MEDICINE

432 Team

24

Gastrointestinal bleeding

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COLOR GUIDE: • Females' Notes • Males' Notes • Important • Additional

Objectives

Not given ☹

Note: we were not supplied by Dr.'s slides
So our resources are: Kaplan videos, step up and Davidson

Definitions

- Upper GI bleed – arising from the esophagus, stomach, or proximal duodenum (source of bleeding above ligament of treitz in the duodenum)
- Lower GI bleed – (source of bleeding below the ligament of treitz)

a) Mid-intestinal bleed – arising from distal duodenum to ileocecal valve

b) Lower intestinal bleed – arising from colon/rectum

Types of bleeding

Hematemesis	Is vomiting blood; suggests upper GI bleeding (bleeding proximal to ligament of Treitz). Indicates moderate to severe bleeding that may be ongoing.
"Coffee grounds" emesis	suggests upper GI bleeding as well as a 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.
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)
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)

Common Causes of Upper Gastrointestinal Bleeding:

Table 1
Frequency of common causes of upper gastrointestinal bleeding

Diagnosis	Frequency (Percentage)
Peptic ulcer disease, including duodenal and gastric ulcer	28–59
Variceal bleeding	4–14
Mucosal erosive disease, including esophagitis, gastritis, and duodenitis	1–31
Mallory-Weiss tear	4–8
Malignancy	2–4
Arteriovenous malformation	3
Gastric antral vascular ectasia	~1
Dieulafoy lesion	~1

Causes of lower GI bleeding: *(Wasn't mentioned by the doctor & not in the slides)*

- Diverticulosis (40% of cases) - most common source of GI bleeding in patients over age 60; usually painless
- Angiodysplasia (40% of cases) - second most common source in patients over age 60
- IBD (UC, Crohn's disease)
- Colorectal carcinoma e.g., Colorectal adenomatous polyps, Ischemic colitis
- Hemorrhoids, anal fissures
- Small intestinal bleeding

Note(s):

- *Lower GI bleed or positive occult blood test of stool in patients over 40 is colon cancer until proven otherwise.*
- *Bleeding from small bowel (lower GI bleeding) may manifest as melena or hematochezia and it diagnosed by excluding upper GI colonic bleeding and colonic.*
- *Hematemesis and melena are the most common presentation of acute upper GI bleed. Occasionally, briskly upper GI bleed presents as hematochezia.*
- *Mallory- Weiss tear (upper GI Bleeding): Classical in pregnancy and binge drinking in alcoholics because of repetitive vomiting which cause tearing of mucosa in the gastro esophageal junction, it usually stops spontaneously and upper endoscopy is diagnostic.*
- *The most common cause of upper GI bleeding is peptic ulcer followed by variceal bleeding.*

History	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
Examination	Vital signs, orthostatics Abdominal tenderness Skin, 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 *(Davidson)*

Initial Assessment

Initial steps in any patient with GI bleeding:

- Vital signs; hypotension, tachycardia, postural changes in BP or HR are signs of significant hemorrhage.
- Resuscitation is the first step (eg, I.V fluid, transfusion)
- Always remember to assess A,B,C *(airways, breathing, circulation)*
- 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

Approach to patient with GI bleeding

1. IV Fluid Resuscitation :
2. Blood Transfusion:-
   - Should be administered when hemoglobin level is 70 g/L or less. *(normal range Male: 138 - 172 g/L Female: 120 - 156 g/L)*
   - 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. *(Transfusing blood until HB level is < 90 is found to increase mortality in these situations) *Kaplan GI bleeding video.*
   - Based on underlying condition hemodynamic status, and markers of tissue hypoxia
   - Based on the patient's risk for complications from inadequate oxygenation

Management of acute GI bleeding from Davidson: the principles of emergency management of nonvariceal (without oesophageal varices) bleeding:

1. Intravenous access:
2. Initial clinical assessment

• Define circulatory status. Severe bleeding causes tachycardia, hypotension and oliguria. The patient is cold and sweating, and may be agitated.

• Seek evidence of liver disease. Jaundice, cutaneous stigmata, hepatosplenomegaly and ascites may be present in decompensated cirrhosis.

• Identify comorbidity. The presence of cardiorespiratory, cerebrovascular or renal disease is important, both because these may be worsened by acute bleeding and because they increase the hazards of endoscopy and surgical operations. These factors can be combined using the Blatchford score (p. 7) to assess the prognosis.

3. Basic investigations

• Full blood count. Chronic or subacute bleeding leads to anaemia, but the haemoglobin concentration may be normal after sudden, major bleeding until haemodilution occurs.

• Urea and electrolytes. Evidence of renal failure. Elevated blood urea with normal creatinine implies severe bleeding.

• Liver function tests. Evidence of chronic liver disease.

• Prothrombin time. Check with clinical suggestion of liver disease or in anticoagulated patients.

• Cross-matching. At least 2 units of blood should be cross-matched.

4. Resuscitation Intravenous crystalloid fluids should be given to raise the blood pressure.

Comorbidities should be managed as appropriate. Patients with suspected chronic liver disease should receive broad-spectrum antibiotics. Central venous pressure (CVP) monitoring may be useful in severe bleeding, particularly in patients with cardiac disease, to assist in defining the volume of fluid replacement and in identifying rebleeding.

5. Oxygen: This should be given to all patients in shock.

6. Endoscopy: this should be carried out after adequate resuscitation, ideally within 24 hours, and will yield a diagnosis in 80% of cases. Patients who are found to have major endoscopic stigmata of recent haemorrhage can be treated endoscopically using a thermal or mechanical modality, combined with intravenous proton pump inhibitor (PPI) therapy, prevent rebleeding, thus avoiding the need for surgery. Patients found to have bled from varices should be treated by band ligation.

Case from Kaplan

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.

What if the patient is receiving anticoagulants?

- Correction of coagulopathy is recommended
- Endoscopy should not be delayed for a high INR *(international normalized ratio)* unless the INR is supra-therapeutic.

Note(s):

- *Lower GI bleed or positive occult blood test of stool in patients over 40 is colon cancer until proven otherwise.*
- *If pt has coagulopathy and you haven't correct it, they are going to continue to bleed no matter how much you scope them!*
- *So first thing to do is to correct coagulopathy!*

Pre-endoscopic pharmacological therapy: PPIs

- HAS NOT been shown to reduce rebleeding, surgery, or mortality
- HAS decreased the need for endoscopy intervention
- HAS a supportive cost-effectiveness analyses
- HAS an excellent safety profile
- This suggest that these agents may be useful.
- May be even more beneficial in situations in which early endoscopy may be delayed or when available endoscopic expertise may be suboptimal

Endoscopic management

Upper endoscopy: Most accurate diagnostic test in evaluation of upper GI bleeding

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

Notes:

Endoscopy is both diagnostic and potentially therapeutic (coagulate bleeding vessels)

Most patients with upper GI sources should have upper endoscopy within 24 hours.

Blatchford score: Risk scoring systems have been developed to stratify risk of needing endoscopic therapy or a poor outcome; it may be used before endoscopy to predict the need for intervention to treat bleeding. Low scores (2 or less) are associated with a very low risk of adverse outcome - *Davidson*

22.16 Modified Blatchford score: risk stratification in acute upper GI bleeding

Admission risk marker	Score component value
Blood urea	
≥ 25 mmol/L (≥ 70 mg/dL)	6
10–25 mmol/L (28–70 mg/dL)	4
8–10 mmol/L (22.4–28 mg/dL)	3
6·5–8 mmol/L (18.2–22.4 mg/dL)	2
< 6.5 mmol/L (18.2 mg/dL)	0
Haemoglobin for men	
< 100 g/L (10 g/dL)	6
100–119 g/L (10–11.9 g/dL)	3
120–129 g/L (12–12.9 g/dL)	1
≥ 130 g/L (13 g/dL)	0
Haemoglobin for women	
< 100 g/L (10 g/dL)	6
100–119 g/L (10–11.9 g/dL)	1
≥ 120 g/L (12 g/dL)	0
Systolic blood pressure	
< 90 mmHg	3
90–99 mmHg	2
100–109 mmHg	1
> 109 mmHg	0
Other markers	
Presentation with syncope	2
Hepatic disease	2
Cardiac failure	2
Pulse ≥ 100 beats/min	1
Presentation with melaena	1
None of the above	0

When is Endoscopic Therapy Required?

- ~80% bleeds spontaneously stops!
- Endoscopic stigmata of recent hemorrhage

Stigmata	Continued/rebleeding rate
Active bleeding	**55-90%**
Nonbleeding visible vessel	**40-50%**
Adherent clot	Variable, depending on underlying lesion: 0-35%
Flat pigmented spot	7-10%
Clean base	< 5%

Pharmacological therapy

- Proton-pump inhibitor:

Compared to placebo or H2RAs with or WITHOUT endoscopic therapy PPIs reduced : **• Rebleeding** **• Surgery** **• NOT mortality**	**Compared to placebo or H2RAs WITH endoscopic therapy High dose PPIs reduced:** **• Rebleeding** **• Surgery** **• Mortality**

(PPI should be given pre endoscopy as it decrease the need for surgical intervention but not mortality But it should be given post endoscopy therapy for 3 day as it decrease rebleeding, surgery and mortality)

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.
- *Percutaneous embolization (Angiography)* 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

Helicobacter pylori testing should be performed in the acute setting.

H.Pylori *negative* diagnostic tests obtained in the acute setting (during bleeding) should be repeated, because blood is alkaline, & any alkaline fluid can't pick H.pylori.

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.*

SUMMARY

1. **Approach to patient with GI bleeding :**

   1- IV fluid resuscitation : Crystilliods. (Resuscitation should be initiated prior to any diagnostic procedure)

   2- Blood transfusion: target hemoglobin level from 70-90g/L (NOT more)

   3- In patients on anticoagulants, correct coagulopathy.

   4- Pre-endoscopic medications: PPIs, may be beneficial in case you have to delay endoscopy. However, it DOESN'T effect rebleeding, surgery, or mortality.

   5- Endoscopic management: early = 2-24 hrs (↓length of hospitalization, ↓need for surgery in ELDERLY), it might be delayed in case of perforation or active ACS.

   6- Pts with predictors of active bleeding need VERY early endoscopy = less than 12 hrs.

   7- Pharmacological therapy: PPIs

   8- Pts are discharged with prescription of PPIs

2. **Recurrent Bleeding:** 2nd attempt endoscopic therapy, if fail percutaneous (Angiographic) emobilization

Questions

1) 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

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.

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

a. One Nasogastric tube placement and gastric lavage.
b. **Resuscitation with adequate IV access and appropriate fluid and blood product fusion.**
c. Intravenous infusion of H2-receptor antagonists to stop the bleeding.
d. Urgent upper panendoscopy.
e. Urgent surgical consultation.

432 Medicine Team Leaders

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Answers:

1st Questions: D

2nd Questions: B