Upper Gastrointestinal Bleeding

December 4, 2018 & December 11, 2018
Sonia Lin
Roadmap

- Evaluation of acute GIB
- Causes of upper GI bleeding
- Initial management of upper GI bleed
- Case 1
- Case 2
- Questions!
Evaluation
Evaluation of Acute GIB

Severity
- Hematemesis
- Comorbidities
- Hemodynamic instability
- Hgb < 8 g/dL

Upper or lower?
- Melena
- NG lavage with blood or coffee grounds
- BUN:Cr > 30
- Absence of blood clots in the stool
Causes
Causes of UGIB

- Peptic ulcers
- Esophagitis
- Esophageal varices
- Mallory Weiss tear
- Neoplasm
- Vascular lesions
- Gastric erosions
Initial Management
Initial Management

Assess severity of bleed
• Tachycardia
• Hypotension
• Orthostasis
• Age > 60 yo
• Coexisting conditions
• Hemoglobin?

Initial therapy
• **Volume resuscitate**
• Transfuse to Hgb > 7 g/dL
• PPI therapy
  ▫ Did NOT significantly reduce risks of further bleeding
  ▫ DECREASE frequency of high-risk endoscopic findings and need for endoscopic therapy
• FFP?
  ▫ If INR > 1.5 or on anticoagulation
• Erythromycin?
• NG tube?

POOR INITIAL INDICATOR OF SEVERITY

Blatchford Score

Predicts need for clinical intervention

0 = low risk of complications
• Probably don’t need admission

> 6 = likely need intervention

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Score Value</th>
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<tbody>
<tr>
<td>Urea (mg/dL)</td>
<td></td>
</tr>
<tr>
<td>≥ 6.5 to &lt; 8.0</td>
<td>2</td>
</tr>
<tr>
<td>≥ 8.0 to &lt; 10.0</td>
<td>3</td>
</tr>
<tr>
<td>≥ 10.0 to &lt; 25.0</td>
<td>4</td>
</tr>
<tr>
<td>≥ 25.0</td>
<td>6</td>
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<tr>
<td>Hemoglobin (g/dL) – Men</td>
<td></td>
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<tr>
<td>≥ 12.0 to &lt; 13.0</td>
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</tr>
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<tr>
<td>Systolic BP (mmHg)</td>
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<tr>
<td>100 – 109</td>
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Timing of Endoscopy

Urgent endoscopy
- Within 12 hours
- If suspect variceal GIB

Non-urgent endoscopy
- Within 24 hours

Outpatient management
- BUN < 18.2 mg/dL
- Normal Hgb
- SBP > 109 mm Hg
- HR < 100/min
- NO melena, syncope, liver disease, cardiac failure

AFTER
- Hemodynamic stability
- Appropriately transfused
Case 1
Case 1

A 37 yo male with a history of chronic low back pain comes to the ER because of nausea, vomiting, and black, tarry stools for the past day. He denies any abdominal pain. He drinks only occasionally on the weekends, and he admits to taking 7-8 OTC ibuprofen every day for his back pain.

On admission, his supine pulse and blood pressure are 104 bpm and 102/62 mm Hg. He has hyperactive bowel sounds, his abdomen is nontender, and his rectal exam reveals black, tarry, Guaiac-positive stool.
What are your initial steps in management?

- IV access – 2 large bore peripheral IVs
- Labs – CBC, CMP, PT/INR
- Aggressive resuscitation with IVF if orthostatic
- PPI bolus + infusion
Case 1

An NG tube returns non-bloody bilious fluid. The hemoglobin comes back at 10.5 g/dL.

Would you characterize this patient as having a “low-risk” upper GI bleed?
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Case 1

By the following morning, the patient’s hemoglobin level has dropped to 8.5 g/dL, although he is no longer having any melena. His heart rate is 90 bpm and his BP is 115/78 mmHg. His only complaint is hunger from being NPO.

On EGD, the patient is found to have a nonbleeding visible vessel at the base of an ulcer and electrocoagulation is applied.

How long does he need to be monitored in the hospital?
Endoscopy Findings

Endoscopy Findings

Courtesy of Dr. Nima Motamedi and Dr. Brian Lee
Endoscopic Interventions

For high risk ulcers

- Injection
  - Epinephrine
  - Alcohol
- Thermal devices
  - Bipolar electrocoagulation probes
  - Heater probes
- Clips

* Consider in vascular ectasias, Dieulafoy’s lesions, neoplasms, actively bleeding Mallory-Weiss tears
Case 1

Is there any utility to continuing acid suppression therapy after endoscopy while the patient is still in the hospital?

If so, how much?
High-risk endoscopic findings
→ IV PPI bolus (80 mg) + continuous PPI (8 mg/hr) x 72hrs

Intermittent IV/PO PPI vs continuous IV PPI?
• Noninferior!
• Dosing unknown
  ▫ PO/IV 80 mg bolus + 40 – 80 mg BID x72hr

Repeat Endoscopy (Second Look)

Routinely, not recommended in all patients, but **recommended** if:
- Rebleeding
- Incomplete initial examination

**Consider** in gastric ulcers s/p 8-12 weeks of PPI therapy if:
- Persistent symptoms after therapy
- Ulcers have appearance concerning for underlying malignancy
- Visualization of the stomach was incomplete
- Biopsies were not initially taken
Case 1

What are major risk factors for bleeding peptic ulcers?

- *H. pylori* infection
- NSAIDs
- Physiologic stress
- Excess gastric acid

The patient has a positive serology for *H. pylori*.

How is *H. pylori* diagnosed? What is the recommended treatment for *H. pylori*? For how long should this patient be treated?
# H. Pylori - Diagnosis

<table>
<thead>
<tr>
<th>Test</th>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Non-endoscopic</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Antibody testing</td>
<td>• √ NPV</td>
<td>• Indirect evidence of infection (+ &gt; 1 yr)</td>
</tr>
<tr>
<td>Urea breath test</td>
<td>• Active infection</td>
<td>• ? availability</td>
</tr>
<tr>
<td>Fecal antigen</td>
<td>• Direct evidence</td>
<td>• ↓ specific in UGIB</td>
</tr>
<tr>
<td>Histology</td>
<td>• Direct evidence</td>
<td>• ↓ sensitive when on anti-secretory</td>
</tr>
<tr>
<td><strong>Endoscopic</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rapid urease</td>
<td>• Rapid</td>
<td>• ↓ sensitive when on anti-secretory</td>
</tr>
<tr>
<td>Culture</td>
<td>• √ specificity</td>
<td>• Difficult</td>
</tr>
<tr>
<td>PCR</td>
<td>• √ sensitivity &amp; specificity</td>
<td>• Not standardized</td>
</tr>
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</table>

**H. Pylori - Treatment**

Triple therapy x14 days
- Clarithromycin + amoxicillin/metronidazole + PPI
- 70-80% eradication rate

Quadruple therapy x10-14 days
- Tetracycline + metronidazole + PPI + bismuth
- 90% eradication rate

Concomitant therapy x10-14 days
- Clarithromycin + amoxicillin + metronidazole + PPI
- 90% eradication rate

Case 1

How effective is treatment of *H. pylori* for prevention of ulcer recurrence?
H. Pylori - Ulcer Prevention

Recurrence rates at 2 years:

<table>
<thead>
<tr>
<th></th>
<th>PPI only</th>
<th>PPI + Therapy</th>
<th>ARR</th>
<th>NNT</th>
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</thead>
<tbody>
<tr>
<td>Duodenal ulcer</td>
<td>95%</td>
<td>12%</td>
<td>73%</td>
<td>2</td>
</tr>
<tr>
<td>Gastric ulcer</td>
<td>74%</td>
<td>13%</td>
<td>61%</td>
<td>2</td>
</tr>
</tbody>
</table>

- Without antibiotic treatment, majority of patients with PUD experience a recurrence
- Ulcer recurrence in the PPI + therapy group was 2/2 failure to eradicate *H. pylori* or the use of NSAIDs

Case 2
Case 2

A 48 yo homeless man with a history of alcoholic and hepatitis C cirrhosis is “found down” in the street. His vitals are BP = 89/40 mmHg, HR = 123 bpm, and T = 99.4F. On exam, he is lethargic, confused, and mildly jaundiced. He has spider angiomas on his chest, and a moderately distended abdomen with shifting dullness and a fluid wave. His rectal exam reveals bright red blood. On labs, his hemoglobin = 7.5 g/dL, WBC = 11,500/μL, platelets = 72,000/μL, BUN = 43 mg/dL, creatinine = 1.6 mg/dL, bilirubin = 3.1 mg/dL, and INR = 2.5.

Does this patient have an upper or lower GI bleed? Is there an additional test you can perform to help you decide?
Case 2

Would you give this patient a blood transfusion?

If so, what is your goal hemoglobin?
## Transfusion Strategies

<table>
<thead>
<tr>
<th></th>
<th>Restrictive</th>
<th>Liberal</th>
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<tbody>
<tr>
<td>Hemoglobin</td>
<td>&lt; 7 g/dL</td>
<td>&lt; 9 g/dL</td>
</tr>
<tr>
<td>Goal</td>
<td>7-9 g/dL</td>
<td>9-11 g/dL</td>
</tr>
<tr>
<td>Units transfused</td>
<td>1.5 units</td>
<td>3.7 units</td>
</tr>
<tr>
<td>45-day mortality</td>
<td>5%</td>
<td>9%</td>
</tr>
<tr>
<td>Further bleeding</td>
<td>10%</td>
<td>16%</td>
</tr>
<tr>
<td>Length of stay</td>
<td>9.6</td>
<td>11.5</td>
</tr>
</tbody>
</table>

- Risk of death lower with the restrictive strategy in all subgroups, except in Child’s Class C cirrhosis (similar rates)
- Decrease in further bleeding in the restrictive strategy + lower length of stay

Case 2

In addition to requesting an urgent GI consult, what treatments should you initiate on this patient?

- IVF
- Octreotide bolus & infusion
- IV PPI bolus & infusion
- IV antibiotics
- FFP(+-)
Octreotide

2008 Cochrane review
• Somatostatin analogues did not reduce mortality

2012 meta-analysis
• Use of vasoactive agents in acute variceal hemorrhage is associated with lower 7-day all-cause mortality and lower transfusion requirements

Octreotide IV bolus (50 mg) → continuous octreotide (5 mg/hr) x3-5 days

Proton Pump Inhibitor

No strong evidence for acid suppression

Promotes hemostasis in patients with lesions other than ulcers

- Neutralization of gastric acid leads to stabilization of blood clots

May help with banding ulcer healing


IV antibiotics

Up to 50% of patients with cirrhosis & GI bleed develop infections within 1 week

2002 Cochrane Review
- ↓ number of deaths
- ↓ rate of bacterial infections

2011 Cochrane Review
- ↓ all-cause mortality
- ↓ bacterial infection mortality
- ↓ rebleeding events
- ↓ hospitalization lengths


Fresh Frozen Plasma?

No clear benefit!

• INR is not a reliable indicator of coagulation status in cirrhosis

no recommendation regarding platelet transfusion

PLT > 30


Case 2

The patient is admitted to the ICU and intubated for airway control. The gastroenterologist performs emergent endoscopy and finds 3-4+ esophageal varices with red wales and portal hypertensive gastropathy (PHG). He is no longer actively bleeding.

What is appropriate endoscopic therapy for this patients?
Endoscopy Findings

Courtesy of Dr. Nima Motamedi and Dr. Brian Lee
Endoscopic Interventions

For variceal bleedings

- Band ligation
  - More effective
  - Safer
- Sclerotherapy

* Endoscopic therapy is not effective for portal hypertensive gastropathy
Case 2

What are the patient’s chances of having spontaneous bacterial peritonitis (SBP) and should he receive prophylaxis?
Spontaneous Bacterial Peritonitis

2002 Cochrane Review
- 20% chance of SBP on admission
- Increases to 50% during hospitalization

Acute GI bleed without ascites
- Treat anyway with prophylactic antibiotics!
- Decreases rate of bacterial infections and improves survival during acute variceal bleed

- Rates of infection and death are low in Child’s Class A patients
  - LIMITATION: there are no prospective studies that evaluate the need of antibiotic prophylaxis in these patients

Spontaneous Bacterial Peritonitis

7 days short-term prophylactic antibiotics

AASLD:
• Ciprofloxacin 500 mg PO q12h
• Bactrim DS 1 tab PO BID
• Ceftriaxone 1 gm IV qday

Case 2

Two days later, the patient is extubated, and his mental status starts to clear. He is hemodynamically stable and is transferred out of the ICU to the floor.

What is his risk of rebleeding? What can be done to minimize the risk?
Minimizing Risk of Rebleeding

Risk of rebleeding: 60% within 1 year
  • Therapy to prevent rebleeding is mandatory!

Options:
  • Non-selective beta-blockers
  • Non-selective beta-blockers + nitrates
    ▫ Difficult to tolerate
  • Endoscopic ligation to eliminate varices
  • Combination pharmacologic and endoscopic therapy
    ▫ More effective

# Medical vs Endoscopic Therapy

<table>
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<tr>
<th>Pros</th>
<th>Medical Therapy</th>
<th>Endoscopic Therapy</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Minor side effects</td>
<td>• Performed in patients who fail or are noncompliant with medications</td>
<td></td>
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<tr>
<td>• Less expensive</td>
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<table>
<thead>
<tr>
<th>Cons</th>
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<th>Endoscopic Therapy</th>
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<tr>
<td>• Side effects: hypotension, bradycardia, headache</td>
<td>• More serious complications of bleeding esophageal ulcers, perforation, aspiration</td>
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<tr>
<td>• Requires long-term compliance</td>
<td>• Expensive, requires multiple procedures</td>
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<tr>
<td>• Not all patients respond with an appropriate drop in HVPG</td>
<td>• Increases risk of gastric varices and PHG</td>
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Case 2

Should this patient undergo a transjugular intrahepatic portosystemic shunt (TIPS) procedure?
Early TIPS

Reduces risk of rebleeding, BUT:

- Increases risk of hepatic encephalopathy
- NO overall improvement in survival

Case 2

What options are available in patients who do not stop bleeding with initial medical and endoscopic therapy?
Case 2

What is the appropriate treatment of bleeding from portal hypertensive gastropathy?
Portal Hypertensive Gastropathy

Congestive gastropathy that occurs as a result of portal HTN

Presents as a chronic GI bleed
• Rarely results in significant acute bleeding

Non-selective beta-blockers + iron supplementation
MKSAP Questions
A 25-year-old woman is evaluated in the emergency department for a 3-day history of nausea with non-radiating epigastric burning. She also has had a 24-hour history of frequent black stools, fatigue, and lightheadedness. For the past 5 days she has been taking ibuprofen for migraine. She takes no other medications. There is no history of gastrointestinal bleeding, alcoholism, chronic liver disease, or bleeding disorders.

On physical examination, temperature is 37.0 °C (98.6 °F), blood pressure is 110/65 mm Hg supine and 92/53 mm Hg standing, pulse rate is 85/min supine and 115/min standing, and respiration rate is 14/min. Abdominal examination reveals epigastric tenderness without guarding or rebound. Rectal examination is positive for melena. Laboratory studies reveal a hemoglobin level of 9.2 g/dL (92 g/L) and a blood urea nitrogen level of 28 mg/dL (10 mmol/L); all other tests are normal.
After intravenous fluid resuscitation, upper endoscopy is performed and reveals a 1.5-cm duodenal bulb ulcer with a central, nonbleeding visible vessel.

Which of the following is the most appropriate management?

A. Endoscopic therapy
B. Surgical intervention
C. Octreotide infusion
D. Observation
Endoscopy Findings

A 55-year-old man is hospitalized for a 3-day history of melena and a 2-week history of epigastric abdominal pain. His medical history is notable for degenerative arthritis of the knee, for which he takes an NSAID. On physical examination, blood pressure is 139/65 mm Hg and pulse rate is 75/min. Other vital signs are normal. Abdominal examination reveals epigastric tenderness to light palpation.

Initial laboratory studies reveal a hemoglobin level of 12 g/dL (120 g/L). An intravenous proton pump inhibitor (PPI) and intravenous hydration are initiated.
Question 2

Upper endoscopy reveals three cratered, clean-based gastric ulcers smaller than 1 cm. The esophagus, stomach, and small bowel are well visualized, and no other source of gastrointestinal bleeding is identified. Gastric biopsies are taken to test for *Helicobacter pylori*.

The patient is examined 24 hours after admission. Vital signs are stable and the abdominal examination reveals diminished tenderness to palpation. Laboratory studies reveal a hemoglobin level of 11.5 g/dL (115 g/L).
In addition to discontinuing the NSAID, which of the following is the most appropriate management?

A. Begin oral feeding, switch to an oral PPI and observe for 24 hr
B. Continue IV PPI therapy for another 24 hrs
C. Discharge and switch to oral PPI therapy
D. Perform repeat upper endoscopy before discharge
Endoscopy Findings

Endoscopic Features
- Active bleeding or visible vessel: Endoscopic therapy
- Adherent clot: May consider endoscopic therapy
- Flat pigmented spot: No endoscopic therapy
- Clean base: No endoscopic therapy

Endoscopic Therapy
- Endoscopic therapy
- May consider endoscopic therapy
- No endoscopic therapy
- No endoscopic therapy

Medical Therapy
- Intensive PPI therapy
- Intensive PPI therapy
- Once-daily PPI therapy
- Once-daily PPI therapy

Diet
- Clear liquids for approximately 2 days
- Clear liquids for approximately 2 days
- Clear liquids for approximately 1 day
- Regular diet

Hospital Stay
- Hospitalize for 3 days
- Hospitalize for 3 days
- Hospitalize for 1 or 2 days
- Discharge after endoscopy

A 47-year-old woman is evaluated in the emergency department after vomiting bright-red blood. She has alcoholic cirrhosis with ascites, which has been well controlled with diuretics. She has had jaundice and intermittent confusion for the past month. She has not consumed alcohol in the past 11 months. Her medications are spironolactone and furosemide, and octreotide was begun in the emergency department.

On physical examination, temperature is 36.8 °C (98.2 °F), blood pressure is 72/54 mm Hg, pulse rate is 112/min, and respiration rate is 20/min; BMI is 26. She is confused. Scleral icterus, jaundice, and spider angiomata over the chest are noted. The left lobe of the liver is firm and is palpated 3 cm below the costal margin. There is no abdominal pain or flank dullness.

Laboratory studies reveal a hemoglobin level of 8.7 g/dL (87 g/L).
Ultrasound shows a coarsened liver echotexture, left lobe hypertrophy, and splenomegaly but no ascites.

Intravenous fluid resuscitation is initiated.

Which of the following is the most appropriate next step in management?

A. Antibiotics
B. Non-selective beta-blocker
C. Transjugular intrahepatic portosystemic shunt placement
D. Upper endoscopy
A 60-year-old man is evaluated in the emergency department for a 24-hour history of frequent black stools and fatigue without abdominal pain. His medical history is notable for a myocardial infarction 1 year ago and hypertension. He has no history of gastrointestinal bleeding, alcoholism, chronic liver disease, bleeding disorders, or cancer. His medications are aspirin, metoprolol, lisinopril, and atorvastatin.

On physical examination, temperature is 37.0 °C (98.6 °F), blood pressure is 122/69 mm Hg, pulse rate is 87/min, and respiration rate is 14/min; BMI is 29. Abdominal examination is normal. Rectal examination identifies melena. Laboratory studies are normal except for a hemoglobin level of 10.2 g/dL (102 g/L).
He is admitted to the hospital. Aspirin is discontinued, and he is given intravenous fluid resuscitation and intravenous proton pump inhibitor (PPI) therapy (bolus followed by continuous intravenous infusion). Upper endoscopy identifies a 1-cm clean-based duodenal ulcer. Intravenous PPI is switched to an oral PPI. *Helicobacter pylori* testing is negative. He tolerates refeeding without problems and is now ready for discharge.

Which of the following adjustments should be made to this patient’s medication on discharge?

A. Change aspirin to clopidogrel
B. Discontinue aspirin
C. Resume aspirin before discharge
D. Resume aspirin 4 weeks after discharge