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Gastrointestinal Bleeding

Sponsored by: IV FLUID RESUSCITATION

★ Objectives:

1- Identify presenting features of patients with suspected upper GI bleeding
2- Appropriate identification and risk stratify patients with suspected upper GI bleeding.
3- Appropriate resuscitation and initial management of patients.
4- Appropriate medical management of patients with upper gastrointestinal bleeding and the appropriate alternatives to endoscopy based on the clinical situation.

★ Resources Used in This lecture:

Step -Up, Master the boards, Slides

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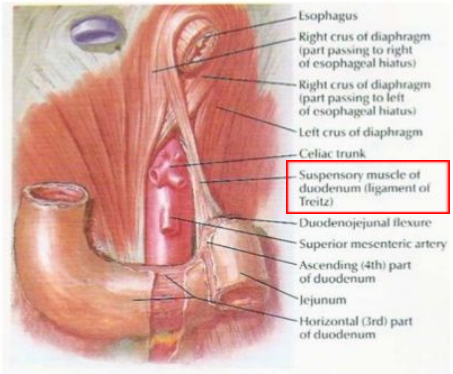
★ General characteristics:

"Treitz"

*Upper GI bleeding → source of bleeding is above the ligament of Treitz

*Lower GI bleeding → source of bleeding is below the ligament of Treitz



The doctor focused mainly on *upper GI bleeding* in the lecture but we're gonna include both.

★ Causes:

Upper GI bleeding	Lower GI bleeding
Mnemonic: GUM BLEEDiNG • **Ulcer**[1] (most common cause) • Gastritis • Mallory-Weiss tear[2] • Biliary (hemobilia) • Large varices (in portal hypertension) • Esophageal ulcer or reflux esophagitis • Enteroarotic fistula (in patients with aortic aneurysm/graft) • Duodenitis, Dieulafoy's vascular malformation[3] • Neoplasm (bleeding is not rapid) • Gastric erosions YouTube Upper GI bleed causes - overview video by armando hasudungan	Mnemonic: HD RAINS  • Hemorrhoids, anal fissures • **Diverticulosis** (most common cause in pts. over 60 years) • Radiation colitis • Angiodysplasia (2nd most common cause in pts. over 60 years) • IBD, Ischemic colitis • Neoplasm (colorectal carcinoma) / colorectal adenomatous polyps • Small intestinal bleeding (diagnosed by excluding upper GI and colonic bleeding) ⚠ NOTE: A lower GI bleed or +ve occult blood in patients over 40 is **colon cancer** until proven otherwise.

[1] **Peptic Ulcer disease (PUD):** duodenal ulcer (25% of cases), gastric ulcer (20% of cases), gastritis (25% of cases)

[2] is a condition marked by a **tear** in the mucous membrane, or inner lining, where the esophagus meets the stomach.

[3] **Dieulafoy's vascular malformation:** submucosal dilated arterial lesions that can cause massive GI bleeding

★ Clinical features (types of bleeding):

- **Hematemesis:** vomiting blood
  - Upper GI bleeding
  - Indicates moderate to severe bleeding
  - Ongoing bleeding
- **"Coffee grounds" emesis:**
  - Upper GI bleeding
  - Lower rate of bleeding (enough time for vomitus to transform into "coffee grounds")
- **Melena:** black, tarry, liquid, foul-smelling *stool*
  - Caused by degradation of hemoglobin by bacteria in the colon (blood has remained in GI for several hours)
  - The further the bleeding site from the rectum, the more likely melena will occur
  - Upper GI bleeding in 90% of the time
  - Note that dark stools can also result from bismuth, iron, spinach, charcoal and licorice
- **Hematochezia:** bright red blood per rectum
  - Lower GI bleeding (typically left colon or rectum)
  - Consider diverticulosis, arteriovenous malformations, hemorrhoids and colon cancers
  - May result from massive upper GI bleeding (blood does not remain in colon to turn into melena)
- **Occult blood in stool:** source of bleeding may be anywhere along GI tract

- Bleeding from small bowel may manifest as → melena or hematochezia
- Bleeding from colonic sources present with → occult blood or hematochezia
- Hematemesis and melena are the most common presentations of acute upper GI bleed, and patients may have both symptoms
- Always ask patients with GI bleeding if they take NSAIDs/aspirin, clopidogrel or anticoagulants

★ Other clinical features:

- **Signs of volume depletion**
- **Symptoms and signs of anemia** e.g., fatigue, pallor, exertional dyspnea
  (anemia can indicate the severity of bleeding)

"Coffee grounds" emesis

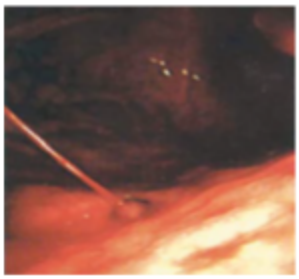
Melena

Sorry for the disgusting pics but this might help you understand what exactly those terms look like :)

★ Epidemiology:

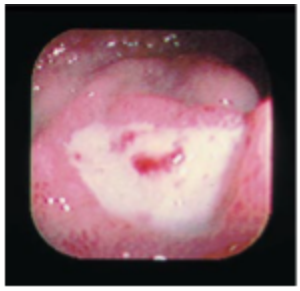
- 48 to 160 cases per 100,000 adults per year
- Mortality generally from 10% to 14%
- Acute UGIB is a common medical emergency that has 11% hospital mortality rate
- Despite advances in management, mortality has not significantly improved

US	KSA
Annual incidence: 100 per 100,000 adults	Annual incidence: 31 per 100,000 adults
Most common cause: peptic ulcer	Esophageal varices, duodenal ulcer



Spurting blood

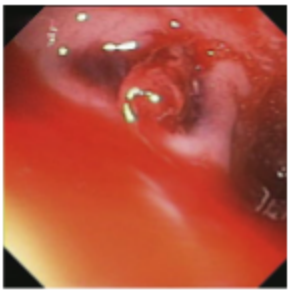
Non-bleeding visible vessel



Flat, pigmented spot

Clean base

Vascular malformation (spider like)



Aortoesophageal fistula

★ Diagnosis:

Tests to order in patients with GI bleeding:

- Hematemesis: Upper GI endoscopy is the initial test
- Hematochezia:
  - 1st rule out any anorectal cause (e.g., hemorrhoids)
  - Colonoscopy should be the initial test (because colon cancer is the main concern)
- Melena:
  - Upper endoscopy is usually the initial test (because it's most likely upper GI bleeding)
  - Colonoscopy if no bleeding site identified by endoscopy
- Occult blood:
  - Colonoscopy is the initial test (because colon cancer is the main concern)
  - Upper endoscopy if no bleeding site is identified by colonoscopy

Lab tests	- Stool guaiac test for occult blood - Hemoglobin/hematocrit level ● May not be decreased in acute bleeds ● Level >7 to 8 g/dL is generally acceptable in young, healthy patients without active bleeding ● Most elderly patients (especially with cardiac disease) should have Hb >10 g/dL - Mean corpuscular volume (MCV) ● Low MCV suggests iron deficiency anemia (chronic blood loss) ● Acute bleeding → normocytic RBCs - Coagulation profile (platelet count, PT, PTT, INR) - LFTs, renal function - BUN-creatinine ratio ● Elevated with upper GI bleeding ● Suggestive of upper GI bleeding if there's no renal insufficiency ● The higher the ratio the more likely the bleeding is from upper GI
Upper endoscopy	- Most accurate diagnostic test in evaluation of upper GI bleeding - Both diagnostic and therapeutic - Most patients with upper GI bleeding should have endoscopy within 24 hours.
Nasogastric tube	-It is often the initial procedure to determine whether it's upper or lower GI bleeding - Used to empty the stomach to prevent aspiration - False -ve findings are possible: 1. Intermittent upper GI bleeding. Or 2. Lesion in the duodenum - Evaluation of aspirate: ● Bile but no blood → upper bleeding unlikely ● Bright red blood or "coffee grounds" → upper GI bleeding ● Nonbloody aspirate (clear gastric fluid) → upper unlikely but cannot be ruled out (may be in the duodenum)

Anoscopy or proctosigmoido-scopy	- Can exclude anal/rectal source - Perform if there is no obvious bleeding from hemorrhoids
Colonoscopy	- Identifies the site of lower GI bleed (in 70% of cases) - Can be therapeutic
Bleeding scan Radionuclide scanning	- Reveals bleeding even with a low rate of blood loss - Does NOT localize the lesion - Its role is controversial, but may help determine whether arteriography is needed
Arteriography	- Definitively locates the point of bleeding (unlike bleeding scan) - mostly used with lower GI bleeding - performed during active bleeding - potentially therapeutic (endoscopy & colonoscopy are too) (embolization or intra-arterial vasopressin infusion)
Exploratory laparotomy	Last resort

ESSENTIALS OF DIAGNOSIS

- Symptoms: Coffee ground vomiting, hematemesis, melena, hematochezia, anemic symptoms
- Past medical history: Liver cirrhosis, use of non-steroidal anti-inflammatory drugs
- Signs: Hypotension, tachycardia, pallor, altered mental status, melena or blood per rectum, decreased urine output
- Bloods: Anemia, raised urea, high urea to creatinine ratio
- Endoscopy: Ulcers, varices, Mallory-Weiss tear, erosive disease, neoplasms, vascular ectasia, and vascular malformations

★ Steps of management:

1 Hemodynamic status and resuscitation [resuscitation is always top priority]

- IV fluid resuscitation [initial assessment].
- Supplemental oxygen.
- Draw blood for hemoglobin and hematocrit, PT, PTT and platelet count
    - Monitor the hemoglobin every 4 to 8 hours until the patient is hemoglobin stable for at least 24 hours.
- Has been shown to significantly *decrease mortality.*

2 Blood transfusion:

- Type and crossmatch adequate blood
- Don't rush into transfusion
- Should be administered to a patient with a hemoglobin level of 70 g/L or less
- Rarely indicated when the level is > 100 g/L
- Almost always indicated when the level is < 60 g/L.
- Target level of 70 to 90 g/L
- The role of transfusion in clinically stable patient with mild GI bleeding remains *controversial*, with uncertainty at which hemoglobin level transfusion should be initiated.
- The restrictive RBCs transfusion had significantly *improved survival and reduced rebreeding.*
- Transfusion as the clinical demands: shock, patient with cardiopulmonary disease.

Patients receiving anticoagulants:

- Correction of coagulopathy is recommended
- Endoscopy should not be delayed for high INR unless the INR is supratherapeutic

3 Risk stratification:

A. Low vs. high risk
B. Early identification
C. Appropriate intervention
D. Minimizes morbidity and mortality

Glasgow- Blatchford Score (GBS)	Rockall Score:
- Patient with score of ≥2: can be safely discharged for outpatient management - if the score < 6 : need transfusion of blood products and urgent inpatient investigation	- Can predict: rebleeding, surgery and mortality - Can't be used to identify patient who are suitable for outpatient endoscopy
GBS vs Rockall	
- GBS is more sensitive in identifying low risk patients suitable for outpatient management - GBS is superior to Rockall score in predicting need for transfusion and intervention - The GBS is as effective as the Rockall score in predicting mortality	

Table 1 | Glasgow–Blatchford score assessment criteria

	Risk factors at presentation	Threshold	Score
Urea	Blood urea nitrogen (mmol/l)	6.5–7.9	2
		8.0–9.9	3
		10.0–24.9	4
		≥25.0	6
CBC	Hemoglobin for men (g/l)	120–130	1
		100–119	3
		<100	6
	Hemoglobin for women (g/l)	100–120	1
		<100	6
Physical	Systolic blood pressure (mmHg)	100–109	1
		90–99	2
		<90	3
	Heart rate (bpm)	>100	1
History	Melena	Present	1
	Syncope	Present	2
	Hepatic disease	Present	2
	Cardiac failure	Present	2

Total score (0–23). Patients with scores >0 are considered to be at high risk. Permission obtained from Elsevier Ltd © Blatchford, O. *et al. Lancet* 356, 1318–1321 (2000).

B Rockall Score

	Variable	Points
Complete Rockall Score	Clinical Rockall Score	
	Age	
	<60 yr	0
	60–79 yr	1
	≥80 yr	2
	Shock	
	Heart rate >100 beats/min	1
	Systolic blood pressure <100 mm Hg	2
	Coexisting illness	
	Ischemic heart disease, congestive heart failure, other major illness	2
	Renal failure, hepatic failure, metastatic cancer	3
	Endoscopic diagnosis	
	No lesion observed, Mallory–Weiss tear	0
	Peptic ulcer, erosive disease, esophagitis	1
	Cancer of upper GI tract	2
	Endoscopic stigmata of recent hemorrhage	
	Clean base ulcer, flat pigmented spot	0
	Blood in upper GI tract, active bleeding, visible vessel, clot	2

History: Age; Shock; Coexisting illness

Physical: Heart rate >100 beats/min; Systolic blood pressure <100 mm Hg

History: Ischemic heart disease, congestive heart failure, other major illness; Renal failure, hepatic failure, metastatic cancer

4 Pre-endoscopic therapy:

Nasogastric tube:

- It is often the initial procedure for determining whether GI bleeding is from upper or lower GI source
- Use the nasogastric tube to empty the stomach to prevent aspiration
- False-negative finding are possible if upper GI bleeding is intermittent or from a lesion in the duodenum
- Useful in predicting high risk lesions
  - Bloody NGT aspirate= high risk lesion

Evaluation of aspirate:

- Bile but no blood : upper GI bleeding is unlikely source is probably distal to ligament of treitz.
- Bright red blood (coffee ground appearance): upper GI bleeding
- Non Bloody aspirate (clear gastric fluid) : upper GI bleeding is unlikely

PPI treatment before endoscopy:

- Reduce requirement for endoscopic therapy
- Decreased the need for intervention
- Has not been shown to affect re-bleeding, surgery or mortality
- Has excellent safety profile
- Has a supportive cost-effectiveness analyses

5 Endoscopic therapy :

Timing of endoscopy:

- Definition of early endoscopy

  Ranges from 2 to 24 hours AFTER INITIAL PRESENTATION

May need to be delayed or deferred:

- Active acute coronary syndromes
- Suspected perforation

*__No__ evidence exists that very early endoscopy (within a few hours of presentation) can improve clinical outcomes.

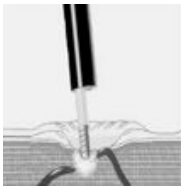
*__No__ significant differences in mortality, need for surgery or transfusion when comparing endoscopy within 6h and at 6 to 24 h.

*Most patient with acute upper GI bleed can be effectively managed by endoscopy *within 24 h.*

- **Types of endoscopic therapy:**

Injection

Thermal



Mechanical

Hemostatic powder spray

6 Post-endoscopy:

- PPIs:
  - Reduce: rebleeding and need for surgery.
  - Has no benefit on overall mortality (improve mortality if patients at highest risk)
  - Intermittent PPI (IV boluses) therapy is comparable to the recommended continuous IV infusion in patients with High risk bleeding ulcers.
  - There is no difference in clinical *outcomes* between oral and intravenous PPI.
  - Patients receiving oral PPI have a shorter hospital stay.

➔ **Compared to H2Ras with or without endoscopic therapy they reduce: rebleeding, surgery but not mortality**

■ Hospitalization:

- It takes 72 hours for most high-risk lesions to become low-risk lesions AFTER endoscopic therapy.
- 60% - 76% of patients who had rebleeding within 30 days AFTER endoscopic hemostasis PLUS high-dose PPI therapy did so within the first 72 hours.

■ Admission to a monitored setting (ICU):

For at least the first 24 hours on the basis of risk or clinical condition:

- Hemodynamic instability
- Increasing age
- Severe comorbidity
- Active bleeding at endoscopy
- Large ulcer size (>2 cm)

■ After discharge:

Patients should be discharged with a prescription for a single daily-dose oral PPI for a duration as dictated by the underlying etiology.

★ Management of continued or recurrent bleeding:

- Percutaneous or trans catheter arterial embolization
- Technical success range from 52% to 98%
- Recurrent bleeding in about 10% to 20%
- Complications include:
  - Bowel ischemia
  - Secondary duodenal stenosis
  - Gastric, hepatic, and splenic infarction

- A second attempt at endoscopic therapy remains the preferred strategy
  - o Angiography:

  Where available, percutaneous embolization can be considered as an alternative to surgery for patients for whom endoscopic therapy has failed.

★ H pylori:

- Patients with bleeding peptic ulcers should be tested for H. pylori
  - Receive eradication therapy if present
  - Confirmation of eradication
- Negative H. pylori diagnostic tests obtained in the acute setting should be repeated

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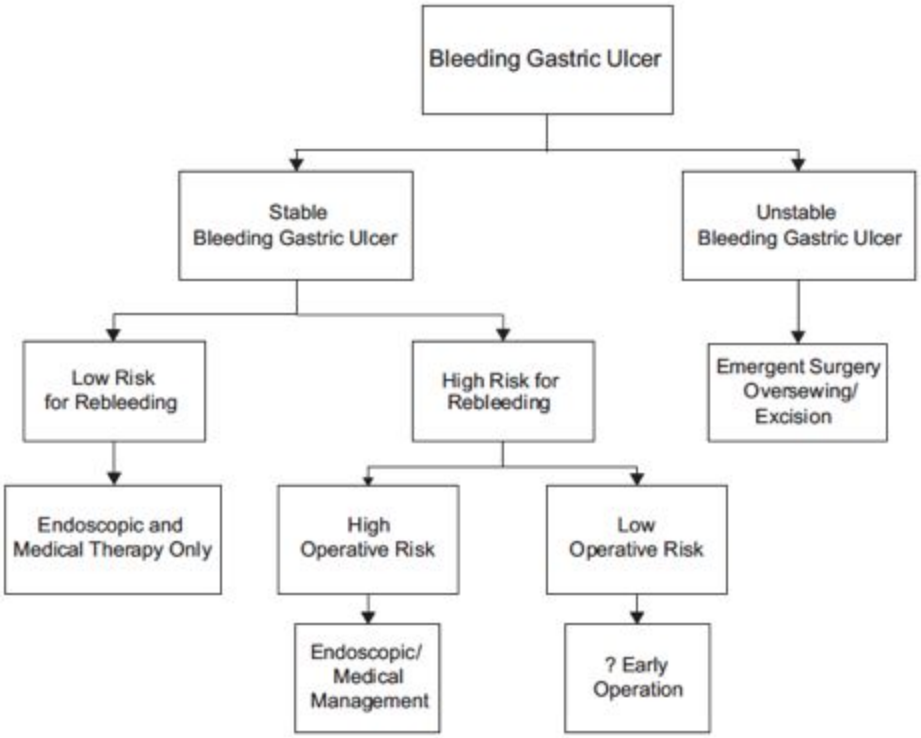
■ When to do surgery:

- Hemodynamically unstable patients who have not responded to IV fluid, transfusion, endoscopic interventions, or correction of coagulopathies.
- Sever initial bleed or recurrence of bleed after endoscopic treatment.
- Continued bleeding for more than 24 hours.
- Visible vessel at base of ulcer (30% to 50% chance of rebleed).
- Ongoing transfusion requirement (five units within first 4 to 6 hours).



★ Cases:

Doctor's case: 73-year-old woman, physically active, presented to the emergency department after falling in her bathroom. When standing up she felt dizzy and fell to the ground but did not lose consciousness. She was transported to the hospital by ambulance. Had been feeling epigastric discomfort that was difficult to describe. It was episodic in nature and mild in intensity. There were no provocative or palliative factors. A few hours prior to her fall she had been feeling lightheaded with some weakness.

In 2008, she developed atrial fibrillation for which she was treated with warfarin, hypertension and benign positional vertigo.

Current medications:

- Aspirin, 81 mg orally once daily
- Valsartan, 80 mg orally once daily
- Vitamin D, 10 000 IU orally once daily
- Warfarin, 7.5 mg orally once daily.

Family history: Both of her parents had gastric ulcers.

On examination O/E:

- She was found to be diaphoretic, consiouse
- Pulse of 110/min and regular
- Blood pressure of 98/68 mm Hg.
- No orthostatic measurements were obtained on presentation.
- Her abdominal examination revealed no abnormalities
- But her rectal examination revealed melena.

Kaplan's case: A 69-year-old woman comes to the ER with multiple red/black stools over the last day. Her past medical history is significant for aortic stenosis. Her pulse is 115 per minute and her BP is 94/62 mm Hg. The physical examination is otherwise normal.

What is the most appropriate next step in the management of this patient?

A. Colonoscopy
B. NGT
C. Upper endoscopy
D. Bolus of normal saline
E. CBC
F. Bolus of 5% dextrose in water
G. Consult gastroenterology
H. Check for orthostasis

Answer: D. The precise etiology of severe GI bleeding is not as important as a fluid resuscitation. There is no point in checking for orthostasis with the person's systolic BP under 100 mm Hg or when there is a tachycardia at rest. Endoscopy should be performed, but it is not as important to do first as fluid resuscitation. When BP is low, normal saline or Ringer lactate are better fluids to give than 5% dextrose in water (D5W). D5W does not stay in the vascular space to raise BP as well as NS.