MANAGEMENT OF ACUTE UPPER GI BLEEDING

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CASE PRESENTATION

- 74 YO female JEHovah’s Witness admitted for chest pain to telemetry on 4/26/2010
- Ruled in for NSTEmI
- Started on Plavix and Lovenox
- 4/27- developed Respiratory Distress on the floor
  - Intubated
  - NGT
  - MICU
CASE PRESENTATION

- 4/28AM- extubated
- 4/28PM- noted to have 1 episode of MELENA and 1 episode of BRBPR
- Gastric lavage- POSITIVE
- Ht decreased to 22
- GI and Surgical consults
CASE PRESENTATION

- PMH/PSH
  - DM
  - HTN
  - Asthma
  - COPD
  - CAD
  - Gout
  - Dyslipidemia
CASE PRESENTATION

- **Upon Surgical Evaluation**
  - VS - HR 117/mn; BP 128/86; SO2 99%
  - Alert and oriented x3
  - NGT- bloody drainage
  - Abdomen- soft, non tender
  - RE- maroon stools
CASE PRESENTATION

- PERTINENT LAB FINDINGS

  CBC - WBC 15; HT/HB 24.3/7.8 (33/10.5 on admission; 28.7/8.9 in AM); PLT 205
  TROP 3.76
  PT/PTT 13.6[1.2]/41.5
  BNP 2255

  The repeat hematocrit later in the evening was 22
CASE PRESENTATION

- GI EVALUATION/EGD

  Two large clots seen below the cardia along the lesser curvature, actively bleeding. Distal smaller clot snared successfully and 4 clips applied. The larger proximal clot continued to bleed despite injection of 20 cc of epinephrine. The clot could not be dislodged. The rest of the exam was unremarkable.
CASE PRESENTATION

OPERATIVE PROCEDURE

EXPLORATORY

LAPAROTOMY—upper midline incision

Mobilization of the left lobe of the liver

Opening of the lesser omentum and the phrenoesophageal membrane
CASE PRESENTATION

OPERATIVE PROCEDURE

Identification and ligation of the left gastric artery

GASTROTOMY-parallel to the lesser curvature
CASE PRESENTATION

OPERATIVE PROCEDURE

“Wedge” resection of the affected area just below the cardia along the lesser curvature
CASE PRESENTATION

OPERATIVE PROCEDURE

Closure with a running 3/0 Vicryl with Connell’s sutures
CASE PRESENTATION

- POSTOPERATIVE COURSE

  Started on EPOGEN and VENOFER

  4/29- extubated

  5/1- Ice chips

  5/3- Clears

  5/4- Postgastrectomy diet
CASE PRESENTATION

- **PATHOLOGY**
  
  Gastric ulcer with fresh hemorrhage and acute inflammation
  
  Marked fungal infection consistent with candida species
  
  Gastric content of degenerated skeletal muscles and vegetable
  
  Acute and chronic gastritis involving resection margins
MANAGEMENT OF UGIB

CURRENT TRENDS AND CONTROVERSIES
DEFINITION

- Bleeding that occurs proximal to the ligament of Treitz

PRESENTATION

- Severe bleeding - hematemesis/hematochesia
- Gradual bleeding - melena
- Occult bleeding - positive tests for blood in stool
INITIAL ASSESSMENT AND MANAGEMENT OF UGIB

Patient presents with upper GI bleeding

Perform initial assessment and management
Evaluate airway, breathing, and circulation.
Look for past or current hematemesis, melena, or hematochezia.
Draw blood for CBC, blood chemistries, measurement of PT and PTT, and typing and crossmatching.

Patient is stable
Proceed with workup.
If active bleeding is present: insert large-bore I.V. line before workup.

Patient is unstable
Give oxygen by mask or by ET tube and ventilator.
Insert large-bore I.V. line, and infuse lactated Ringer solution.
Insert urinary catheter, and monitor urine output.
Give blood as needed.
Correct any coagulopathies.

Patient stabilizes
Proceed with workup.

Patient remains unstable
Proceed to OR for intraoperative diagnosis and management.

Work up patient
Obtain history, focusing on known causes of upper GI bleeding and suspect medications.
Perform physical examination.
Perform NG aspiration.
Perform esophagastroduodenoscopy [see 5.18 Gastrointestinal Endoscopy].
Use other tests as appropriate:
- tagged red cell scans
- arteriography
- intraoperative endoscopic exploration

Manage specific source of upper GI bleeding.
RISK SCORING SYSTEMS TO PREDICT THE NEED FOR CLINICAL INTERVENTION IN NONVARICEAL UGIB

<table>
<thead>
<tr>
<th>Admission risk marker</th>
<th>Score component value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood urea nitrogen level (mg/dL)</td>
<td></td>
</tr>
<tr>
<td>$\geq 18.2$ to $&lt;22.4$</td>
<td>2</td>
</tr>
<tr>
<td>$\geq 22.4$ to $&lt;28$</td>
<td>3</td>
</tr>
<tr>
<td>$\geq 28$ to $&lt;70$</td>
<td>4</td>
</tr>
<tr>
<td>$\geq 70$</td>
<td>6</td>
</tr>
<tr>
<td>Hemoglobin level for men (g/dL)</td>
<td></td>
</tr>
<tr>
<td>$\geq 12$ to $&lt;13$</td>
<td>1</td>
</tr>
<tr>
<td>$\geq 10$ to $&lt;12$</td>
<td>3</td>
</tr>
<tr>
<td>$&lt;10$</td>
<td>6</td>
</tr>
<tr>
<td>Hemoglobin level for women (g/dL)</td>
<td></td>
</tr>
<tr>
<td>$\geq 10$ to $&lt;12$</td>
<td>1</td>
</tr>
<tr>
<td>$&lt;10$</td>
<td>6</td>
</tr>
<tr>
<td>Systolic blood pressure (mm Hg)</td>
<td></td>
</tr>
<tr>
<td>$\geq 100$ to $&lt;109$</td>
<td>1</td>
</tr>
<tr>
<td>$\geq 90$ to $&lt;99$</td>
<td>2</td>
</tr>
<tr>
<td>$&lt;90$</td>
<td>3</td>
</tr>
<tr>
<td>Other markers</td>
<td></td>
</tr>
<tr>
<td>Pulse rate $\geq 100$ beats/min</td>
<td>1</td>
</tr>
<tr>
<td>Presentation with melena</td>
<td>1</td>
</tr>
<tr>
<td>Presentation with syncope</td>
<td>2</td>
</tr>
<tr>
<td>Hepatic disease</td>
<td>2</td>
</tr>
<tr>
<td>Heart failure</td>
<td>2</td>
</tr>
</tbody>
</table>

Range of scores is from 0 to 23; maximum score is 23, high risk, greater than 0.

BLATCHFORD SCORE

RISK SCORING SYSTEMS TO PREDICT THE NEED FOR CLINICAL INTERVENTION IN NONVARICEAL UGIB

### CLINICAL AND COMPLETE ROCKALL RISK SCORES

<table>
<thead>
<tr>
<th>Variable</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (y)</td>
<td>0</td>
</tr>
<tr>
<td>Shock</td>
<td>1</td>
</tr>
<tr>
<td>Comorbidity</td>
<td>2</td>
</tr>
<tr>
<td>Shock</td>
<td>3</td>
</tr>
</tbody>
</table>

- Age (y):<60, 60-79, ≥80
- Shock: HR > 100 beats/min, SBP < 100 mm Hg, IHD, CHF, any major comorbidity, Renal failure, liver failure, metastatic malignancy

<table>
<thead>
<tr>
<th>Endoscopic diagnosis</th>
<th>Mallory-Weiss tear or no lesion observed</th>
<th>Peptic ulcer disease, erosive esophagitis</th>
<th>Malignancy of upper GI tract</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stigmata of recent hemorrhage</td>
<td>Clean-based ulcer, flat pigmented spot</td>
<td>Blood in upper GI tract, clot, visible vessel, bleeding</td>
<td></td>
</tr>
</tbody>
</table>

The clinical Rockall score, which is calculated without endoscopic finding, for each case was based on points assigned for 3 clinical variables: patient age at presentation, shock status based on initial heart rate and systolic pressure, and presence of comorbid disease. The complete Rockall score (after endoscopy) is calculated for each case based on points assigned for each of 3 aforementioned clinical variables plus 2 endoscopic variables: the endoscopic diagnosis and stigmata of recent hemorrhage based on the initial endoscopic examination. Patients with clinical Rockall scores (before endoscopy) of greater than 0 and patients with complete Rockall scores (after endoscopy) of greater than 2 are considered to be at high risk for developing adverse outcomes (recurrent bleeding, death). HR indicates heart rate; SBP, systolic blood pressure; IHD, ischemic heart disease; CHF, congestive heart failure.

# THE FOREST CLASSIFICATION

<table>
<thead>
<tr>
<th>Grade</th>
<th>Endoscopic Picture</th>
<th>Risk of rebleeding</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Active haemorrhage</td>
<td></td>
</tr>
<tr>
<td>IA</td>
<td>Spurting</td>
<td>85-100%</td>
</tr>
<tr>
<td>IB</td>
<td>Oozing</td>
<td>10-27%</td>
</tr>
<tr>
<td>II</td>
<td>Signs of recent haemorrhage</td>
<td></td>
</tr>
<tr>
<td>IIA</td>
<td>Visible vessel</td>
<td>50%</td>
</tr>
<tr>
<td>IIB</td>
<td>Adherent clot</td>
<td>30-35%</td>
</tr>
<tr>
<td>IIC</td>
<td>Haematin covered flat spot</td>
<td>&lt;8%</td>
</tr>
<tr>
<td>III</td>
<td>No signs of haemorrhage – clean bed of ulcer</td>
<td>&lt;3%</td>
</tr>
</tbody>
</table>
MANAGEMENT OF SPECIFIC SOURCES OF UGIB: DUODENAL ULCERS

- **STEP1**: Endoscopic control of bleeding
- **STEP2**: IV PPIs (drip or BID bolus)+/- anti HP treatment
- **STEP3**: Recurrence despite medical and endoscopic therapy: RESCOPE
MANAGEMENT OF SPECIFIC SOURCES OF UGIB: DUODENAL ULCERS

- **When to OPERATE?**
  - Massive bleeding (>6 PRBCs)
  - Failure of endoscopic control
  - Hemodynamic instability
  - High risk bleeders even if endoscopically controlled: Visible vessels, Giant Ulcers, Adherent Clot

- **How about VAGOTOMY?**
  - Maybe not in PPI naïve patients
  - May consider **Highly Selective Vagotomy** in stable patients
# Management of Specific Sources of UGIB: Gastric Ulcers

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type I</td>
<td>Located on the lesser curvature and not associated with acid secretion</td>
</tr>
<tr>
<td>Type II</td>
<td>Located on the lesser curvature associated with duodenal ulcers and acid hypersecretion</td>
</tr>
<tr>
<td>Type III</td>
<td>Located on the lesser curvature and associated with prepyloric ulcers and acid hypersecretion</td>
</tr>
<tr>
<td>Type IV</td>
<td>Located in the cardia near the GE junction and not associated with acid hypersecretion</td>
</tr>
<tr>
<td>Type V</td>
<td>Diffuse ulcers associated with medications e.g. NSAIDS</td>
</tr>
</tbody>
</table>
# Management of Specific Sources of UGIB: Gastric Ulcers

<table>
<thead>
<tr>
<th>Ulcer Type</th>
<th>Surgical Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type I</strong></td>
<td>Wedge resection of the ulcer</td>
</tr>
<tr>
<td><strong>Type II/III</strong></td>
<td>Antrectomy with Billroth I/II procedure with vagotomy</td>
</tr>
<tr>
<td><strong>Type IV</strong></td>
<td>Csendes procedure vs left gastric artery ligation, biopsy and oversewing the ulcer</td>
</tr>
</tbody>
</table>
Patient has bleeding from duodenal or gastric ulcer
- Initiate medical management.
  - PPI infusion
- Attempt to control bleeding endoscopically.

Bleeding continues
- Repeat attempt at endoscopic control.

Bleeding continues
- Proceed to OR for surgical treatment.

Bleeding stops
- Continue medical management.
  - PPI infusion
  - H. pylori therapy, if necessary

Patient has duodenal ulcer
- Perform duodenotomy and oversew ulcer.
- Consider truncal vagotomy (if patient is unstable) or highly selective vagotomy (if patient is stable).

Patient has gastric ulcer
- Treat according to ulcer type.
  - Type I: wedge resection
  - Type II/III: antrectomy, Billroth I reconstruction, and vagotomy
  - Type IV: Csendes procedure or ligation of left gastric artery with oversewing of ulcer
  - Type V: as for acute hemorrhagic gastritis
Management of Bleeding Esophageal Varices

Patient has bleeding from esophageal or gastric varices

- Attempt to control hemorrhage endoscopically with intravascular injection sclerotherapy or rubber banding (gastric varices are less amenable to sclerotherapy). Give IV somatostatin (250 μg bolus; then 250 μg/hr). Octreotide (25-50 μg/hr) is an alternative.

Bleeding stops

- If any varices remain, repeat injection sclerotherapy or banding at 2-wk intervals until varices are gone. Give propranolol p.o.

Bleeding does not recur

Bleeding continues

- Pass 4-port Minnesota tube, and perform balloon tamponade.

Bleeding does not recur

- Bleeding recurs

Bleeding continues

- Bleeding stops

Initial surgical management

- If any varices remain, repeat sclerotherapy or rubber banding at 2-wk intervals until varices are gone. Give propranolol p.o.

Patient is a transplant candidate

- Decompress portal venous system with transjugular intrahepatic portosystemic shunt (TIPS). Proceed with transplantation when suitable organ is obtained.

Patient is not a transplant candidate

- Procedure of choice depends on patient status.

Patient is stable

- Obtain arteriograms with views of portal vein and left renal vein.
  - If variceal anatomy is suitable, perform distal splenorenal shunting procedure.
  - If variceal anatomy is not suitable, consider esophageal transection (for esophageal varices only) or mesocaval or portosystemic shunt.

Patient is unstable

- Perform central portacaval shunting procedure (usually side to side or with short PTFE interposition graft).
  - Alternatively, consider esophageal transection (for esophageal varices only) or suture ligation of bleeding gastric varices.
MANAGEMENT OF SPECIFIC SOURCES OF UGIB: ESOPHAGEAL VARICES

- Even in the presence of known varices, the origin of bleeding is most commonly **non variceal**

- **Concerning medical therapy**
  
  Somatostatin is the best

  If Vasopressin is used -> use also nitrates

  Octreotide doesn’t decrease gastric blood flow

  Use propranolol after bleeding stops
MANAGEMENT OF SPECIFIC SOURCES OF UGIB: OTHER SOURCES

- **GASTRIC VARICES** - managed in much the same way as esophageal varices

- **MALLORY-WEISS TEARS** - stop bleeding w/o interventions
  - Endoscopic injection/clipping/banding
  - Oversewn at surgery (rarely)

- **ACUTE HEMORRAGIC GASTRITIS** - H2 blockers, PPIs, sucralfate +/- anti HP; *Intrarterial Vasopressin* (LGA); total or near total gastrectomy
MANAGEMENT OF SPECIFIC SOURCES OF UGIB: OTHER SOURCES

- NEOPLASMS - wedge resection of benign tumors
  Malignant tumors - initial endoscopic control; resect tumor if possible and patient stable

- HIATAL HERNIA - **Cameron lesions** (linear erosions at the level of the diaphragm) -> surgical management (mechanical erosion)
  
  **TYPE1 HH** - initial treatment with PPI
  **Surgical treatment** - complicated type 1 and symptomatic types 2, 3 and 4
MANAGEMENT OF SPECIFIC SOURCES OF UGIB: OTHER SOURCES

- DIEULAF OYE LESION - endoscopic control with clips or heater probe: 95% success rate
- HEMOBILIA - epigastric/RUQ pain; jaundice; GI bleeding: 40%
  - EGD/arteriography - diagnosis
  - Embolization - if unsuccessful -> surgical ligation
- HEMOSUCCUS PANCREATICUS - upper abdominal pain followed by hematochezia; EGD for diagnosis; Embolization vs pancreatic resection
Short and long-term results of transcatheter embolization for massive arterial hemorrhage from gastrointestinal ulcers not controlled by endoscopic hemostasis

Methods - massive peptic ulcer bleeding (>4 units/24h)/causing hemodynamic instability

- 60 patients (41 men/19 women)
- Mean age 69.4
- High operative risk/serious comorbid conditions
- 36 patients on anticoagulation
- Mean follow up 22 months
- Early rebleeding = bleeding within 30 days after embolisation

Short and long-term results of transcatheter embolization for massive arterial hemorrhage from gastrointestinal ulcers not controlled by endoscopic hemostasis

Results

<table>
<thead>
<tr>
<th>Outcomes after embolization</th>
<th>Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n/n</td>
</tr>
<tr>
<td>Procedural success</td>
<td>57/60</td>
</tr>
<tr>
<td>Early clinical success</td>
<td>41/57</td>
</tr>
<tr>
<td>Late clinical success</td>
<td>54/57</td>
</tr>
<tr>
<td>Rebleeding</td>
<td></td>
</tr>
<tr>
<td>Early rebleeding</td>
<td>16/57</td>
</tr>
<tr>
<td>Late rebleeding</td>
<td>0/57</td>
</tr>
<tr>
<td>Complications*</td>
<td></td>
</tr>
<tr>
<td>Major complications</td>
<td>2/60</td>
</tr>
<tr>
<td>Minor complications</td>
<td>4/60</td>
</tr>
<tr>
<td>Mortality</td>
<td></td>
</tr>
<tr>
<td>Within one month</td>
<td>16/60</td>
</tr>
<tr>
<td>After one month</td>
<td>11/44</td>
</tr>
<tr>
<td>Cause</td>
<td></td>
</tr>
<tr>
<td>Recurrent bleeding</td>
<td>3/27</td>
</tr>
<tr>
<td>Underlying illness</td>
<td>24/27</td>
</tr>
</tbody>
</table>

*Complications were classified as major complications if they required surgery and/or prolonged hospitalization, and as minor complications otherwise.
Short and long-term results of transcatheter embolization for massive arterial hemorrhage from gastrointestinal ulcers not controlled by endoscopic hemostasis

Conclusions

Arterial embolization is effective in controlling bleeding from GD ulcers even when extravasation is not visualized.

It has a lower morbidity compared to surgery and less mortality (the mortality rate for surgery after failed endoscopic therapy is 20-40%) in high risk patients.

More likely to be unsuccessful in patients taking anticoagulants and NSAIDS (13/36 vs 3/21).

Treatment of choice after failed endoscopy at the author’s institution.

REFERENCES

- Chen IC, Hung MS, Chiu TF, Chen JC, Hsiao CT. Risk scoring systems to predict need for clinical intervention for patients with non variceal upper gastrointestinal tract bleeding; Am J Em Med 2007;25: 774-779
- Loffroy R, Guiu B. Role of transcatheter arterial embolization for massive bleeding from gastroduodenal ulcers; World J Gastroenterol 2009; 15(47): 5889-5897
- Loffroy R, Guiu B, Mezzetta L et al. Short and long term results of transcatheter embolisation for massive arterial hemorrhage from gastroduodenal ulcers not controlled by endoscopic hemostasis; Can J Gastroenterol 2009; 23(2): 115-120