GI Bleeding for the PCP

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Outline

• Acute upper GI bleeding
  - Variceal
  - Non-variceal
• Acute lower GI bleeding
• Occult/Obscure GI bleeding
Etiology of Upper GI Bleeding

- Peptic ulcer disease (PUD) – 35%
- Esophagitis
- Gastric erosions
- Arteriovenous malformations (AVMs)
- Mallory Weiss tear
- Dieulafoy’s lesion
- Varices – 9%
- Malignancy

Clinical Management of UGI Bleeding

- Assess hemodynamic status
- Resuscitation
  - ABC’s (intubation, large bore IV)
- CBC; type and cross-match; fluids
- Monitoring of vital signs and urine output
- Nasogastric tube
- Empiric therapy (IV PPI, octreotide)
- Endoscopy - Diagnosis & therapy
  - Indications for urgent endoscopy
    - Active bleeding
    - Shock
    - Elderly patients
Clinical Presentation

- Hematemesis – 30%
- Melena – 26%
- Both 41%
- Hematochezia – 3%

Prognostic Indicators

- Etiology
- Severity of initial bleed
- Age (> 60 worse prognosis)
- Comorbid disease(s)
- Ulcer size (> 2 cm increased mortality)
- Hospitalization
Variceal Bleeding

Esophageal Varices

- Prevalence: 60 to 80% of cirrhotics
- Incidence: 4 to 12% per year
  - 225 pts, surveillance EGD q1-3 yrs, followed 10 years
  - 41% developed varices, 55% did not develop varices
  - Progression in size: 5% per year
  - Bleeding rate: 7% per year

  D’Amico, Gastroenterology, 2001

- Predictors for bleeding
  - High Child-Pugh Score
  - Large varices
  - Stigmata (red wale, hemocystic spots, etc.)
Esophageal Varices Endoscopic Grading: Size and Stigmata

- Size
  - Absent
  - Small
  - Medium
  - Large

- Stigmata
  - Red wale marking
  - Hemocystic spot
  - Cherry red spots

Jensen, *Gastroenterology*, 2001

Gastric Varices

- Prevalence: 4 to 10%
- Risk of bleeding
  - 16% at 1 year
  - 36% at 3 years
  - 44% at 5 years
    
  Kim, *Hepatology*, 1997
- Predictors for bleeding
  - High Child-Pugh
  - Red markings
  - Size
Primary Prophylaxis: Summary

- Large varices, high Child-Pugh Score, cherry red spot or red wale signs
- Propranolol 40 mg bid or nadolol 40 mg daily
  - 25% reduction in resting pulse rate or pulse rate of 60
- Endoscopic band ligation
  - As effective as beta-blocker therapy
  - Considered for cirrhotics who are not candidates for drug therapy (COPD, IDDM)
  - Typically do not band small varices

Octreotide

- Longer acting analog of somatostatin
- Reduces *azygos blood flow* (a measure of collateral blood flow including variceal flow)
- Bolus of 50 mcg, 50 mcg/hour infusion for 3 - 5 days
- No effects on cardiac function, systemic blood pressure, or extra splanchnic tissue perfusion
- No special monitoring required
Endoscopic Band Ligation

- Limited field of vision
- Slightly more difficult to perform for acute bleeding
- Place 1 to 2 bands per varix
- Start distally and work proximally

ACG Algorithm for bleeding cirrhotics

- Resuscitation
  - Octreotide x 5d
- Early EGD
- Non portal hypertensive
  - Treat appropriately
- Portal hypertensive gastropathy
- Esophageal Varices
- Gastric Varices
- Band ligation
- Sclerotherapy
- Beta-blocker
- TIPS
- Shunts
- Liver Transplant (B/C)
- Variceal ablation
- Band ligation
Secondary Prophylaxis: Summary

• After initial esophageal variceal bleed, all patients should be treated to reduce re-bleeding
• Endoscopic Variceal Ligation until obliteration
• Beta-blocker therapy (nadolol 40 mg daily) to achieve 25% reduction in resting pulse rate or pulse of 60
Non-variceal UGI Bleeding

Stigmata of Recent Hemorrhage

- Spurting
- Oozing
- Adherent clot
- Visible vessel
- Flat pigmented spot
- Clean base ulcer
### Endoscopic risk stratification

<table>
<thead>
<tr>
<th>Endoscopic appearance</th>
<th>Rebleeding (%)</th>
<th>Surgery (%)</th>
<th>Mortality (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clean based</td>
<td>5</td>
<td>0.5</td>
<td>2</td>
</tr>
<tr>
<td>Flat spot</td>
<td>10</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Adherent clot</td>
<td>22</td>
<td>10</td>
<td>7</td>
</tr>
<tr>
<td>Non-bleeding visible vessel</td>
<td>43</td>
<td>34</td>
<td>11</td>
</tr>
<tr>
<td>Active bleeding</td>
<td>55</td>
<td>35</td>
<td>11</td>
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</table>


### Treatment

- Epinephrine injection (1:10,000)
- Electrocoagulation (BICAP)
- Thermal therapy (Argon Plasma Coagulation)
- Hemostasis clips
Management of Re-bleeding

• Signs of re-bleeding
  – Hematemesis, melena, orthostasis, fall in Hgb >2 g/dL within 24 hours
• Repeat endoscopy
• Perform 2\textsuperscript{nd} endoscopic hemostasis
• If bleeding stops, close observation
• Uncontrolled bleeding or 2\textsuperscript{nd} re-bleed, then surgery or embolization (interventional radiology)

Pharmacotherapy for Prevention of Ulcer Re-bleeding

<table>
<thead>
<tr>
<th>Agent</th>
<th>Benefits</th>
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<tbody>
<tr>
<td>H2-receptor antagonists</td>
<td>no</td>
</tr>
<tr>
<td>Anti-fibrinolytics</td>
<td>no</td>
</tr>
<tr>
<td>Vasoconstrictors</td>
<td>no</td>
</tr>
<tr>
<td>Proton pump inhibitors</td>
<td>yes</td>
</tr>
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</table>
Influence of intragastric pH on hemostasis and proteolysis

- pH<5
  - Pepsin accelerates clot lysis
- pH>6
  - Effective platelet aggregation
  - Irreversible inactivation of pepsin
  - Optimal maintenance of hemostasis

Summary: Criteria of IV PPI use

- In treatment of bleeding ulcer, randomized trials of high dose PPI by continuous infusion is effective for prevention re-bleeding
- Dose must maintain intragastric pH>6
- No evidence of mortality reduction
- Use limited to high-risk patients with active bleeding or non-bleeding visible vessels at time of EGD
Effects of *H. pylori* Eradication

- Reduce recurrent ulcer & ulcer complications
- Reduce risk of aspirin-induced ulcer bleeding
- Is insufficient to protect against NSAID-induced ulcer bleeding


ACG recommended first-line *H. pylori* eradication regimens

PPI* + clarithromycin + amoxicillin 1 gm bid or
bid 500 mg bid metronidazole 500 mg bid

All for 10 to 14 days
PPI for 1 month

Howden & Hunt. Am J Gastro 1998
**Summary: Management of Bleeding Ulcers**

- Team approach
- Identify high risk patients & resuscitation
- Early endoscopy + hemostasis
- Combined therapy (Epinephrine + Heat Probe or Mechanical metal clips)
- IV and then oral PPI, monitor for re-bleeding
- Eradicate *H. pylori* infection
- Stop NSAIDs or use of COX-2 selective inhibitors or use prophylactic therapy

**Other causes of UGI Bleeding**

**Mallory-Weiss Tear (MWT)**
- Linear, longitudinal fissure-like tear at or below GE junction
- Lower power setting vs. PUD bleeding
- Injection therapy for cirrhotics with MWT
- High dose PPI for non-active bleeding
Other causes of UGI Bleeding

Dieulafoy lesion

- High body of stomach or fundus location
- Arterial bleeding in absence of underlying ulcer
- Similar hemostasis methods used for bleeding ulcer disease

Lower GI Bleeding (LGIB)

- Bleeding distal to the ligament of Treitz
- Annual incidence ~ 20-27 cases per 100,000
- Compared to UGI bleed: 100-200 cases per 100,000
- More common in men
- Incidence increases with age with 200-fold increase from 3rd to 9th decade
- 80-85% cease spontaneously
- Overall mortality 10%

Longstreth, Am J Gastroenterol. 1997; 92:419
Longstreth, Am J Gastroenterol. 1995; 90:206
Zuckerman, Gastrointest Endosc. 1999; 49:227
Differential diagnosis: LGIB

- Diverticular (40%)
- Inflammatory disease (21%)
  - IBD, infectious, ischemia
- Neoplasia (14%)
  - Cancer, polyps, Polypectomy sites
- Coagulopathy (12%)
- Anorectal disease (11%)
  - Hemorrhoids, fissures
- Other (2%): AVM, radiation, small bowel lesions


Initial Clinical Management: LGIB

- Assess hemodynamic status
- Resuscitation
- CBC, type and cross-match, fluids
- Monitoring of vital signs and urine output
- Nasogastric tube
LGIB: Diagnostic tests

- Digital rectal examination
  - Anorectal pathology
  - Up to 40% rectal carcinomas palpable
- Nasogastric aspiration
  - If positive (gross blood or strongly guaiac positive), 93% had UGI source
- Anoscopy/Sigmoidoscopy
  - Diagnostic yield ~ 10%
  - Role uncertain in era of emergent colonoscopy

Richter et al, Gastrointest Endosc 1995

LGIB: Colonoscopy

- Urgent colonoscopy after rapid purge
  - After resuscitation
  - Within 8-24 hours upon presentation
- Diagnostic yield: 48-90%
  - Active bleeding site, non-bleeding visible vessel, adherent clot, fresh blood localized to colonic segment, ulceration of diverticulum with blood, absence of blood in ileum
- Endoscopic therapy
  - Hemostasis with injection, coagulation, clipping, APC

Richter et al, Gastrointest Endosc 1995: 41: 93
LGIB: Tagged red blood scan

• Technetium labeling
  – Detects bleeding rates 0.1 mL/min
  – Remains in circulation for 48 hours
• ~ 45% detection rate
• Typically used prior to angiography
• Problems
  – Reliability of scan to direct surgery
  – Overall ~ 22% inaccuracy rate for localization

Ryan et al, Dis Colon Rectum, 1992; 35: 219

LGIB: Angiography

• Arterial bleeding rate 0.5 mL/min
• After positive TRBC scan
• 47% sensitivity, 100% specificity
• Complication rate 9.3%
  – Hematoma, thrombosis, renal failure, contrast allergy
• Therapeutic benefit
  – Localization prior to surgery (methylene blue, catheter or coils at site, etc.)
  – Selective embolization
  – Vasopressin infusion

Fiorito et al, Am J Gastroenterol 1998; 143: 569
LGIB: diagnostic studies

- EGD
  - Up to 11% yield of gastric or duodenal lesions
- Barium Enema/Enteroclysis
  - Seldom used
- Meckel scan
  - younger patients
- Capsule endoscopy
- Push Enteroscopy
  - Single balloon enteroscope, double balloon enteroscopy

LGIB: Diverticular Hemorrhage

- ~80% spontaneously stop
- Transfusion requirement
  - < 4 U RBC, near 100% stopped bleeding
  - > 4 U RBC, 60% required surgery
- Re-bleeding
  - 25% risk of re-bleeding
  - >50% risk of continued bleeding after 2nd bleed

Acute Lower GI Bleeding

- Bleeding ceases:
  - Elective colonoscopy
  - EGD
  - Capsule endoscopy
  - Enteroscopy
  - Angiography
  - Meckel's Enteroclysis

- Bleeding recurs:
  - Proctoscopy
  - NG aspirate/EGD
  - Urgent colonoscopy
  - Angiography
  - Surgery

- Bleeding continues:
  - Resuscitate

Obscure GI Bleeding

- Recurrent or persistent bleeding of the GI tract without obvious source despite endoscopic evaluation and imaging
- Accounts for 5% of patients with GI bleed
- 75% of bleeds involve the small bowel
- Remainder of bleeds may be missed lesions in upper lower GI tract

Davies et al, Gut 1995; 37:346
Repeat EGD and Colonoscopy

• Greatest value in patients with obscure GI bleeding and iron deficiency anemia or overt bleeding with melena or maroon blood
• Colonoscopy yield is lower (consider if inadequate prep)

Occult bleeding

• Initial presentation of + fecal occult blood test and/or iron deficiency anemia without evidence of blood loss
  – Testing for occult blood loss (FOBT, FIT)
  – Evaluation of + FOBT with EGD, colonoscopy, and or small bowel study
Wireless Video Capsule Endoscopy (VCE)

- Equally or more sensitive than other methods of small bowel evaluation
- Revealed additional findings in 25 – 55% of cases
- Wireless VCE may be more effective if performed prior to push enteroscopy

Raju et al., Gastro 2007;133:1694

Deep Small Bowel Enteroscopy

- Double/Single balloon enteroscopy
- Allows visualization and treatment
- DBE detected bleeding sources in 78% of patients with obscure GI bleeding
- Capsule directed DBE may provide better long-term outcomes and cost effectiveness

Shinozaki et al., Gastroenterol Hepatol 2010;8:151
Gerson et al., Gastrointest Endosc 2008;68:920
Conclusions

- Monitoring vitals and aggressive volume replacement are the sine qua non for patients with severe GI bleeding
- Variceal bleeding has the highest risk of recurrence/death
- Early endoscopy in patients with ongoing upper GI bleeding
- Colonoscopy for patients with acute lower GI bleeding with hemodynamic stability
Questions ?