forrest et al. in The Lancet
- Standardized classification system for endoscopists to describe peptic ulcers
- Helps prognosticate and risk stratify patients based on stigmata of recent hemorrhage and decide on discharge versus close inpatient monitoring

Endoscopic treatment options

- The most commonly used treatment for ulcer bleeding worldwide is epinephrine injection therapy
  - *widely available, easy to perform, safe, and inexpensive*

- Addition of a thermal or mechanical hemostatic modality further decreases the rates of rebleeding, surgery, and mortality

Post-endoscopy management

- PPIs

Several studies have shown that PPIs are effective in reducing rebleeding rates from peptic ulcer after endoscopic therapies

- Patients with PUD and low-risk stigmata can be fed within 24hrs of endoscopy, receive once daily oral PPI therapy, and be discharged from hospital
- Patients with high-risk peptic ulcer lesions and those with adherent clots requiring endoscopic treatment should receive IV PPI therapy for 72 hrs

Rebleeding after Endoscopic Treatment

- Risk of rebleeding is greatest in the first 72 hours after diagnosis and treatment.

- An urgent repeat endoscopy (rather than immediate surgery) should be performed
  - *A large, well-designed, randomized trial from Hong Kong*
  - *73% of patients achieve sustained hemostasis and do not require surgery*

- recurrent bleeding despite 2 sessions of endoscopic hemostasis should be considered for angiographic embolization or surgical therapy

Reintroduction of antithrombotic drugs

Question 7

- A 68-year-old male presents to the ED with melena for 24 hours. He reports having four black stools since the day prior, with mild epigastric abdominal discomfort. His only medications are aspirin 81 mg daily and atorvastatin. VS are normal. Abdominal exam reveals mild epigastric tenderness. Labs are notable for BUN 38 mg/dL, Cr of 1.0 mg/dL, Hb 9.4 g/dL (baseline 12 g/dL). Upper endoscopy reveals a 15 mm clean-based gastric antral ulcer without stigmata of hemorrhage. Testing for H pylori is negative. You recommend transitioning to oral PPI therapy.

  Which of the following recommendations should you make regarding the patients aspirin therapy?

A) Resume aspirin now

B) Hold aspirin for one day

C) Hold aspirin for three days

D) Hold aspirin for seven days

E) Discontinue aspirin

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- ASA for primary prophylaxis → DC because the bleeding risk probably outweighs the cardiovascular benefits
- ASA for 2nd prophylaxis→ Resume within 1-7 days

The risk for rebleeding → highest in the first 3-7 days depending on the type of lesion, and the risk for a cardiovascular event tends to be highest after 10-14 days off aspirin

Resume aspirin therapy as soon as possible after hemostasis of a bleeding lesion is achieved, ideally within one to three days and certainly by seven days

Question 8

- A 52-year-old man with NASH-cirrhosis is admitted to the ICU with hematemesis and hemodynamic instability. An Upper Endoscopy four weeks ago revealed only large esophageal varices which were incompletely eradicated with banding but the patient did not show up for his scheduled repeat Upper Endoscopy last week. His initial hemoglobin is 5.8 g/dL. His INR is 1.8 and his platelet count is 94K.

  Which of the following treatment options is LEAST likely to benefit this patient?

A) Intravenous somatostatin analog

B) Intravenous proton pump inhibitor

C) Endotracheal intubation

D) Intravenous antibiotics

E) Packed red blood cell transfusion

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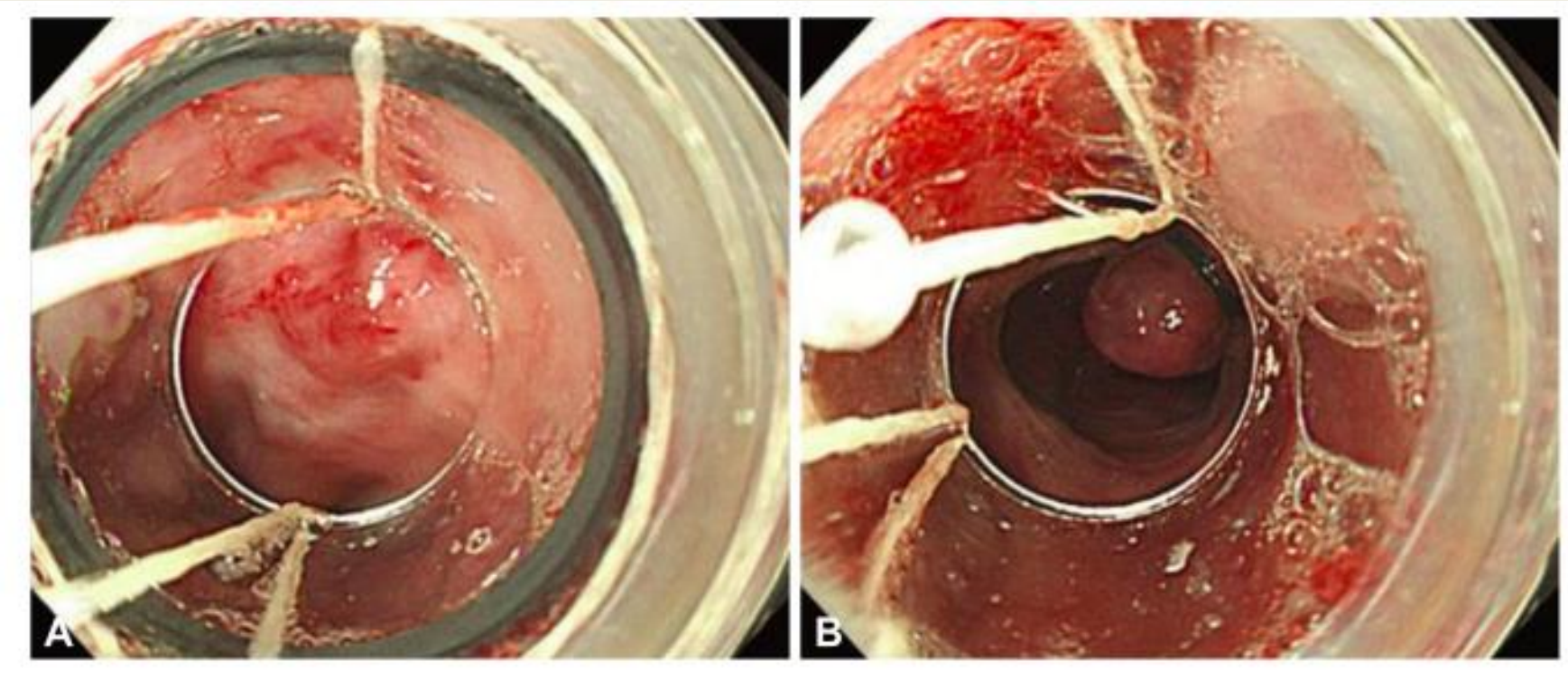
Management of variceal bleeding

- The acute mortality rate with each bleed is approximately 30%, and the long-term survival rate is less than 40% after 1 year with medical management alone
- The optimal endoscopic therapy for esophageal variceal bleeding is variceal band ligation
- Remember Octreotide and IV antibiotics



Acute hemostasis generally can be achieved in 80% to 85% of cases, with a rebleeding rate of 25% to 30%

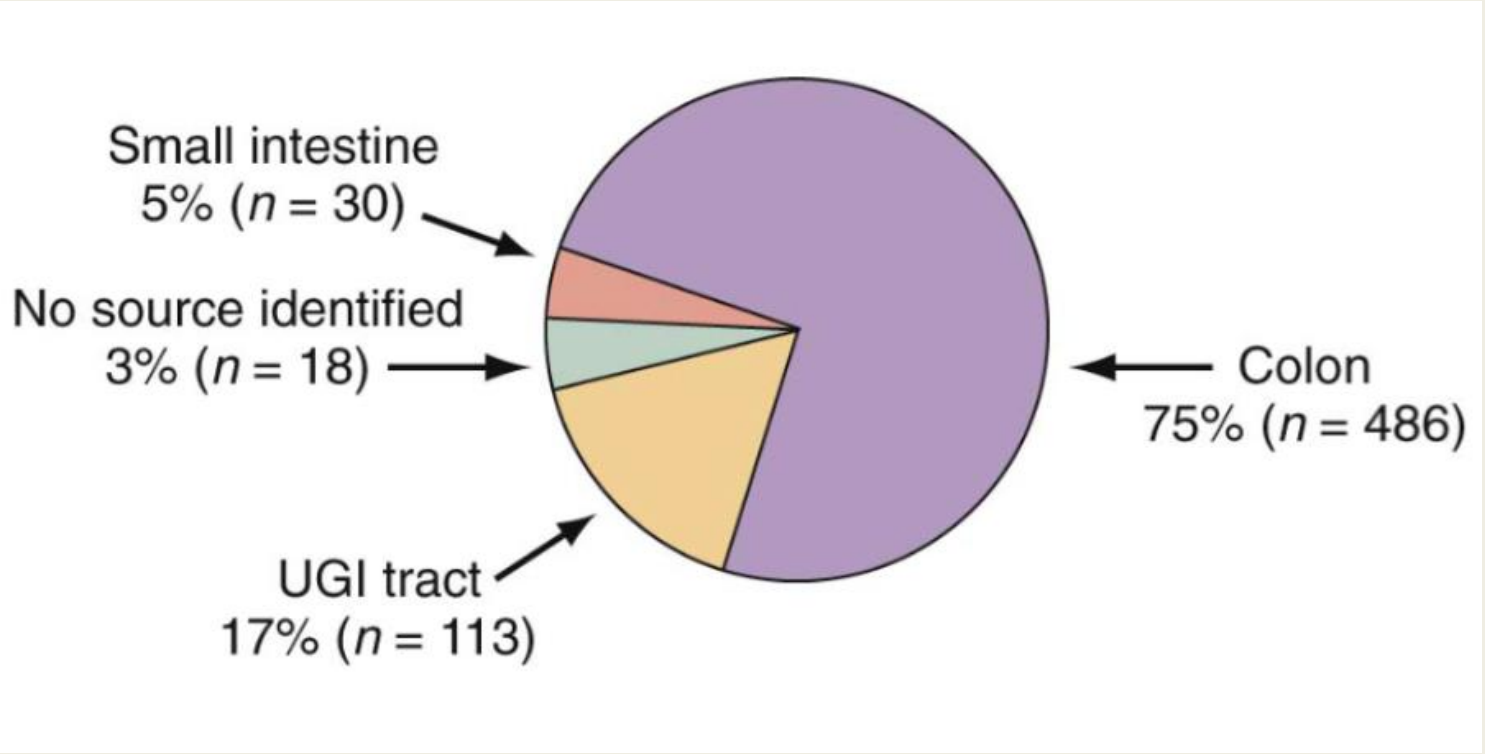
Post-endoscopy management

- Remember to keep antibiotics for 5-7 days
- Octreotide for 72 h
- NSBB
- TIPS?

LGIB

- Bleeding arising distal the ligament of Treitz
- Presents with hematochezia/BRBPR

Hematochezia



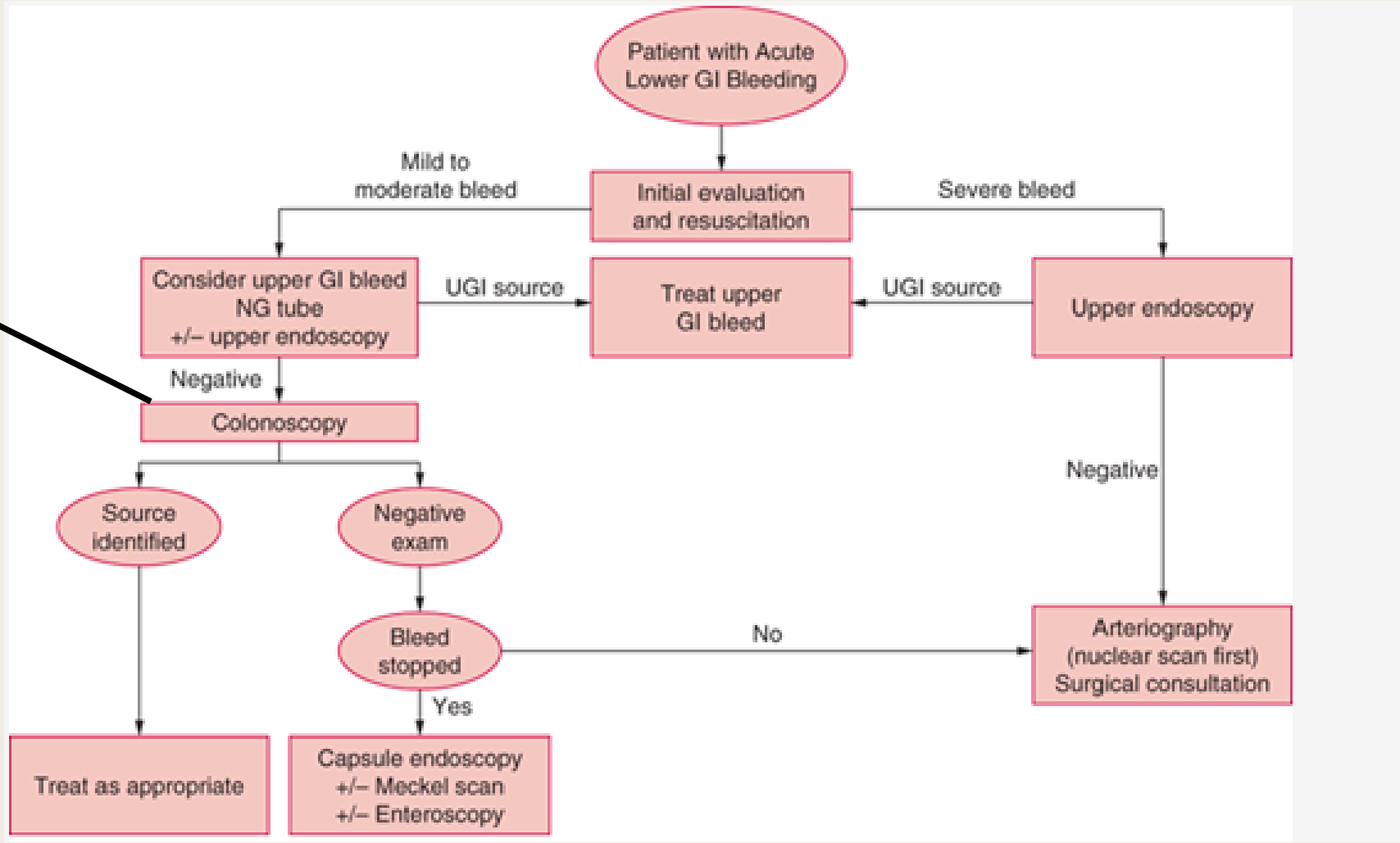
Causes of LGIB

Eight most common colonic sources of severe hematochezia (706 cases)

Diagnosed lesion	Frequency (%)*
1. Diverticulosis	32.6 %
2. Ischemic colitis	12.2.%
3. Internal hemorrhoids	10.8%
4. Rectal ulcers	8.5%
5. Ulcerative colitis, Crohn's, other colitis	7.5%
6. Colon angiomas or radiation telangiectasia	7.2%
7. Post-polypectomy ulcer	7.1 %
8. Colon cancer or polyps	6.1%

* Expressed as percent of colorectal sources

- There is no role for unprepped colonoscopy/flex seg
- Colonoscopy performed < 24 h from presentation after hemodynamic resuscitation and 4–6 L of PEG solution given over 3–4 h until rectal effluent is clear of blood and stool



A 72-year-old female with chronic constipation presents with to the Emergency Department with four hours of rectal bleeding. She described being in her usual state of health until this morning, when she developed acute onset of heavy rectal bleeding, passing bright red blood with clots in the toilet every 30 minutes. She denies abdominal pain, nausea, vomiting, melena, hematemesis, diarrhea, or prior episodes of GI bleeding. She has never had a colonoscopy. On exam, vital signs are normal and abdomen is soft and non-tender. Hemoglobin is 11.6 g/dL (baseline 13.4 g/dL).

Which of the following is the most likely etiology of hematochezia in this patient?

- Internal hemorrhoids
- Colorectal cancer
- AVM
- Ischemic colitis
- Diverticular disease

Diverticular bleeding

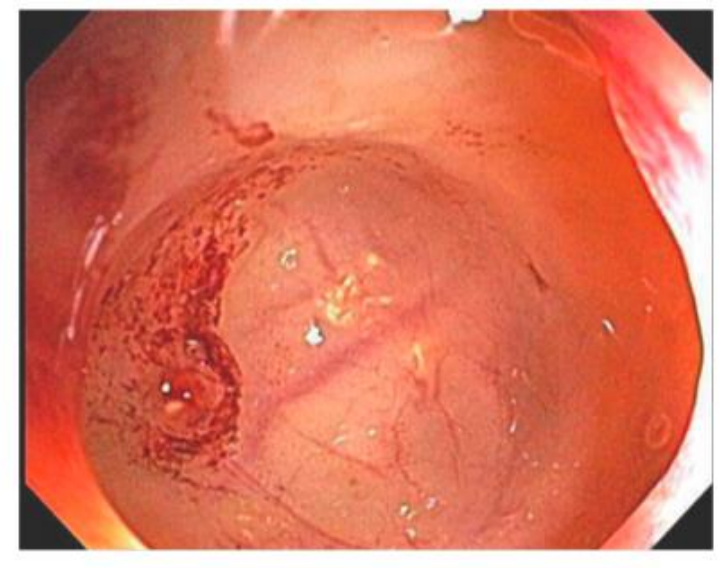
- most common colonic cause for patients hospitalized with severe hematochezia.
- typically presents as **painless** hematochezia
- Diverticular bleeding is arterial !
- Usually seen in elderly patients with hx of diverticulosis or chronic constipation.

Diverticular bleeding

- Bleeding stops spontaneously in 75 % of patients
- risk of rebleeding (14 to 38 %)

Diverticular bleeding-tx

- Endoscopic treatment
- Surgical consultation
- IR



Ischemic colitis

- most common form of ischemic injury to the GI tract
- It is the second most frequent colonic etiology of LGIB
- Seen in patient with :
  - *cardiac disease, recent major surgery, sepsis, hypotension(acute setting), diabetes, chronic renal failure, vasculitis, hypercoagulable state*

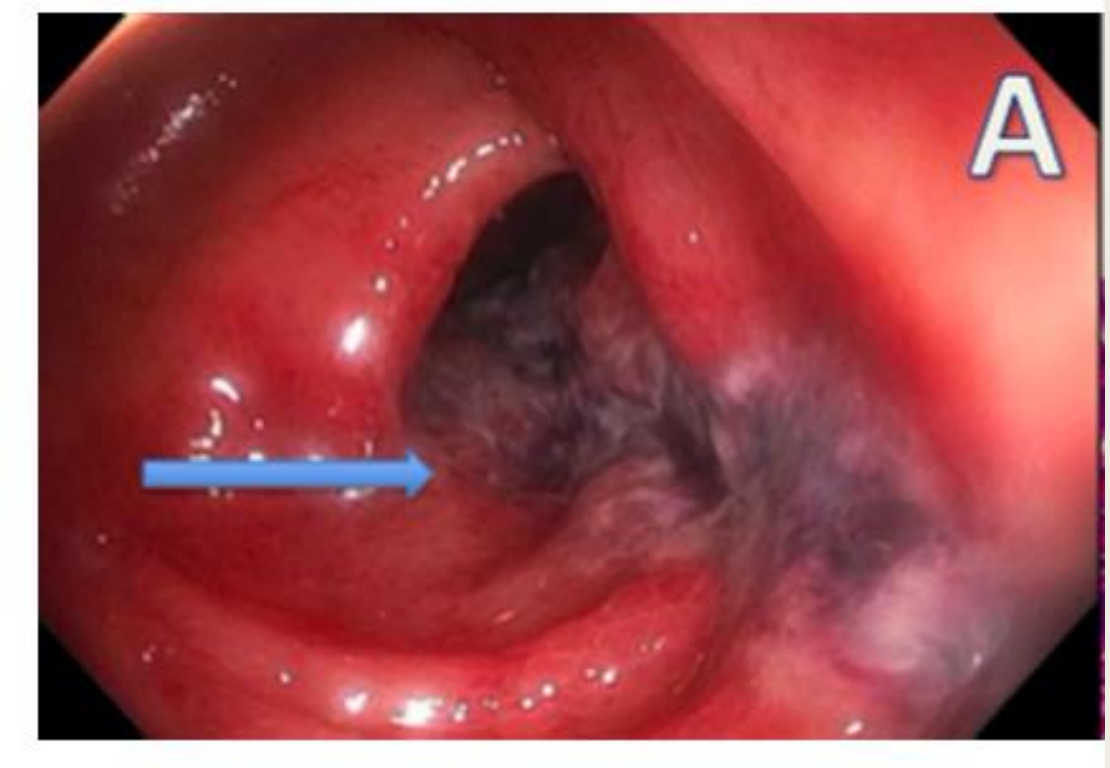
Ischemic colitis

- Patients usually present with acute onset of **severe, crampy abdominal pain**, followed by hematochezia
- Most (75-85 %) patients have self-limited ischemic colitis and improve with supportive medical treatment
- However, in elderly patients with associated comorbid illnesses or those patients with transmural infarction, urgent surgical therapy is required, and morbidity is substantial.

Ischemic colitis

- Early colonoscopy after cleansing the colon with purge in suspected cases is critical for accurate diagnosis and risk stratification.
- descending colon and splenic or hepatic flexures are the most common affected areas
- Classical endoscopic finding is “single stripe sign”

“single stripe sign”



IT'S WACK TO GUAIAC

What is Fecal Occult Blood Testing (FOBT)

- Screening for **colorectal cancer** in average risk population in the **ambulatory setting**
  - Guaiac based (**g-FOBT)** or immunochemical test (**FIT**)
  - g-FOBT is the older of the two and no longer recommended as first line screening
- **Recommended** screening use
  - **Three separate** stool samples, with **applicator** used to smear on card, **NOT FROM DRE**
- gFOBT often misused (particularly on inpatient setting) for indications other than CRC screening (100% of time)

Why You Might Think g-FOBT is helpful for evaluation of GIB

- G-FOBT is quick, inexpensive and can be performed by any healthcare professional
- Non-invasive option compared to the gold standard EGD
- Suspect that GI team bases their management on the results

Why FOBT is NOT appropriate for GIB/anemia evaluation

- False Positives
  - **Ingested blood:** epistaxis, gingival bleeding, pharyngitis
  - **Mucosal inflammation**: esophagitis, gastritis, IBD, cirrhosis
  - **Medications**: NSAIDs, iron supplementation, ASA, coumadin, antiplatelets,anticoagulants
  - **Diet**: red meat, broccoli, cauliflower, ETOH
- False Negatives
  - Ingestion of antioxidants (VitC)
  - Denatured blood from upper GIB
- Does not change management and can lead to unnecessary testing, extended LOS

What you should do instead:

- Obtain a thorough history, physical exam and inspection of stool:
  - Observed MELENA (Likelihood ratio 25 for UGIB)
  - Self-Reported black/ tarry stool (LR of 5-6)
  - BUN to Cr ratio >30 (LR of 7.5)
  - DRE to identify black, brown or red stool
- **DO NOT GUAIAC ANY BODY FLUIDS INPATIENT/ED**