Gastrointestinal Hemorrhage
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Case
- 79 yo M transferred from OSH with blood per rectum
- 4u pRBC 2u FFP
- Mentating, HR 90s SBP 100s on RA
- No hx of GI bleed

Initial Assessment
- UGI bleed vs LGIB
- ABC
- Early intubation (?)
- IV access
- Labs, EKG
- Anoscopy/Rigid sigmoidoscopy
- NGT – quality?
- Biliary or bloody?
- False negative rate: 15%
  Aljebreen et al: Nasogastric aspirate predicts high risk endoscopic lesions in patients with acute upper GI bleeding; Gastrointest Endosc. 2008

History
- Liver disease, gastric or esophageal varices
- Peptic ulcer disease
- Helicobacter pylori infection
- NSAID use
- Smoking or alcohol abuse
- AAA repair
- Gastroenteric anastomosis
- Anticoagulants
Palmer ED. The vigorous diagnostic approach to upper gastrointestinal tract hemorrhage: A 23-year prospective study of 1,4000 patients. JAMA

Vital Signs
- Resting tachycardia: Less than 15% of blood volume
- Orthostatic hypotension: At least 15% of blood volume
- Supine hypotension: Blood volume loss of at least 40%
Cappell MS, Friedel D. Initial management of acute upper gastrointestinal bleeding: from initial evaluation up to gastrointestinal endoscopy. Med Clin North Am 2008

Factors predictive of UGI source
- Melena (hx or exam)
- Blood or coffee ground on NGT lavage
- BUN/Cr > 30

UGI bleed until proven otherwise!!!!
Upper GI Bleed – Differential Dx

- Over 400,000 pts/year hospitalized
- Majority: PUD
- Others:
  - Esophageal and gastric varices
  - Mallory – Weiss tears
  - Neoplasms
  - Dieulafoy lesions
  - Hemobilia
  - Aortoenteric fistulae

Lewis et al: Hospitalization and mortality rates from peptic ulcer disease and GI bleeding in the 1990s; Am J Gastroenterol. 2002

Nasogastric Lavage

- Controversial
- Retrospective case control study ~ 600 pts
- Randomized prospective trial - 280 pts
- NGT -> shorter interval to endoscopy
- No difference in mortality, LOS, surgery, transfusion


Endotracheal intubation?

Association of prophylactic endotracheal intubation in critically ill patients with upper GI bleeding and cardiopulmonary unplanned events.

BACKGROUND AND AIMS: Prophylactic endotracheal intubation (ETI) is often advocated to mitigate the risk of cardiopulmonary adverse events in patients presenting with brisk upper GI bleeding (UGB). However, the benefit of such a measure remains controversial. Our study aimed to compare the incidence of cardiopulmonary unplanned events between critically ill patients with brisk UGB who underwent endotracheal intubation versus those who did not.

METHODS: Patients aged 19 years or older who presented at Denver Clinic between 2011 and 2014 with hemorrhage and/or patients with active bleeding and/or endoscopic hemostasis could be included. The primary outcome was a composite of several cardiopulmonary unplanned events. Measurements were performed for 24 hours after the procedure. Mortality, unplanned intubation, and cardiac arrests occurring within 48 hours of the endoscopes were collected. Prognostic score was used to match each patient 1:1 to evaluate the risk of events in patients. These included Glasgow Blunt Injury Score, Chronic Lung Disease Index, and Acute Physiology and Chronic Health Evaluation score.

RESULTS: Two hundred thirty patients were included in the final analysis. The baseline characteristics, comorbidities, and prognostic scores were similar between the 2 groups. The overall cardiopulmonary unplanned event rates were significantly lower in the intubated group compared with the non-intubated group (29% vs 47%, p = 0.02), which remained significant (p = 0.02) after adjusting for the presence of prognostic variables. CONCLUSION: ETI offers an ICU for brisk UGB in critically ill patients who are associated with a lower risk of unplanned cardiopulmonary events. The benefits and risks of intubation should be carefully weighed when considering primary protection because of UGB in this group of patients.

Transfusion: pRBC

- Initial loss: whole blood
- Hb < 7 even in stable ischemic cardiac disease
- Hb = 9 ONLY in active bleed and unstable cardiac dz
- Overtransfusion in variceal bleeding is HARMFUL
- Meta-analysis of 5 randomized trials ~ 2000 pts
- Restrictive transfusion: lower mortality and rebleed
- No difference in acute MI or AKI


Transfusion: platelets & coag factors

- Platelet goal > 50,000
- INR (non-cirrhotic) goal < 1.5 (FFP or PCC)
- Endoscopy is safe with INR < 3
- Aspirin and plavix: individualize treatment


Meds: Acid suppression

- Recommendation: 40mg BID IV PPI + 80mg once
- No benefit of H2 blockers
- Continuous IV infusion is equivalent to above dose
- Helps even in non – ulcer related GIB

Meds: Prokinetic agents

- Erythromycin and Metoclopramide have been studied
- Multiple randomized controlled trials
- Erythromycin showed benefit (single dose IV 3mg/kg)
  - Improves visibility
  - Shorter endoscopy times
  - Reduce need for repeat scope
- At least as effective as NGT or better


Meds: Other

- Somatostatin (octreotide) may reduce bleed
- Antibiotics: 20-50% with cirrhosis + GI bleed have bacterial infections
- Tranexamic acid: no good evidence for use


Upper Endoscopy

- Diagnostic AND therapeutic
- Therapeutic maneuvers:
  - Injecting vasoconstrictors
  - Injecting sclerosing agents
  - Coagulation
  - Mechanical: clips or bands (variceal bleed)
- Risk of rebleeding: Forrest score

Pamela Roberts, Comprehensive Critical Care 2012

Forrest Classification

<table>
<thead>
<tr>
<th>Class</th>
<th>Endoscopic findings</th>
<th>Ho bleeding with (%)</th>
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<tbody>
<tr>
<td>1a</td>
<td>Spurting arterial vessel</td>
<td>80 - 90</td>
</tr>
<tr>
<td>1b</td>
<td>Oozing hemorrhage</td>
<td>30 - 50</td>
</tr>
<tr>
<td>2a</td>
<td>Non-bleeding vessel</td>
<td>50 - 60</td>
</tr>
<tr>
<td>2b</td>
<td>Adherent clot</td>
<td>25 - 35</td>
</tr>
<tr>
<td>2c</td>
<td>Uterus base with black spot sign</td>
<td>0 - 8</td>
</tr>
<tr>
<td>3</td>
<td>Clean base</td>
<td>0 - 12</td>
</tr>
</tbody>
</table>


Risk scores

- Rockall Score:
  - Age, shock, comorbidity, dx, stigmata of recent hemorrhage
  - Needs further validation
- Blatchford Score:
  - BUN, Hb, SBP, HR, melena, syncope, liver dz, cardiac dz
  - Score 0-23
  - Score 0 or 1 > low risk


American Society for Gastrointestinal Endoscopy Guideline Recommendations

- Pts should be adequately resuscitated before endoscopy.
- PPIs for patients with bleeding caused by peptic ulcers.
- Prokinetic agents for patients with fresh blood or a clot
- Urgent endoscopy (within 24 hrs)
  - Hx of malignancy or cirrhosis
  - Presenting with hematemesis, hypotension, tachycardia, shock
  - Hb 8 or less

American Society for Gastrointestinal Endoscopy Guideline Recommendations

- Endoscopic therapy for peptic ulcers with high-risk stigmata.
- Don’t do epinephrine injection alone for peptic ulcer bleeding.
- Low-risk lesions should be considered for outpatient mgmt.
- Repeat scope only if evidence of recurrent bleed exists.


If bleeding persists….

- Re - EGD first!
- IR if available
- Surgery required if:
  - Hemodynamically unstable
  - Excessive transfusion (e.g. 6 units in 24 hrs)

Lau et al: Endoscopic retreatment compared with surgery in patients with recurrent bleeding after initial endoscopic control of bleeding ulcers; N Eng J Med. 1999

ONCE UGIB ruled out…consider LGIB

- Diverticulosis
- Vascular
  - AVM
  - Ischemic
  - Radiation induced
- Neoplastic
- Hemorrhoids
- Iatrogenic
- Note: About 80-85% will stop spontaneously


LGIB: High risk features

- Hemodynamic instability
- Persistent bleed
- Significant comorbidities
- Advanced age
- Nontender abdomen
- Bleeding in a hospitalized pts
- Prior hx of bleed
- ASA use
- Prolonged PT
- Anemia
- High BUN
- High WBC


Diagnostic Tests: Colonoscopy

- Colonoscopy: 1st choice – also therapeutic
  - Bowel prep if at all possible (4-6 L polyethylene glycol)
  - May need NGT to reduce aspiration risk


Radiographic Imaging

Advantage – localizes anywhere in bowel

- Tagged rbc scan – most sensitive 0.1-0.5cc/min
  - High false positive rate (varies greatly in studies)
- CT angiography – not therapeutic
  - 0.3 – 0.5cc/min rate
  - 85% sensitive, 92% specific

Penney WA, Vignali PV, Cohen JL. Mesenteric angiography for lower gastrointestinal hemorrhage are these predictors for a positive study? De Cohn Review 1997; 40:1074.
**Angiography**

- Requires 0.5 - 1mL/min blood loss
- Choice for patients in whom endoscopy failed
- No need for bowel prep
- 1. SMA  2. IMA  3. Celiac axis
- Active bleed → embolization 80% with 97% success rate
- 20% associated ischemia

**Additional Tests**

- Push enteroscopy (60 cm of proximal jejunum)
- Capsule endoscopy
- Provocative challenges

**Surgical Treatment: PUD**

- Gastric v Duodenal
- Gastric mandates biopsy
- Duodenal -> Erodes into gastroduodenal artery
- Surgical control: Duodenotomy followed by 3 pt ligation

**PUD: Acid – suppressing Tx**

- Today PPI +/- omental patch or wedge resection
- Before:
  - Partial or complete gastrectomy
  - Billroth I
  - Billroth II
  - Vagotomy to various degrees +/- pyloroplasty

**Bilroth I & II**

**Esophageal Varices**

- Pts with liver disease
- Octreotide/PPI
- EGD – banding
- TIPS
- Emergency mesocaval shunt
  - IVC – SMV (PTFE)
  - Doesn’t compromise liver tp option
  - Increases risk for encephalopathy


Dimick,J: Clinical Scenarios in Surgery: Decision Making and Operative Technique 2012
Sengstaken–Blakemore tube

Case Revisited
- 79 yo M transferred from OSH with blood per rectum
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- Mentating, HR 90s SBP 100s on RA
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Case continued
- GI consulted – EGD declined due to instability
- 2 additional units of pRBC given
- SBP responds
- Now what?

Case continued
- IR called, bedside anoscopy performed
- Family discussion – surgery?
- Recent bacteremia, metastatic prostate cancer
- ?

Classic Scenarios
- POD1 s/p AAA repair
- Several months s/p roux en y gastric bypass
- AAA repair in distant past with 1 episode of bleed
- Alcoholic cirrhosis with UGI bleed
- Hep C cirrhosis with LGIB
- GI bleed in Jehova’s Witness
Questions & Discussion