Gastrointestinal Bleeding

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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 $\leq$ 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
C Villanueva, et al. N Engl J Med 2013; 368:11-21

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)

Aljebreen AM, Fallone CA, Barkun AN. Nasogastric aspirate predicts high- risk endoscopic lesions in patients with acute upper-GI bleeding. Gastro- intest Endosc 2004;59:172-8.

Huang ES, Karsan S, Kanwa IF,et al. Impact of Nasogastric lavage on outcomes in acute GI bleeding. Gastrointest Endosc 2011;74:971-80.

Risk Scoring

Rockall

- Pre and post-endoscopy values
- Predicts high or low risk for rebleeding, mortality
- Prospectively pre-endoscopic score less reliable for low risk.

Glasgow Blatchford

- Pre-endoscopy values
- Predicts need for interventions
  - Endoscopic
  - Surgery
  - transfusions

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

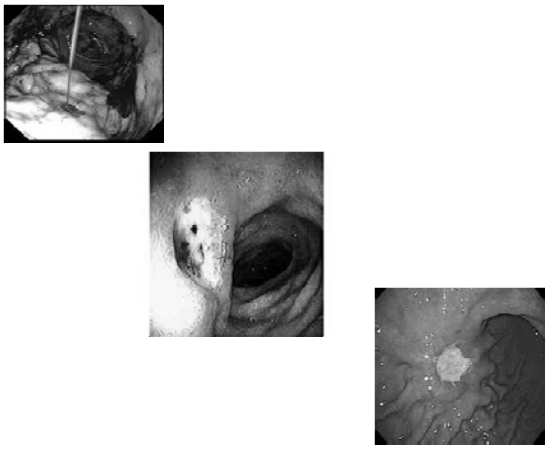
- Hemosuccus Pancreaticus
- Hemobilia
- Dieulafoy lesion
- Vascular Ectasias
- Aorto-enteric fistulae
- Neoplasms : Benign > Malignant

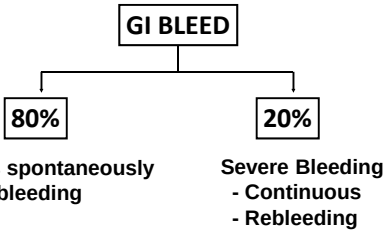
Predictors of Mortality

- 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

Forrest Classification System with Respective Prognosis

Forrest Classification	Rebleeding Incidence	Surgical Requirement	Incidence of Death
Type I: Active Bleed Ia: Spurting Bleed Ib: Oozing Bleed	55-100%	35%	11%
Type II: Recent Bleed IIa: Non-Bleeding Visible Vessel (NBVV)	40-50%	34%	11%
IIb: Adherent Clot	20-30%	10%	7%
Type III: Lesion without Bleeding	10%	6%	3%
Flat Spot Clean Base	5%	0.5%	2%





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 cycloxygenase –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 re look 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