Gastrointestinal Bleeding

Bennie Ray Upchurch III, MD, FACP, FASGE
Clinical Associate Professor of Medicine
Division of Gastroenterology, Hepatology & Nutrition
The Ohio State University Wexner Medical Center

Disclosures

• Nothing to disclose
Objectives

- Develop a prioritized care plan for patients admitted with upper gastrointestinal bleeding (UGIB).
- Accurately assess, triage and resuscitate the UGIB patient.
- Recognize common causes of UGIB and the approach in management.
- Understand and facilitate a multidisciplinary approach to management of the UGIB patient.

Acute Upper Gastrointestinal Bleeding

- Annually ~ 300,000 hospitalizations and ~ 20,000 deaths in US*
- Common cause for ICU admission and potentially lethal medical emergency
- Overall incidence: 50-100/100,000 pts/yr
- Incidence of UGIB : LGI bleeding ~ 5:1
- More common in elderly – esp. men > 70 yrs, who comprise ~ 30 % of all pts with UGIB
- Mortality rates over past 40-50 yrs had been stable at ~ 7-10%. More recently improved to ~ 2.4-5%

*Acute non-variceal UGIB
# Etiology of UGIB

- **Non Variceal**: 86%
  - Ulcerations: about 50%
  - Mallory-Weiss Tear: 4-8%
  - Erosive esophagitis: 1-13%
  - Neoplasia: 2-7%
  - Vascular ectasia: 0-6%
- **Variceal**: 14%

## Initial Assessment of Severe UGIB

1. Resuscitation and stabilization
2. Assessment of severity and location of bleeding
3. Preparation for emergent upper endoscopy
4. Role of endoscopist
   - Localization and identification of the bleeding site
   - Control of active bleeding or high risk lesions
   - Stratification of the risk for rebleeding
   - Minimization of treatment-related complications
   - Treatment of persistent or recurrent bleeding
## Initial Evaluation - History

- **Age:** Elderly (ischemia, cancer, diverticula)  
  Young (ulcers, esophagitis, varices)
- Prior GI Bleeding
- Previous gastrointestinal disease
- Previous GI surgery
- Underlying Medical Disorders (liver disease, CKD)
- Meds: NSAIDS - ASA/Anticoagulant use
  - Symptoms: Abdominal pain, fever, wt loss, anorexia, epistaxis, hematuria etc

## Physical examination

- Hemodynamics with a thorough cardiopulmonary exam
- Skin (spider angiomata, purpura, cutaneous telangiectasias /pigmentation)
- Abdomen (ascites, tenderness, masses)
- Digital Rectal exam
## Initial Patient Care/Management

- Appropriate IV access: 2 large bore I.V. catheters

- IV fluids (NS/LR) and/or blood product resuscitation.
  
  (Target HCT 30% in elderly/ 25-30% in young adults and pts with in Portal HTN)

- Continuous cardio-pulm monitoring for those with coronary risk factors with supplemental O2.

- Frequent vital sign / urine output monitoring.

- Consider intubation in those with altered mental status or brisk bleeding.

## Labs and Studies

- Complete blood count, electrolytes (BUN >> Cr)
  Albumin for risk scoring. Consider Iron panel.

- Coagulation Panel: PT/INR

- Type + screen or type + cross-match blood

- EKG for patients > 50 yrs or risk factors for heart disease.

- Abdominal radiographs usually not indicated.
RBC transfusion

- Restrictive strategies
  - Transfusion may disrupt splanchnic vasoconstriction, increase splanchnic BP, impair clot formation
  
  - Threshold of < 7g/dL assoc with lower mortality in ill patients, higher 6 wk survival, and lower rebleeding rate
  
  - Physician’s judgment in active bleeding & with comorbidities

Transfusion Strategies for Acute Upper Gastrointestinal Bleeding

Naso Gastric Lavage (NGL)

- 32% positive predictive, 85% negative predictive value

- Positive NGL does not provide etiology

- A non bloody aspirate in ~ 25% of UGIB

- A bile aspirate does not R/O UGIB

- Minimal evidence that NGL affects outcome (risk scoring)


Risk Scoring

<table>
<thead>
<tr>
<th>Rockall</th>
<th>Glasgow Blatchford</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Pre and post-endoscopy values</td>
<td>• Pre-endoscopy values</td>
</tr>
<tr>
<td>• Predicts high or low risk for rebleeding,</td>
<td>• Predicts need for interventions</td>
</tr>
<tr>
<td>mortality</td>
<td>– Endoscopic</td>
</tr>
<tr>
<td>• Prospectively pre-endoscopic score</td>
<td>– Surgery</td>
</tr>
<tr>
<td>less reliable for low risk.</td>
<td>– transfusions</td>
</tr>
</tbody>
</table>

Causes of upper GI bleeding in hospitalized patients

- Gastroduodenal erosions 44%
- No source found 23%
- Esophagitis 22%
- Other 15%
- Gastric Ulcer 8%
- Duodenal Ulcer 2%
- Multiple findings
## Uncommon Sources of GI Bleeding

- Hemosuccus Pancreaticus
- Hemobilia
- Dieulafoy lesion
- Vascular Ectasias
- Aorto-enteric fistulae
- Neoplasms: Benign > Malignant

## Predictors of Mortality

- Increasing age - Age > 70 yrs
- Concurrent active major organ disease
- Preexisting hospitalization (mortality rate ~ 34%)
- Passing frequent frank blood. Esp if - Shock or Orthostatic hypotension
- Requiring emergency surgery for GIB
- Active bleeding / Transfusion requirement
  - 4 or more red cell units in the first 24 hours
  - 2 or more units for rebleeding event
  - 6-8 units total
<table>
<thead>
<tr>
<th>Forrest Classification</th>
<th>Rebleeding Incidence</th>
<th>Surgical Requirement</th>
<th>Incidence of Death</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type I: Active Bleed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ia: Spurting Bleed</td>
<td>55-100%</td>
<td>35%</td>
<td>11%</td>
</tr>
<tr>
<td>Ib: Oozing Bleed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type I: Active Bleed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ia: Spurting Bleed</td>
<td>55%</td>
<td>35%</td>
<td>11%</td>
</tr>
<tr>
<td>Ib: Oozing Bleed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type II: Recent Bleed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ila: Non-Bleeding Visible Vessel (NBVV)</td>
<td>40-50%</td>
<td>34%</td>
<td>11%</td>
</tr>
<tr>
<td>Ilb: Adherent Clot</td>
<td>20-30%</td>
<td>10%</td>
<td>7%</td>
</tr>
<tr>
<td>Type III: Lesion without Bleeding</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flat Spot</td>
<td>10%</td>
<td>6%</td>
<td>3%</td>
</tr>
<tr>
<td>Clean Base</td>
<td>5%</td>
<td>0.5%</td>
<td>2%</td>
</tr>
</tbody>
</table>
GI BLEED

80%

Stops spontaneously
No rebleeding

20%

Severe Bleeding
- Continuous
- Rebleeding

Management of UGI Bleeding

• High dose PPI Rx
• Endoscopic Modalities
  – Injection Rx
  – Thermal device
  – Mechanical
## Endoscopic Methods of Hemostasis of UGIB

- Thermally active
  - Heater probe
  - APC
- Injectable therapies
  - Epinephrine
  - Glue
- Mechanical
  - Endoscopic clips
  - Band ligation
  - Combination Rx

## Prognostic Features of GastroDuodenal Ulcers

- Posterior duodenal wall or lesser gastric curvature

- Ulcer size > 1 cm is associated with increased re-bleeding and mortality

- Endoscopic hemostasis is less successful in ulcers > 2 cm in size

- Greatest re-bleeding risk from ulcers is within first 72 hours
### H. pylori (H.P) and PUD

- ASGE and ACG guidelines suggest that all pts with PUD should be checked and treated for H. pylori. (Class A rec)

- Some studies suggest rebleeding less with H.P Rx than PPI.
- NSAID user infected with H.P has ~ two-fold risk of ulcer bleeding.
- False negatives/false positives
- Theoretically, alkaline milieu in UGIB (or PPI use) results in proximal migration of H.P
- Serologic testing is unreliable for active infection or proving eradication

### PUD and NSAIDS / ASA

- **Mechanism**: Reduced production of cyclooxygenase –generated cytoprotective PG, platelet dysfunction

- **Risk of Bleeding**: gastric ulcers > duodenal ulcers

- **RR of NSAIDS** is 4-7 compared to ASA (2.5) and COX 2 inhibitors (1.5). Relative risk varies with individual NSAIDS ex: piroxicam > ibuprofen etc

- **Risk of bleeding** is dose dependant

- **Multiple cofactors contribute to risk** (eg, age > 75 yrs, h/o CAD, prior GIB, H. pylori, steroids, bisphosphonates & ETOH etc)
Management while on ASA

- Consensus recommendation—Short term hold for 5 days
- Restart as soon as the risk for cardiovascular complication outweighs risk for bleeding
- 3 fold increase in major cardiac events within 7-30 days
- Gastroprotection with PPI (CONGENT)
  - Continue PPI as long as on ASA/DAPT
  - PPI with Plavix if history of PUD

Resumption of Low Dose ASA (81 mg) After Bleeding Ulcer

- Sung et al. Gastro 2006;130 (suppl 2): A 44
- 8 week DB RCT after Endoscopic Therapy. IV PPI X 3 days followed by oral PPI Rx.

- Rebleeding at 1 month: 11% of pts on placebo (N=55) rebled c/to 18% of pts on ASA (N=58).
  - P = 0.25

- Mortality at 2 months: There was a 14% mortality in placebo group (n=55) vs 2% in pts on ASA (N=58).
  - P = 0.012.
Medical Therapy for Bleeding PUD

- Acidic pH retards clotting, enhances clot dissolution.
- PPI: Clearly superior to H2RA to keep gastric pH > 6.0
- Pre endoscopic PPI compared with H2RA showed no evidence of reduced rebleeding, need for surgery, or mortality
- Pre endoscopic PPI downstages high risk lesions to low risk
- Post endoscopic high dose intravenous PPI therapy (80mg bolus dose intravenously followed by 8mg/h infusion over 72 hours) (Class A rec)
- All patients should be discharged on a single daily oral PPI dose. Caveat- GERD

Prokinetics

- Erythromycin 250mg IV 30-90 min before EGD
  - significantly increases quality of mucosal visibility.
    (Class A rec)
  - reduces need for relook endoscopy
  - Consider EKG
- Reglan 10mg IV 30 min prior (option)
  - Caution regarding tardive dyskinesia/EPS
- Evidence based > NG lavage
Rebleeding after Endoscopic Therapy

- ~ 20% of pts with active UGIB rebleed.
- A ‘second-look’ endoscopy demonstrated benefit in only those cases with active re-bleeding.

- 3386 patients with bleeding peptic ulcers
  - Initial therapy 98.6% successful
  - Rebleeding 8.2%
  - Predictors of rebleeding: OR
    - Hypotension 2.2
    - Anemia <10 gm/dl 1.9
    - Active bleeding / fresh blood 1.7 / 2.2
    - > 2 cm ulcer 1.8

Wong et al Gut 2002

Early (2-24 hrs) vs. Delayed Endoscopy for UGIB

- Lower costs
- Early discharge of low risk patients.
- Location of admission (ICU vs. ward)
- Significant benefit of endoscopic therapy in high risk pts has not been documented in RCTs.
- Major clinical outcome parameters such as rebleeding rate, mortality and the need for an emergency operation have no bearing with timing of endoscopy.

J Sung, AGA Perspectives Vol 5, Dec 2009
**Indications for Angiography in UGIB**

- Consensus statement from American College of Radiology:
  - Endoscopy is the best dx and therapeutic procedure.
  - Surgery and Transcatheter arteriography /intervention (angiography) are equally effective following failed EGD.
  - Angiography considered in cases with high operative risk
    - less successful in pts with impaired coagulation
    - best technique for UGIB into the biliary tree or pancreatic duct.

**Angiographic Therapy**

- Overall - is rarely required in pts with bleeding ulcer.
  - Bleeding should be > 0.5 ml/hr.
  - Selective Intra-arterial vasopression – not used now.
    Risks: Brady-arrhythmias, ischemia, etc
  - Selective occlusion of bleeding arteries with gelfoam, beads, tissues adhesives and coils etc are used.
  - Rebleeding is common, and complications such as ischemia, infarction, perforation and abscess etc are prominent.
Surgical Therapy for UGIB - When?

- Role is controversial.
- Is usually considered in high risk cases when:
  1) HD instability even after > 3 units PRBC transfusions
  2) TWO unsuccessful EGDs/attempts at hemostasis
  3) Shock with recurrent hemorrhage
  4) Continuous bleeding with transfusion requirements of > 3 units PRBC / day.

Surgical Therapy

- Typically pts are severely ill and mortality is ~ 25 %
- Primary objective is not to cure ulcer disease but stop hemorrhage. Acid-reducing procedures may be added.
- A large RCT trial of 92 pts – demonstrated that after initial failure of Endo Tx – an endoscopic re-treatment reduced the need for surgery without increasing mortality and had fewer complications than surgery.
- No data from current endoscopic era supports early surgery except - A-E fistula, bleeding benign tumors and severe GAVE
**Stress Related Mucosal Disease**

- Incidence decreasing since 90’s with improved ICU care.
- In ventilated pts with respiratory failure (OR - 15.6) and/or coagulopathy (OR - 4.3).
- Prophylaxis with H2RA > sucralfate (GIB 1.7% vs. 3.8%, P=0.02).
- H2RAs may be limited by tolerance.
- PPIs may have possible interactions with Plavix and potential increased risk of C. difficile infection.
- No pharmacotherapy shown to be beneficial once bleeding.
- Endoscopic therapy should be attempted.

---

**UGIB after AMI**

- Not uncommon
  - 1-3%
  - Multifactorial
    - Medications
    - Underlying low flow state
### UGIB after AMI

**Predictors of UGIB**
- Older age
- Hemodynamic compromise
- Severe myocardial ischemia
- Use of thienopyridines before event
  - +/- Integrillin

**Substantially increased mortality**
- Especially if PCI done for NSTEMI/ACS

**PPI use provides substantial risk reduction**

### UGIB after AMI

**EGD/Colonoscopy is relatively safe in patients with UGIB and AMI**
- NG Tube is also safe

**Diagnostic yield is approximately 80%**

**UGIB followed by AMI may be worse than AMI followed by UGIB**

**Cardiac status may play a less prominent role in complications**

**Prospective data are sorely needed**
### Therapies For Long-Term Prevention of Ulcer Hemorrhage

- Medical therapies
  - Acid suppression
  - Prostaglandin analogs
  - Mucosal protectants
- Helicobacter Pylori eradication
- NSAID discontinuation
- Smoking cessation

### Conclusions:

- Medical stabilization
- Signs and symptoms help to localize
- Direct the investigation
- Maximize pharmacotherapy
- Alter risk factors