UPPER GASTROINTESTINAL BLEEDING

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LEARNING OBJECTIVES

- Causes of Upper GI bleeding
- Resuscitation, Risk stratification, Pre-endoscopy management
- Role of endoscopy
CAUSES OF UPPER GI BLEED
CAUSES OF UPPER GI BLEED

- Oesophagitis (10%) - Usually with hiatus hernia
- NSAIDs
  - H. pylori
- Peptic ulcer (35–50%)
- Vascular malformations (5%)
- Aortic graft
  - Aorto-duodenal fistula (0.2%)
- Liver
  - Portal vein disease thrombosis
  - Varices (2–9%)
- Retching
  - Mallory–Weiss tear (5%)
- Cancer of stomach or oesophagus (2%)
- NSAIDs
  - Alcohol
  - Gastric erosions (10–20%)
EMERGENCY RESUSCITATION

Takes priority over determining the diagnosis/cause

- **ABC** (main focus is ‘C’)
- Oxygen: High Flow
- 2 large bore cannulae
  - Take bloods at same time for FBC, U&E, LFT, Clotting, X match
- **IDC**
- IVF initially then **blood** as soon as available
- Monitor response to resuscitation frequently.
- Stop anti-coagulants and correct any clotting abnormalities
**Restrictive Strategy Superior**

<table>
<thead>
<tr>
<th></th>
<th>Restrictive</th>
<th>Liberal</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mortality rate</td>
<td>5%</td>
<td>9%</td>
<td>0.02</td>
</tr>
<tr>
<td>Rate of further bleeding</td>
<td>10%</td>
<td>16%</td>
<td>0.01</td>
</tr>
<tr>
<td>Overall complication rate</td>
<td>40%</td>
<td>48%</td>
<td>0.02</td>
</tr>
</tbody>
</table>

Benefit seen primarily in Child A/B cirrhotics

NEJM 2013;368;11-21
HISTORY AND EXAMINATION

1. Identify likely source – upper vs lower – and potential cause

2. Determine severity of bleeding

3. Identify precipitants (e.g. Drugs)
HISTORY IN PATIENTS WITH GI BLEEDING

“AMPLE”

- Presenting complaint
- Allergies
- Medications: and any recent change to medications.
- Is the patient currently taking anti-inflammatory medication, or aspirin?
- Are they on anticoagulant medications?
- Are they taking iron with can turn stool black?
- Past medical past surgical history relevant: Alcohol intake; liver disease; abdominal aortic aneurysm; angiodysplasia; diverticulosis; GORD; haemorrhoids; peptic ulcer disease; varices or portal hypertension.
- Last ate / drank & last menstrual period (LMP)
- Events and environment leading to presentation: duration of onset
# Haemodynamic Response to Bleeding

<table>
<thead>
<tr>
<th></th>
<th>Class I</th>
<th>Class II</th>
<th>Class III</th>
<th>Class IV</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Volume Loss</strong> (ml)</td>
<td>0–750</td>
<td>750–1500</td>
<td>1500–2000</td>
<td>&gt;2000</td>
</tr>
<tr>
<td><strong>Loss (%)</strong></td>
<td>0–15</td>
<td>15–30</td>
<td>30–40</td>
<td>&gt;40</td>
</tr>
<tr>
<td><strong>RR</strong></td>
<td>14–20</td>
<td>20–30</td>
<td>30–40</td>
<td>&gt;40</td>
</tr>
<tr>
<td><strong>HR</strong></td>
<td>&lt;100</td>
<td>&gt;100</td>
<td>&gt;120</td>
<td>&gt;140</td>
</tr>
<tr>
<td><strong>BP</strong></td>
<td>Unchanged</td>
<td>Unchanged</td>
<td>Reduced</td>
<td>Reduced</td>
</tr>
<tr>
<td><strong>Urine Output</strong> (ml/hr)</td>
<td>&gt;30</td>
<td>20–30</td>
<td>5–15</td>
<td>Anuric</td>
</tr>
<tr>
<td><strong>Mental State</strong></td>
<td>Restless</td>
<td>Anxious</td>
<td>Anxious/confused</td>
<td>Confused/lethargic</td>
</tr>
</tbody>
</table>
EXAMINATION IN PATIENTS WITH GI BLEEDING

- Reduced level of consciousness.
- Pale and clammy.
- HR: Tachycardic
- BP: Hypotensive
- Tenderness on abdominal examination may point to underlying cause e.g. Epigastric → PUD
- Stigmata of chronic liver disease (palmar erythema, liver flap, jaundice, spider naevi, shifting dullness/ascites)
- **Digital rectal examination** may reveal melaena, dark red blood, bright red blood.
RISK STRATIFICATION
# Risk Stratification: Rockall Score

- Identifies patients at risk of adverse outcome following acute upper GI bleed

## Table: Rockall Score

<table>
<thead>
<tr>
<th>Variable</th>
<th>Score 0</th>
<th>Score 1</th>
<th>Score 2</th>
<th>Score 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td>&lt;60</td>
<td>60-79</td>
<td>&gt;80</td>
<td>-</td>
</tr>
<tr>
<td><strong>Shock</strong></td>
<td>Nil</td>
<td>HR &gt;100</td>
<td>SBP &lt;100</td>
<td>-</td>
</tr>
<tr>
<td><strong>Co-morbidity</strong></td>
<td>Nil major</td>
<td>-</td>
<td>IHD/CCF/major morbidity</td>
<td>Renal failure/liver failure</td>
</tr>
<tr>
<td><strong>Diagnosis</strong></td>
<td>Mallory Weiss tear</td>
<td>All other diagnoses</td>
<td>GI malignancy</td>
<td>-</td>
</tr>
<tr>
<td><strong>Endoscopic Findings</strong></td>
<td>None</td>
<td>-</td>
<td>Blood, adherent clot, spurting vessel</td>
<td>-</td>
</tr>
</tbody>
</table>

- Score <3 carries good prognosis
- Score >8 carries high risk of mortality
BLATCHFORD SCORE

- Predicts need for endoscopic therapy
- Based on readily available clinical and lab data
- Can use UpToDate calculator

<table>
<thead>
<tr>
<th>Admission risk marker</th>
<th>Score component value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood urea (mmol/L)</td>
<td></td>
</tr>
<tr>
<td>≥8.5 &lt; 8.0</td>
<td>2</td>
</tr>
<tr>
<td>≥8.0 &lt; 10.0</td>
<td>3</td>
</tr>
<tr>
<td>≥10.0 &lt; 25.0</td>
<td>4</td>
</tr>
<tr>
<td>≥25</td>
<td>6</td>
</tr>
<tr>
<td>Haemoglobin (g/L) for men</td>
<td></td>
</tr>
<tr>
<td>≥120 &lt; 130</td>
<td>1</td>
</tr>
<tr>
<td>≥100 &lt; 120</td>
<td>3</td>
</tr>
<tr>
<td>&lt;10.0</td>
<td>6</td>
</tr>
<tr>
<td>Haemoglobin (g/L) for women</td>
<td></td>
</tr>
<tr>
<td>≥100 &lt; 120</td>
<td>1</td>
</tr>
<tr>
<td>&lt;100</td>
<td>6</td>
</tr>
<tr>
<td>Systolic blood pressure (mm Hg)</td>
<td></td>
</tr>
<tr>
<td>100–109</td>
<td>1</td>
</tr>
<tr>
<td>90–99</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 ≥100 (per min)</td>
<td>1</td>
</tr>
<tr>
<td>Presentation with melaena</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>Cardiac failure</td>
<td>2</td>
</tr>
</tbody>
</table>

Lancet 2000;356:1318
**BLATCHFORD SCORE**

- Most useful for safely discriminating low risk UGIB patients who will likely NOT require endoscopic hemostasis
- “Fast track Blatchford” – patient at low risk if:

  - BUN < 18 mg/dL
  - Hgb > 13 (men), 12 (women)
  - SBP > 100
  - HR < 100
BLATCHFORD SCORE

Distribution of the Blatchford Score

- Therapeutic endoscopy required
- Therapeutic endoscopy not required

Patients (%)

Blatchford Score

Gastrointest Endosc 2010;71:1134
**MANAGEMENT (NON-VARICEAL)**

- **Pharmacology**
  - PPI (infusion) – pH >6 stabilises clots and reduces risk of re-bleeding following endoscopic haemostasis
  - Tranexamic acid (anti-fibrinolytic) – maybe of benefit (more studies needed)
  - Stop NSAIDs/aspirin/clopidogrel/warfarin/steroids if safe to do so (risk: benefit analysis)
PRE-ENDOSCOPY PPI

▪ Reduces the proportion of patients with high risk endoscopic stigmata ("downstages" lesion)

▪ Decreases need for endoscopic therapy

▪ Has not been shown to reduce re-bleeding, surgery, or mortality rates

Endoscopic treatment required:
Omeprazole – 19% (23% of PUD)
Placebo – 28% (37% of PUD)
WHEN IS ENDOSCOPIC THERAPY REQUIRED?

- ~80% bleeds spontaneously resolve
- Endoscopic stigmata of recent hemorrhage

<table>
<thead>
<tr>
<th>Stigmata</th>
<th>Continued/rebleeding rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active bleeding</td>
<td>55-90%</td>
</tr>
<tr>
<td>Nonbleeding visible vessel</td>
<td>40-50%</td>
</tr>
<tr>
<td>Adherent clot</td>
<td>Variable, depending on underlying lesion: 0-35%</td>
</tr>
<tr>
<td>Flat pigmented spot</td>
<td>7-10%</td>
</tr>
<tr>
<td>Clean base</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>
MAJOR STIGMATA - NBVV
ADHERENT CLOT

- Role of endoscopic therapy of ulcers with adherent clot is controversial
- Clot removal usually attempted
- Underlying lesion can then be assessed, treated if necessary
MINOR STIGMATA

Flat pigmented spot

Clean base

Low rebleeding risk – no endoscopic therapy needed
ENDOSCOPIC HEMOSTASIS THERAPY

- Adrenaline 1:10000 injection
- Thermal electrocoagulation
- Mechanical (haemoclips)
- Combination (dual) therapy superior to monotherapy


NONVARICEAL UGIB – POST-ENDOSCOPY MANAGEMENT

- Patients with low risk ulcers can be fed promptly, put on oral PPI therapy.

- Patients with ulcers requiring endoscopic therapy should receive **PPI infusion x 72 hours**
  - Significantly reduces 30 day re-bleeding rate vs placebo (6.7% vs. 22.5%)

Arch Intern Med 2010;170:751
NONVARICEAL UGIB – POST-ENDOSCOPY MANAGEMENT

- Determine *H. pylori* status in all ulcer patients
- Discharge patients on PPI (once to twice daily), duration dictated by underlying etiology and need for NSAIDs/ aspirin
- In patients with cardiovascular disease on low dose aspirin: restart as soon as bleeding has resolved
  - RCT demonstrates increased risk of rebleeding (10% v 5%) but decreased 30 day mortality (1.3% v 13%)

Not dying is more important than not rebleeding

Ann Intern Med 2010;152:1
INTERVENTIONAL RADIOLOGY
UPPER GI VARICEAL BLEED
VARICEAL BLEEDING

- Occurs in 1/3 of patients with cirrhosis
- 1/3 initial bleeding episodes are fatal
- Among survivors, 1/3 will rebleed within 6 weeks
- Only 1/3 will survive
  1 year or more
VARICEAL BLEED

- Vasoconstricctor therapy
- Antibiotics
- Resuscitation
- ICU level care
- Endoscopy
- Alternative/Rescue therapies
- Beta blockade
Vasoconstrictor Therapy

- **Goal**: Reduce splanchnic blood flow
- **Octreotide** (somatostatin analogue)
  - Standard dose: 50 mcg bolus, then 50 mcg/hr drip for 3-5 days
- **Terlipressin** – only agent shown to improve control of bleeding and survival in RCTs and meta-analysis
  - Available but not first line in Australia

Gastroenterology 2001;120:946
Cochrane Database Syst Rev 2008;16:CD000193
Am J Gastroenterol 2009;104:617
**ANTIBIOTICS**

- Bacterial infection occurs in up to 66% of patients with cirrhosis and variceal bleed
- Negative impact on hemostasis (endogenous heparinoids)
- **Prophylactic antibiotics reduces incidence of bacterial infection, significantly reduces early rebleeding**
  - Ceftriaxone 1 g IV QD x 5-7 days
  - Alt: Norfloxacin 400 mg po BID
Resuscitation

- Promptly but with caution
- Goal = maintain hemodynamic stability, Hgb ~7-8
- Avoid excessively rapid overexpansion of volume; may increase portal pressure, greater bleeding.
ENDOSCOPY

- Should be performed as soon as possible after resuscitation (within 12 hours)
- Endotracheal intubation frequently needed
- Band ligation is preferred method

Endoscopic band ligation
**Sengstaken-Blakemore Tube**

- Very effective for immediate, temporary control
- High complication rate – aspiration, migration, necrosis + perforation of esophagus
- Use as bridge to TIPS within 24 hours
- Airway protection strongly recommended
ALTERNATIVE/RESCUE THERAPIES

Self-Expanding Metal Stent

- Specially designed covered metal stent
- Tamponades distal esophageal varices
- Removable; does not require airway protection
- Limited data but some studies suggest better results than SB tube. (Hepatology Jan 2016)
ALTERNATIVE/RESCUE THERAPIES

- TIPS – Transjugular Intrahepatic Portosystemic Shunt

- Early placement of shunt (within 24-72hrs) associated with improved survival among high-risk patients
EMBOLIZATION OF GASTRIC VARICES
**Beta Blockade**

- Reduces risk for recurrent variceal hemorrhage
- Use *nonselective beta blocker* (e.g. Propranolol – splanchnic vasoconstriction, decrease cardiac output) and titrate up to maximum tolerated dose, HR 50-60
  - Start as inpatient, once acute bleeding has resolved and patient shows hemodynamic stability
Prognosis closely related to severity of underlying chronic liver disease (Childs-Pugh grading)

Child-Pugh classification grades severity of liver disease into A, B, C based on degree of ascites, encephalopathy, bilirubin, albumin, INR

<table>
<thead>
<tr>
<th>Parameter</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ascites</td>
<td>Absent</td>
<td>Slight</td>
<td>Moderate</td>
</tr>
<tr>
<td>Hepatic encephalopathy</td>
<td>None</td>
<td>Grade 1-2</td>
<td>Grade 3-4</td>
</tr>
<tr>
<td>Bilirubin micromol/L (mg/dL)</td>
<td>&lt;34.2 (&lt;2)</td>
<td>34.2-51.3 (2-3)</td>
<td>&gt;51.3 (&gt;3)</td>
</tr>
<tr>
<td>Albumin g/L (g/dL)</td>
<td>&gt;35 (&gt;3.5)</td>
<td>28-35 (2.8-3.5)</td>
<td>&lt;28 (&lt;2.8)</td>
</tr>
<tr>
<td>Prothrombin time seconds</td>
<td>&lt;4</td>
<td>4-6</td>
<td>&gt;6</td>
</tr>
<tr>
<td>INR</td>
<td>&lt;1.7</td>
<td>1.7-2.3</td>
<td>&gt;2.3</td>
</tr>
</tbody>
</table>

CPT classification:
- Child A: score 5-6 (well compensated);
- Child B: score 7-9 (significant functional compromise);
- Child C: score 10-15 (decompensated)

Mortality 32% Childs A, 46% Childs B, 79% Childs C
TAKE HOME MESSAGE

- Stabilise
- Scope
- Intervene.