L18: Gastrointestinal Bleeding

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MEDICINE 433

objectives

Not given :(

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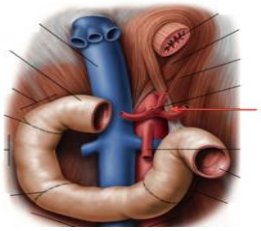
Gastrointestinal Bleeding



The doctor was focusing on UGIB all the time of the lecture

	Upper Gastrointestinal Bleeding	Lower Gastrointestinal Bleeding
Definition	refers to a source of bleeding above the ligament of Treitz *(1) in the duodenum.	is classically defined as bleeding below the ligament of Treitz.
Causes	a. Peptic ulcer *(2) disease (PUD) including duodenal and gastric ulcer b. Variceal bleeding *(3) including esophageal and gastric varices. c. Mucosal erosions including duodenitis, gastritis, esophagitis. d. Malignancy e. Mallory–Weiss tear f. Hemobilia g. Dieulafoy's vascular malformation—submucosal dilated arterial lesions that can cause massive GI bleeding h. Aortoenteric fistulas—after aortic surgery (ask about prior aortic aneurysm/ graft) i. Neoplasm—bleeding is not rapid—usually not an emergency j. Gastric erosions k. oesophagitis	a. Diverticulosis (40% of cases)—most common source of GI bleeding in patients over age 60; usually painless b. Angiodysplasia (40% of cases)—second most common source in patients over age 60 c. IBD (UC, Crohn's disease) d. Colorectal carcinoma e. Colorectal adenomatous polyps f. Ischemic colitis g. g. Hemorrhoids, anal fissures h. Small intestinal bleeding—diagnosed by excluding upper GI and colonic bleeding i. Carcinoma j. Radiation enterities

Note: Past medical history will help you to reach the cause of GI bleeding

Aortoenteric fistula is a rare but lethal cause of GI bleeding. The classic presentation is a patient with a history (sometimes distant) of aortic graft surgery who has a small GI bleed involving the duodenum before massive, fatal hemorrhage hours to weeks later. Perform endoscopy or surgery during this small window of opportunity to prevent death.

(1) the ligament of Treitz anatomically separates the duodenum from the jejunum.
(2) Common with patient on Antiplatelet drug (Aspirin)
(3) Variceal bleeding is common in those with portal hypertension from cirrhosis.

Gastrointestinal Bleeding

Lower gastrointestinal bleeding presents with red blood in the stool, whereas upper gastrointestinal bleeding presents with black stool or melena.

	Upper Gastrointestinal Bleeding	Lower Gastrointestinal Bleeding
Clinical presentation	1-hematemesis if the volume of bleeding is high enough. About 10% of cases of red blood from the rectum can be from an upper gastrointestinal source. This can happen if the volume of bleeding is so high that the blood is rapidly transported to the bowel without the time for it to oxidize and turn black. In upper gastrointestinal bleeding, 2-occult blood–positive brown stool can occur with as little as 5 to 10 mL of blood loss. The same is true of 3-"coffee-ground" emesis. 4-Melena develops when at least 100 mL of blood have been lost.	1-Hematochezia 2- Occult blood in stool 3- fresh rectal bleeding 4- anal pain during defecation
	-Signs of volume depletion (depending on rate and severity of blood loss) **-1st sign of GI bleeding: postural hypotension. (later there may be tachycardia at rest**	
	Symptoms and signs of anemia (e.g., Palpitation, weakness, fatigue, pallor, exertional dyspnea +/- under wight) *in chronic blood lose the presintation will be anemic symptoms	

When a patient presents with GI bleeding: check for pallor, jaundice, muscle wasting (liver cirrhosis)

-Hematemesis : Is vomiting blood; Indicates moderate to severe bleeding that may be ongoing

-"Coffee grounds" emesis: suggests lower rate of Bleeding only 5-10 ml of blood (enough time for vomitus to transform into "coffee grounds")

-Melena: Black, liquid, foul-smelling stool Caused by degradation of hemoglobin by bacteria in the colon; presence of melena indicates that blood has remained in GI tract for several hours Melena suggests upper GI bleeding 90% of the time. Occasionally, the jejunum or ileum is the source.

-Occult blood in stool: Source of bleeding may be anywhere along GI tract. Positive fecal occult blood test with or without iron deficiency anemia in absence of visible bleeding to patient and the physician. Note :Positive occult blood test of stool in patient above 40 is always colon cancer (lower GI)

- Hematochezia: Bright red blood per rectum, This usually represents a lower GI source (typically left colon or rectum). In 5 to 10 % it can be UGI origin it is briskly pace/large volume)

Diagnosis

From doctor notes and team432

High urea+low hemoglobin+melena = UGI bleeding

1- History and symptoms (Age, Nature of bleeding, Associated symptoms (Abdominal pain, Vomiting, change in bowel habit, weight loss, fatigue, dizziness), localizing symptoms, History of prior GIB NSAID/aspirin , clopidogrel and anticoagulants medication use, Liver disease/cirrhosis, Vascular disease Aortic valvular disease, chronic renal failure, Abdominal aortic aneurism repair (aortoenteric fistula is one of causes of upper GI bleeding always ask about prior aortic aneurysm or graft), Radiation exposure, Family history of GIB, Other co-morbidities)

2- **Examination:** Vital signs consciousness level, assess A,B,C (airways, breathing, circulation), orthostatics*, Abdominal tenderness, Skin and oral examination, Stigmata of liver disease, Rectal examination, Objective description of stool/blood, Assess for mass, hemorrhoids, No need for guaiac test, Hepatosplenomegaly – ascites – jaundice

3- Lab: A. Crossmatch (to know patient's blood type if he need transfusion) very important.

B.CBC (Show you baseline hemoglobin and anemia or any blood abnormality)

C. Coagulation profile (platelet count, PT, PTT, INR)

D.Liver profile.

E. Renal profile (Check urea, because here urea important while criatinin we don't need it unless if we look for AKI because urea increases due to digestion of GI blood)

4- compare the diagnosis (UGI or LGI) we know from history and lab.

5- Endoscope is diagnostic for GI bleeding and underling cause.(colonoscope or gastorcope according to the case)

6- Assess degree of hypovolemic shock

	Class I	Class II	Class III	Class IV
Blood loss (mL)	750	750-1500	1500-2000	>2000
Blood volume loss (%)	< 15%	15-30%	30-40%	>40%
Heart rate	<100	>100	>120	>140
SBP Supine blood pressure	No change	Orthostatic change	Reduced	Very low, supine
Urine output (mL/hr)	>30	20-30	10-20	<10
Mental status	Alert	Anxious	Aggressive/ drowsy	Confused/ unconscious

*Orthostasis is defined as a >10-point rise in pulse when the patient goes from the supine to the standing or sitting position. It is also defined as a >20-point drop in systolic blood pressure on a change in position. There should be at least a minute in between the position change and the measurement of the pulse and blood pressure to allow time for the normal autonomic discharge to accommodate to the position change. Orthostasis is when the rise in pulse or drop in blood pressure persists after the position has been changed. It indicates a 15 to 20% blood loss.

Diagnosis

From Kaplan

1-Endoscopy is the most accurate test to determine the etiology of both upper and lower gastrointestinal bleeding. Barium studies are always less accurate. You also cannot biopsy unless endoscopy is performed.

Occasionally, in lower gastrointestinal bleeding, endoscopy will not reveal the etiology even when there is active bleeding. 2-A nuclear bleeding scan can detect low volume bleeds 0.1–0.5 mL/min. Red cells from the patient are tagged with technetium and reinjected back into the patient. These tagged cells are then detected to determine the site of bleeding.

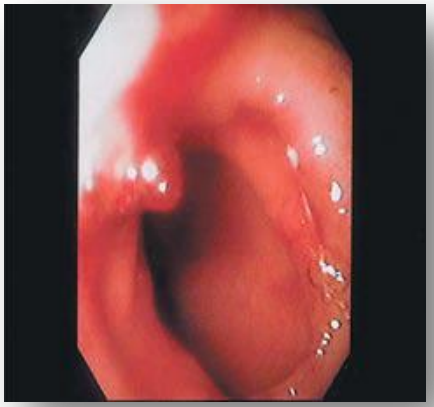
3-Angiography is rarely used in the evaluation of lower gastrointestinal bleeding because it needs a higher volume of blood loss >0.5 mL/min compared with the tagged nuclear scan. Angiography, however, is useful in extremely high-volume bleeding in which so much blood is coming out that endoscopy cannot see the source. It may then be used prior to either embolization of the site of the bleeding or hemicolectomy. Angiography can also help guide the occasional use of a local vasopressin injection in the control of severe lower gastrointestinal bleeding.

Despite all of these methods, an etiology of gastrointestinal bleeding cannot be determined in about 5% of patients. This is often because the upper endoscope only goes as far as the ligament of Treitz, and the lower endoscope only reaches just past the ileocecal valve. When both of these modalities are unrevealing, the most likely source of the bleeding is in the small bowel. The small bowel is very difficult to visualize, and barium studies are inaccurate. The newest modality to visualize the small bowel is 4-capsule endoscopy, in which a patient swallows a capsule with an electronic camera that can transmit thousands of images to a receiver near the patient. This will allow anatomic localization of the lesion.

Virtual endoscopy is a CT scan used to try to detect cancer without the need of endoscopy.
Virtual endoscopy lacks both sensitivity and specificity and should not be done.

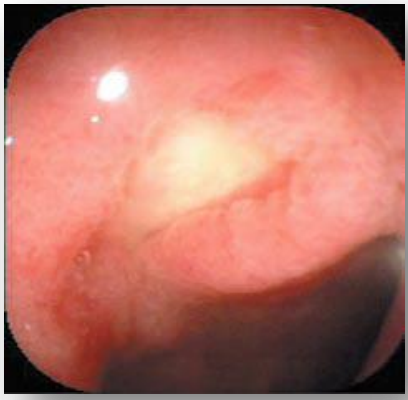
Endoscope

Spurting Blood (endoscopic finding of gastric ulcer also called active artirial bleeding)



Non-bleeding Visible Vessel protroting from ulcer (recent bleed but no active bleed)

Flat, Pigmented Spot (indicate recent bleed)



Clean Base (recent bleed)

We use Endoscope for diagnosis and treatment it is a Cornerstone diagnostic test

Treatment

From step up

*Remember, it's the treatment, not the etiology, that should be considered first when a patient is experiencing gastrointestinal bleeding.

*In >80% of cases, gastrointestinal bleeding will resolve spontaneously with supportive management, irrespective of etiology.

1-If patient is hemodynamically unstable, **resuscitation** is always top priority.
Remember the ABCs. Once the patient is stabilized, obtain a diagnosis.

a. Supplemental oxygen

b. Place two large-bore IV lines. Give IV fluids or blood if patient is volume depleted. "First, treat with crystalloids"

c. Draw blood for hemoglobin and hematocrit, PT, PTT, and platelet count.
Monitor hemoglobin every 4 to 8 hours until the patient is hemoglobin stable for at least 24 hours.

d. **Type and crossmatch adequate blood (PRBCs).** Transfuse as the clinical condition demands (e.g., shock, patients with cardiopulmonary disease).

2. Treatment depends on the cause/source of the bleed.

Upper GI bleeding	Lower GI bleeding
• EGD with coagulation of the bleeding vessel. If bleeding continues, repeat endoscopic therapy or proceed with surgical intervention (ligation of bleeding vessel).	•endoscopic thermal ablation (trearment of choice) • Colonoscopy—polyp excision, injection, laser, cautery • Arteriographic vasoconstrictor infusion • Surgical resection of involved area—last resort

3. Indications for surgery (depend on the site and diagnosis of the lesion)

a. Hemodynamically unstable patients who have not responded to IV fluid, transfusion, endoscopic intervention, or correction of coagulopathies
b. Severe initial bleed or recurrence of bleed after endoscopic treatment
c. Continued bleeding for more than 24 hours
d. Visible vessel at base of ulcer (30% to 50% chance of rebleed)
e. Ongoing transfusion requirement (5 units within first 4 to 6 hours)
f. Rebleeding occurs ones in elderly or twice in younger, fitter patient.

Blood Transfusion

From doctor slides and notes

*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
*Based on underlying condition hemodynamic status, and markers of tissue hypoxia
*Based on the patient's risk for complications from inadequate oxygenation
*if blood pressure remains low and patient is actively bleeding

*Indications of blood transfusion:
1-less than 7 of hemoglobin without comorbidities.
2-less than 10 of hemoglobin with comorbidities.
3-unresponsive hypovolemic shock.

*Restricted protocol strategy of blood transfusion should be considered :
If there is no comorbidities the target of hemoglobin we give is 7-9 to decrease the risk of blood transfusion problems. But not if you have comorbidities which need aggressive blood transfusion (ischemic heart disease) because cardiac muscles need O2 carrier so, high hemoglobin will needed to carry O2 to myocardial muscles.

https://youtu.be/59uO-8UVC2A

Endoscopic management

Timing and need for early 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

A VERY low Blatchford score

- Can identify very low-risk patients
  - Unlikely to have high-risk stigmata
  - Unlikely benefit from endoscopic therapy
  - Can be safely managed as outpatients without the need for early endoscopy

HOWEVER, this remains controversial

Early endoscopy

Reductions in length of hospital stay in patients at low risk, high risk, and combined patient groups

Decreased need for surgery in elderly patients

Predictors of active bleeding:

- Fresh blood in the NGT
- Hemodynamic instability
- Hemoglobin level < 80 g/L
- Leukocyte count >12 10^9 cells/L
- They need very early endoscopy (<12 hours)

Types of treating endoscopy:
1- thermal
2 –mechanical
3 – combination

Endoscopy in less than 12 hours if ongoing bleeding (stable but w/ low Hb and tachycardia)

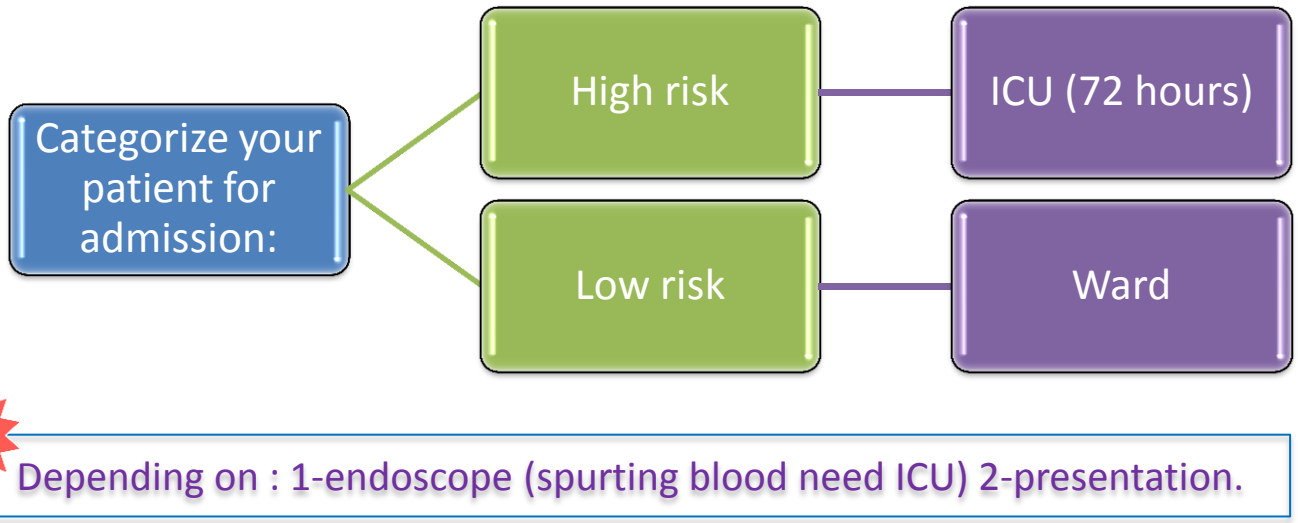
Pharmacological therapy

From doctor slides and notes

1-Non-variseal bleeding (ulcer bleeding): we use just Antacid **proton pump inhibitors (PPIs)** reduce the production of acid by blocking the enzyme in the wall of the stomach that produces acid. Acid is necessary for the formation of most ulcers in the esophagus, stomach, and duodenum, and the reduction of acid with PPIs prevents ulcers and allows any ulcers that exist in the esophagus, stomach, and duodenum to heal.(stabilize thrombus formation.)

2- Variseal bleeding (liver cirrhosis): any medication decrease portal hypertension (Somatostatin Analogs, Vasopressin Analogs, octreotide Analogs) The main advantages to using vasoactive agents include the ability of these drugs to treat variceal bleeding in the emergency department, lower portal pressure, and offer the endoscopist a clearer view of varices because of less active bleeding. + (IV antibiotic) to prevent spontaneous bacterial peritonitis

*If my patient have bleeding by rectum (fresh) I don't give PPIs.
*If my patient have liver cirrhosis I don't give PPIs because it will increase bacterial peritonitis



Ask for help:

1-Gastroentrologist (endoscope)
2- interventional radiologist (if Gastroentrologist fail to stop bleeding we need radiologist to embolisation the site of bleeding)
3-surgen (the importance one so, he should be stand by)

Summary

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

Initial steps in any patient with GI bleeding

- Vital signs: Decreased BP, tachycardia, or postural changes in BP or HR are signs of significant hemorrhage. However, vital signs may also be normal when significant hemorrhage is present.
- Resuscitation is the first step (e.g., IV fluids, transfusion).
- Perform rectal examination (hemoccult test).

Dr's case

86 year-old woman, physically active. She presented to the emergency department after falling in her bathroom. Had been feeling epigastric discomfort. 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. When standing up she felt dizzy and fell to the ground but did not lose consciousness. She was transported to the hospital by ambulance. In 2008, she developed atrial fibrillation for which she was treated with warfarin. She is hypertensive and has osteoporosis. Her current medications are Aspirin, 81 mg orally once daily. Extended-release Diltiazem, 120mg orally once daily, Voltaren, 50mg orally PRN, Vitamin D, 10 000 IU orally once daily, Warfarin, 7.5 mg orally once daily. She has family Hx of both of her parents had gastric ulcers. On examination, she was found to be diaphoretic. Her Pulse of 103/min which is regular. Blood pressure of 108/68 mm Hg. No orthostatic measurements were obtained on presentation. Her abdominal examination revealed no abnormalities but her rectal examination revealed melena. 2 intravenous accesses established and she received crystalloids and was observed in a monitored setting.

Laboratory investigation:

- Hemoglobin level 7.6 g/dL (compared with 13.7 g/dL a month prior to her presentation)
- White blood cell count 9000/µL
- Platelet count of 151,103/µL
- INR was 3
- Urea level 21 mmol/L (High)
- Electrolyte, creatinine, and liver enzyme levels were otherwise normal

Kaplan's case

70 years old man with Hx of aortic stenosis come to ER with red and black stool over last 2 days. His BP 94/60 and p 105. How do you manage him?

1) First thing fluid resuscitation with NS / RL

2) CBC : (for HCT & platelet)

Low HCT <30 → PRBC unites transfusion if pt is elderly but you pt no need they will create their RBC on their own.

Platelet target should be above 50000

3) Measure PT (if it was elevated) → give pt Fresh frozen blood it works right away.

Note: in that case old pt with Hx of heart diseases is much more vulnerable in reducing oxygen delivery (can't handle it) so be aware in that case we do not care about etiology of GI bleeding , you have forward manage pt acutely.

MCQs

Q1: A 73-year-old man presents with several episodes of hematemesis. Examination shows sign of orthostatic hypotension and melena. What is the first priority in caring for this patient?

A. Resuscitation with adequate IV access and appropriate fluid and blood product fusion.
B. Intravenous infusion of H2-receptor antagonists to stop the bleeding.
C. Urgent upper panendoscopy.
D. Urgent surgical consultation.

Q2: After initial stabilization and resuscitation of the patient, each of the following options shou be considered in the management of UGI bleeding except:

A. Determine the source of bleeding
B. Treat the underlying abnormality
C. Prevent rebleeding
D. Emergency surgery.

Q3: The most frequent cause of UGI bleeding is:

A. Esophageal varices
B. Peptic ulcer disease
C. Gastritis
D. Mallory Weiss tear

MCQs

Q4: Which one of the following most common to develop Mallory-Weiss syndrome?

A. Children
B. Pregnant women
C. Peptic Ulcer patients
D. NSAIDs abusers

Q5: Which of the following combinations of stigmata of ulcer Hemorrhage should be treated with endoscopic Hemostasis?*

A. Non-bleeding visible vessel and black slough
B. Pulsatile bleeding and white based ulcer
C. Oozing from an ulcer and a flat red spot
D. Non-bleeding visible vessel and pulsatile bleeding
E. Black slough and white based ulcer

*Explanation: The endoscopic finding of active hemorrhage from an ulcer, either pulsatile or spurting bleeding is an indication for treatment. Finding a visible vessel, also called a sentinel clot or pigmented protuberance, is another indication for endoscopic coagulation since there is a 50% chance of rebleeding. Flat red spots and black slough are minor stigmata of hemorrhage and have about a 7% risk of rebleeding. Patients with a clean ulcer base have a 3% or less chance of rebleeding.

Answers : 1-A 2-D 3-B 4-B 5- BD

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Medicine is a science of uncertainty and an art of probability

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