Gastrointestinal (GI) bleeding

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RCPT ูตริติค์
GI Bleeding

Objective:

• To understand how to assess a patient who has upper GI and Mid-GI bleeding
• To tell the current medical treatment for upper GI and Mid-GI bleeding patients
Gastrointestinal (GI) Bleeding: Epidemiology

• USA: upper GI hemorrhage ~ 36-102:100,000 cases
• Male: Female ~ 2:1
• Acute GI hemorrhage > chronic
• Upper GI hemorrhage > lower GI hemorrhage
• Mortality
  • Upper GI hemorrhage ~ 3.5-7%
  • Lower GI hemorrhage ~ 3.6%
• Surgery ~ 10%
• Rebleeding ~ 20%
Causes of UGI Bleeding

- Peptic ulcer disease: 40-50%
- Erosive gastritis/duodenitis: 20-35%
- Varices: 8-15%
- Mallory-Weiss Syndrome: 8-15%
- Esophagitis: 6%
- Neoplasm: 3%
- Miscellaneous: 7%

Gastrointestinal (GI) Hemorrhage: Classification

Classification

• Upper GI hemorrhage = bleeding above Ligament of Treitz

• Lower GI hemorrhage = bleeding below Ligament of Treitz
Gastrointestinal bleeding

• Upper GI bleeding = bleeding above the ampulla of Vater

• Mid GI bleeding = bleeding from the ampulla of Vater to the terminal ileum

• Lower GI bleeding = colonic bleeding

Raju GS, et al. Gastroenterology 2007;133:1694-1717
Hematemesis / Melena

Initial Assessment and Resuscitation

Risk Stratification

Low Risk

High Risk

6. PPI for Suspected Non-variceal Bleeding

Endoscopy Available

Yes

No

Ulcer bleeding

Variceal bleeding

Others

Refer
# Rockall scoring system for risk of rebleeding and death after admission to hospital for acute UGIB

<table>
<thead>
<tr>
<th>Variable</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (Y)</td>
<td>&lt;60</td>
<td>60-79</td>
<td>≥80</td>
<td></td>
</tr>
<tr>
<td>Shock</td>
<td>No shock (SBP&gt;100, P&lt;100)</td>
<td>Tachycardia (SBP&gt;100, P&gt;100)</td>
<td>Hypotension (SBP&lt;100, P&gt;100)</td>
<td></td>
</tr>
<tr>
<td>Comorbidity</td>
<td>Nil major</td>
<td></td>
<td>Cardiac failure, ischemic heart disease, any major comorbidity</td>
<td>Renal failure, liver failure, disseminated malignancy</td>
</tr>
<tr>
<td>Diagnosis</td>
<td>MWT, no lesion, and no SRH</td>
<td>All other diagnosis</td>
<td>Malignancy of upper GI tract</td>
<td></td>
</tr>
<tr>
<td>Major SRH</td>
<td>None or dark spot</td>
<td>Blood in UGI tract, adherent clot, visible spurting vessel</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Each variable is scored and the total score calculated by simple addition SRH, stigmata of recent hemorrhage. MWT, Mallory Weiss tear*
## Correlation between Rockall score and rebleeding and mortality

A total score of <3 is associated with excellent outcome, whereas a score >8 carries a high mortality.

<table>
<thead>
<tr>
<th>Risk score</th>
<th>n</th>
<th>Rebleed (%)</th>
<th>Mortality (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>144</td>
<td>7 (5)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>1</td>
<td>281</td>
<td>9 (3)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>2</td>
<td>337</td>
<td>18 (5)</td>
<td>1 (0.2)</td>
</tr>
<tr>
<td>3</td>
<td>444</td>
<td>50 (11)</td>
<td>13 (3)</td>
</tr>
<tr>
<td>4</td>
<td>528</td>
<td>76 (14)</td>
<td>28 (5)</td>
</tr>
<tr>
<td>5</td>
<td>455</td>
<td>83 (24)</td>
<td>49 (11)</td>
</tr>
<tr>
<td>6</td>
<td>312</td>
<td>102 (33)</td>
<td>54 (17)</td>
</tr>
<tr>
<td>7</td>
<td>267</td>
<td>113 (44)</td>
<td>72 (27)</td>
</tr>
<tr>
<td>8+</td>
<td>190</td>
<td>101 (42)</td>
<td>78 (41)</td>
</tr>
</tbody>
</table>

Sanders DS. Am J Gastroenterol 2002
1. Evaluate of SRH at ulcer bases

<table>
<thead>
<tr>
<th></th>
<th>Rebleeding</th>
<th>Surgery</th>
<th>Death</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clean base</td>
<td>5%</td>
<td>0.5%</td>
<td>2%</td>
</tr>
<tr>
<td>Spot</td>
<td>10%</td>
<td>6%</td>
<td>3%</td>
</tr>
<tr>
<td>Adherent clot</td>
<td>22%</td>
<td>10%</td>
<td>7%</td>
</tr>
<tr>
<td>NBVV</td>
<td>43%</td>
<td>34%</td>
<td>11%</td>
</tr>
<tr>
<td>Active bleeding</td>
<td>55%</td>
<td>35%</td>
<td>11%</td>
</tr>
</tbody>
</table>

Endoscopic treatment
<table>
<thead>
<tr>
<th>Demographic data</th>
<th>overall</th>
<th>low risk</th>
<th>high risk</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>62 ± 16</td>
<td>58 ± 17</td>
<td>70 ± 11</td>
<td>&lt;0.0001*</td>
</tr>
<tr>
<td>Sex (Male)</td>
<td>287(71%)</td>
<td>203(71%)</td>
<td>84(71%)</td>
<td>0.93</td>
</tr>
<tr>
<td>Underlying disease</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Heart disease</td>
<td>120(22.3%)</td>
<td>71(22.3%)</td>
<td>49(22.2%)</td>
<td>0.04*</td>
</tr>
<tr>
<td>- Renal disease</td>
<td>30(5.5%)</td>
<td>17(5.3%)</td>
<td>13(5.9%)</td>
<td>0.08</td>
</tr>
<tr>
<td>- Liver disease</td>
<td>34(6.3%)</td>
<td>19(6%)</td>
<td>15(6.9%)</td>
<td>0.04*</td>
</tr>
<tr>
<td>- Malignancy</td>
<td>27(5%)</td>
<td>13(4.1%)</td>
<td>14(6.3%)</td>
<td>0.007*</td>
</tr>
<tr>
<td>- Stroke</td>
<td>47(8.7%)</td>
<td>30(9.4%)</td>
<td>17(7.7%)</td>
<td>0.26</td>
</tr>
<tr>
<td>- COPD</td>
<td>16(3%)</td>
<td>9(2.8%)</td>
<td>7(3.2%)</td>
<td>0.19</td>
</tr>
<tr>
<td>- DM</td>
<td>99(18.4%)</td>
<td>55(17.3%)</td>
<td>44(19.9%)</td>
<td>0.0001*</td>
</tr>
<tr>
<td>- Hypertension</td>
<td>166(30.8%)</td>
<td>104(32.7%)</td>
<td>62(28.1%)</td>
<td>0.002*</td>
</tr>
<tr>
<td>Drugs use</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Aspirin</td>
<td>109(27%)</td>
<td>66(23%)</td>
<td>43(36%)</td>
<td>0.006*</td>
</tr>
<tr>
<td>- Clopidogrel</td>
<td>31(8%)</td>
<td>15(5%)</td>
<td>16(14%)</td>
<td>0.004*</td>
</tr>
<tr>
<td>- NSAIDs</td>
<td>115(28%)</td>
<td>86(30%)</td>
<td>29(25%)</td>
<td>0.27</td>
</tr>
<tr>
<td>Alcohol drinking</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- never</td>
<td>230(57%)</td>
<td>151(52%)</td>
<td>79(67%)</td>
<td>0.01*</td>
</tr>
<tr>
<td>- active drinker</td>
<td>171(42%)</td>
<td>134(47%)</td>
<td>37(31%)</td>
<td></td>
</tr>
<tr>
<td>- ex-drinker</td>
<td>4(1%)</td>
<td>2(1%)</td>
<td>2(2%)</td>
<td></td>
</tr>
<tr>
<td>Bleeding before admission(hours)</td>
<td>35±41</td>
<td>39±44</td>
<td>25±31</td>
<td>0.002*</td>
</tr>
</tbody>
</table>

Laosanguanek N, Bubthamala J, Leelakusolvong S, Charuscharoenwitthaya P. 2010
Presenting symptoms of non-variceal upper GI Bleeding in Thai patients

<table>
<thead>
<tr>
<th>Presenting symptom</th>
<th>overall</th>
<th>low risk</th>
<th>high risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coffee ground</td>
<td>70(17%)</td>
<td>51(18%)</td>
<td>19(16%)</td>
</tr>
<tr>
<td>Hematemesis</td>
<td>129(32%)</td>
<td>88(31%)</td>
<td>41(35%)</td>
</tr>
<tr>
<td>Melena</td>
<td>190(47%)</td>
<td>136(47%)</td>
<td>54(46%)</td>
</tr>
<tr>
<td>Hematochezia</td>
<td>16(4%)</td>
<td>12(4%)</td>
<td>4(3%)</td>
</tr>
</tbody>
</table>

Laosanguanek N, Bubthamala J, Leelakusolvong S, Charuscharoenwitthaya P. 2010
<table>
<thead>
<tr>
<th>Cause of bleeding</th>
<th>overall</th>
<th>low risk</th>
<th>high risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clean based ulcer</td>
<td>170(42%)</td>
<td>142(49%)</td>
<td>28(24%)</td>
</tr>
<tr>
<td>Hemorrhagic spot ulcer</td>
<td>28(7%)</td>
<td>23(8%)</td>
<td>5(4%)</td>
</tr>
<tr>
<td>Adherent clot with ulcer</td>
<td>12(3%)</td>
<td>4(1%)</td>
<td>8(7%)</td>
</tr>
<tr>
<td>NBVVV with ulcer</td>
<td>54(13%)</td>
<td>17(6%)</td>
<td>37(31%)</td>
</tr>
<tr>
<td>Active ulcer bleeding</td>
<td>17(4%)</td>
<td>6(2%)</td>
<td>11(9%)</td>
</tr>
<tr>
<td>Esophageal ulcer</td>
<td>12(3%)</td>
<td>8(3%)</td>
<td>4(3%)</td>
</tr>
<tr>
<td>Gastroduodenitis</td>
<td>50(12%)</td>
<td>42(15%)</td>
<td>8(7%)</td>
</tr>
<tr>
<td>Esophagitis</td>
<td>10(2.5%)</td>
<td>9(3%)</td>
<td>1(1%)</td>
</tr>
<tr>
<td>Mallory Weiss tear</td>
<td>15(3.7%)</td>
<td>13(5%)</td>
<td>2(2%)</td>
</tr>
<tr>
<td>Dieulafoy's lesion</td>
<td>3(0.7%)</td>
<td>2(0.7%)</td>
<td>1(1%)</td>
</tr>
<tr>
<td>Angiodysplasia</td>
<td>3(0.7%)</td>
<td>1(0.4%)</td>
<td>2(2%)</td>
</tr>
<tr>
<td>GI malignancy</td>
<td>13(3.2%)</td>
<td>5(1.7%)</td>
<td>8(7%)</td>
</tr>
</tbody>
</table>
Hematemesis / Melena

Initial Assessment and Resuscitation

Risk Stratification

Low Risk
- Supportive Treatment and Monitoring
- Elective Endoscopy

High Risk
- PPI for Suspected Non-variceal Bleeding
- Somatostatin for Suspected Variceal Bleeding
Non-variceal and Variceal Bleeding

Table 3  Multivariate analysis showing independent factors associated with variceal bleeding

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Odds ratio</th>
<th>95% CI</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Previous diagnosis of cirrhosis or signs of chronic liver disease</td>
<td>22.4</td>
<td>8.3-60.4</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Red vomitus</td>
<td>4.6</td>
<td>1.8-11.9</td>
<td>0.020</td>
</tr>
<tr>
<td>Red NG aspirate</td>
<td>3.3</td>
<td>1.3-8.3</td>
<td>0.011</td>
</tr>
</tbody>
</table>

UGIB Score = \((3.1 \times \text{previous diagnosis of cirrhosis or the presence of signs of chronic liver disease}) + (1.5 \times \text{presence of red vomitus}) + (1.2 \times \text{presence of red NG aspirate})\).
Non-variceal and Variceal Bleeding

Accuracy 82%

Management goals for upper GI bleeding

- Resuscitation
- Identification of bleeding site
- Cessation of active bleeding
- Prevention of recurrence of bleeding
Initial Management

• Early intensive-care monitoring*
  • Reduce time to hemodynamic stabilization
  • Reduce mortality rate

• UGI bleeding team**
  • Improve overall MR 8% compared with 14%

*Baradarian R. Am J Gastroenterol. 2004
**Sander DS. Eur J Gastroenterol Hepatol 2004
<table>
<thead>
<tr>
<th></th>
<th>GI team</th>
<th>General GI</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rebleeding</td>
<td>16%</td>
<td>31%</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>Surgery</td>
<td>4%</td>
<td>20%</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>Mortality</td>
<td>4%</td>
<td>11%</td>
<td>&lt;0.10</td>
</tr>
<tr>
<td>Length of stay</td>
<td>9.4</td>
<td>16.2</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>Hospital charge</td>
<td>$29,819</td>
<td>$76,935</td>
<td>&lt;0.05</td>
</tr>
</tbody>
</table>

Stevens. Gastrointest Endosc 1997
Barkun A.Ann Intern med 2003
Hemostasis

- Initial hemostasis
  - Endoscopic therapy
  - Pharmacologic therapy

- Prevent rebleeding
  - Pharmacologic therapy
  - Second look endoscopy
A. Resuscitation, risk assessment, and preendoscopy management

• A1. Immediately evaluate and initiate appropriate resuscitation.

• A2. Prognostic scales are recommended for early stratification of patients into low- and high-risk categories for rebleeding and mortality.

• A3. Consider placement of a nasogastric tube in selected patients because the findings may have prognostic value.

• A4. Blood transfusions should be administered to a patient with a hemoglobin level 70 g/L.

• A5. In patients receiving anticoagulants, correction of coagulopathy is recommended but should not delay endoscopy.

1. Hematemesis / Melena

2. Initial Assessment and Resuscitation

3. Risk Stratification

3A Low Risk

4. Supportive Treatment and Monitoring

5. Elective Endoscopy

3B High Risk

6. PPI for Suspected Non-variceal Bleeding

7. Somatostatin for Suspected Variceal Bleeding

Endoscopy Available

8. No

Endoscopy Available

Yes

Ulcer bleeding

Variceal bleeding

Others

Refer
Empirical Therapy

Nonvariceal upper GI haemorrhage

- Acid related disease: > 75%
- Bleeding peptic ulcer
  ~ 75% stop spontaneously
  ~ 25% recurrent bleeding

Treatments of Non-variceal UGIH

- Medical treatment
- Endoscopic treatment
- Radiology intervention
- Surgical treatment
Pharmacologic Therapy

• Acid suppressing agents
  • $\text{H}_2$-receptor antagonists (H$_2$RAs),
  • proton pump inhibitors (PPIs)
• Splanchnic blood pressure modifiers
  • vasopressin, somatostatin, octreotide
• Anti-fibrinolytic agents
  • tranexamic acid
Role of PPI in Non-variceal Upper GiHg

Risk stratification

TIME

Day 0  Day 1  Day 2  Day 3

PPI Before

PPI After endoscopy

Upper Gi Hg

Endoscopy ± Therapeutics
Timing for endoscopy in high risk non-variceal upper GIHg

• Study compare 0-6 hr and 6-24 hr for endoscopy
• Retrospective review in 169 patients (77 patients 0-6 hr and 92 patients 6-24 hr)
• No difference in
  • Rebleeding
  • Surgery
  • Mortality
  • Readmission within 30 days

PPI before Endoscopy in non-variceal Upper Gastrointestinal Hemorrhage

4 RCTs
Total n = 1,512

PPI (IV or Oral) vs Control

- Mortality: OR=1.12 (0.72-1.73)
- Re-bleeding: OR=0.81 (0.61-1.09)
- Surgery: OR=0.96 (0.68-1.35)
- Reduced proportion of patient with SRH: OR=0.67 (0.54-0.84)

Dorward S et al. Cochrane Review 2006 issue 4
Omeprazole before endoscopy in patients with GI bleeding


Omeprazole 80 mg iv bolus then 8 mg/hr

<table>
<thead>
<tr>
<th>Type of Ulcer</th>
<th>Omeprazole</th>
<th>Placebo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actively bleeding peptic ulcer</td>
<td>12</td>
<td>28</td>
</tr>
<tr>
<td>Ulcer with nonbleeding visible vessels</td>
<td>23</td>
<td>31</td>
</tr>
<tr>
<td>Clot</td>
<td>7</td>
<td>11</td>
</tr>
<tr>
<td>Flat, pigmented spots</td>
<td>25</td>
<td>30</td>
</tr>
<tr>
<td>Ulcer with clean base</td>
<td>120</td>
<td>90</td>
</tr>
</tbody>
</table>

P = 0.001

P = 0.01

No. of Ulcers

## PPI treatment for acute peptic ulcer bleeding

<table>
<thead>
<tr>
<th>Parameters</th>
<th>No study</th>
<th>Mortality (OR)</th>
<th>Rebleeding (OR)</th>
<th>Surgery (OR)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>04 Type of control</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>04.1 PPI vs H$_2$RA</td>
<td>14</td>
<td>↔</td>
<td>↓ 0.63 (0.49-0.81)</td>
<td>↔</td>
</tr>
<tr>
<td>04.2 PPI vs placebo</td>
<td>7</td>
<td>↔</td>
<td>↓ 0.41 (0.23-0.72)</td>
<td>↓ 0.61 (0.45-0.84)</td>
</tr>
<tr>
<td><strong>05 Route of PPI administration</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>05.1 Oral PPI</td>
<td>5</td>
<td>↔</td>
<td>↓ 0.32 (0.20-0.50)</td>
<td>↓ 0.38 (0.22-0.66)</td>
</tr>
<tr>
<td>05.2 iv. PPI</td>
<td>16</td>
<td>↔</td>
<td>↓ 0.62 (0.50-0.75)</td>
<td>↓ 0.69 (0.52-0.91)</td>
</tr>
<tr>
<td><strong>06 PPI dose</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>06.1 High dose PPI</td>
<td>5</td>
<td>↔</td>
<td>↓ 0.47 (0.28-0.82)</td>
<td>↓ 0.61 (0.40-0.93)</td>
</tr>
<tr>
<td>06.2 Low dose PPI</td>
<td>12</td>
<td>↔</td>
<td>↓ 0.47 (0.34-0.70)</td>
<td>↓ 0.61 (0.45-0.82)</td>
</tr>
</tbody>
</table>

Leontiadis GI et al. Cochrane Review 2006
## PPI treatment for acute peptic ulcer bleeding

<table>
<thead>
<tr>
<th>Parameters</th>
<th>No study</th>
<th>Mortality (OR)</th>
<th>Rebleeding (OR)</th>
<th>Surgery (OR)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>07 Initial endoscopic hemostatic treatment</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>07.1 With initial EHT</td>
<td>11</td>
<td>↔</td>
<td>↓ 0.57 (0.42-0.78)</td>
<td>↓ 0.60 (0.43-0.85)</td>
</tr>
<tr>
<td>07.2 Without initial EHT</td>
<td>5</td>
<td>↔</td>
<td>↓ 0.38 (0.18-0.81)</td>
<td>↓ 0.62 (0.44-0.88)</td>
</tr>
<tr>
<td><strong>08 PPI dose for studies allowing initial endoscopic hemostatic treatment</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>08.1 Oral or low dose iv. PPI</td>
<td>7</td>
<td>↔</td>
<td>↓ 0.54 (0.36-0.82)</td>
<td>↔</td>
</tr>
<tr>
<td>08.2 High dose iv. PPI</td>
<td>6</td>
<td>↔</td>
<td>↓ 0.47 (0.28-0.82)</td>
<td>↓ 0.61 (0.40-0.93)</td>
</tr>
</tbody>
</table>

Leontiadis GI et al. Cochrane Review 2006
International Consensus on Nonvariceal Upper Gastrointestinal Bleeding

A. Resuscitation, risk assessment, and preendoscopy management

• A6. Promotility agents should not be used routinely before endoscopy to increase the diagnostic yield.
• A7. Selected patients with acute ulcer bleeding who are at low risk for rebleeding on the basis of clinical and endoscopic criteria may be discharged promptly after endoscopy.
• A8. Preendoscopic PPI therapy may be considered to downstage the endoscopic lesion and decrease the need for endoscopic intervention but should not delay endoscopy.

International Consensus on Nonvariceal Upper Gastrointestinal Bleeding

B. Endoscopic management

- B1. Develop institution-specific protocols for multidisciplinary management. Include access to an endoscopist trained in endoscopic hemostasis.
- B2. Have available on an urgent basis support staff trained to assist in endoscopy.
- B3. Early endoscopy (within 24 hours of presentation) is recommended for most patients with acute upper gastrointestinal bleeding.
- B4. Endoscopic hemostatic therapy is not indicated for patients with low-risk stigmata (a clean-based ulcer or a nonprotuberant pigmented dot in an ulcer bed).

PPI treatment for acute peptic ulcer bleeding

Conclusions

• PPI treatment in PU bleeding reduces
  • rebleeding and
  • surgery compared with placebo or H2RA
  • but not on all-cause mortality

• All-cause mortality was reduced only in Asian studies; reductions in rebleeding and surgery were quantitatively greater in Asian studies.

Leontiadis GI et al. Cochrane Review 2006
The use of vasoconstrictor therapy in non-variceal upper GI bleeds

- Meta-analysis of 14 RCTs show good evidence for Somatostatin
  - to reduce rebleeding
  - Trend for reducing surgery
  - Rebleeding with NNT 11
- 2 octreotide studies in meta-analysis have completely different conclusions
  - The blinded trial showing no effect on outcome
  - The non-blinded trial concluded that it stopped
    - PU bleed
    - Decrease Tx requirements
    - Need for surgery
    - Not superior to ranitidine*

*Archimandritis et al. Current Medical and Research Opinion 2000;16:178
Meta-analysis
Tranexamic acid vs Placebo: all-cause mortality

<table>
<thead>
<tr>
<th>Trial</th>
<th>Relative Risk 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cormack (19)</td>
<td></td>
</tr>
<tr>
<td>Biggs (20)</td>
<td></td>
</tr>
<tr>
<td>Engquist (21)</td>
<td></td>
</tr>
<tr>
<td>Bergqvist (22)</td>
<td></td>
</tr>
<tr>
<td>Barer (15)</td>
<td></td>
</tr>
<tr>
<td>Holstein (23,24)</td>
<td></td>
</tr>
<tr>
<td>Hawkey (16)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
</tr>
</tbody>
</table>

Chi-square for heterogeneity P = 0.85

N = 1754 patients
7 trials, compared with placebo

Gluud LL et al. APT 2008 Feb
International Consensus on Nonvariceal Upper Gastrointestinal Bleeding

C. Pharmacologic management

- **C₁.** H₂RAs are not recommended for patients with acute ulcer bleeding.
- **C₂.** Somatostatin and octreotide are not routinely recommended for patients with acute ulcer bleeding.
- **C₃.** An intravenous bolus followed by continuous-infusion PPI therapy should be used to decrease rebleeding and mortality in patients with high-risk stigmata who have undergone successful endoscopic therapy.
- **C₄.** Patients should be discharged with a prescription for a single daily-dose oral PPI for a duration as dictated by the underlying etiology.

International Consensus on Nonvariceal Upper Gastrointestinal Bleeding

D. Nonendoscopic and nonpharmacologic in-hospital management

• D₁. Patients at low risk after endoscopy can be fed within 24 hours.

• D₂. Most patients who have undergone endoscopic hemostasis for high-risk stigmata should be hospitalized for at least 72 hours thereafter.

• D₃. Seek surgical consultation for patients for whom endoscopic therapy has failed.

• D₄. Percutaneous embolization can be considered as an alternative to surgery for patients for whom endoscopic therapy has failed.

• D₅. Patients with bleeding peptic ulcers should be tested for *H. pylori* and receive eradication therapy if it is present, with confirmation of eradication.

• D₆. Negative *H. pylori* diagnostic tests obtained in the acute setting should be repeated.

Endoscopic hemostasis: Meta-analysis

<table>
<thead>
<tr>
<th>Endpoint</th>
<th>OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rebleeding</td>
<td>0.38 (0.32-0.45)</td>
</tr>
<tr>
<td>Surgery</td>
<td>0.36 (0.28-0.45)</td>
</tr>
<tr>
<td>Death</td>
<td>0.55 (0.40-0.76)</td>
</tr>
</tbody>
</table>

Cook et al. Gastroenterol 1992;102:139-48
Endoscopic hemostatic methods

**Thermal**
- Bipolar probe
- Heater probe
- Laser
- Argon plasma coagulation
- Monopolar probe
- Microwave

**Injection**
- Epinephrine
- Alcohol
- Ethanolamine
- Cyanoacrylate
- Polidocanol
- Thrombin
- Fibrin

**Mechanical**
- Hemoclips
- Sewing
- Band ligation
- Endoloop

**Combination**
- Epinephrine+thermal
- Epinephrine+hemoclips
- Epinephrine+laser
Injection Therapy

• Epinephrine (1:10,000-20,000)
• Saline: hypertonic saline
• Absolute alcohol
• Water
• Ethanolamine
• Cyanoacrylate
• Polidocanol
• Thrombin
• Fibrin
Thermal Coaptive Therapy

• Heater probe, Multipolar probe

• Mechanism
  • Physically compress & tamponade
  • Thermal energy sealing the wall of vessel
Heater probe
Mechanical Devices

• Clips, band ligators, Endo-loop

• Mechanism
  • Mechanical closure of bleeding vessel
Easy, precise and Cost-effective Varices Ligation System... From OLYMPUS

Easy to Use, Cost Effective, Excellent Visibility, Multiple Varices Ligation
Clip

- Best suitable for spurting bleed and visible vessels
- Lower rebleeding rate
- Minor tissue damage
- May be the only option in large vessels >1mm
- 15.7% technical difficulties
- Location - tangential, retroflex position of endoscope
- Lesion - fibrotic scar
Is a second look necessary?
A meta-analysis

• Marmo et al. found that routine ‘second look’ (24 hr later) endoscopy with retreatment as appropriate, significantly reduced the risk of recurrent bleeding, but did not substantially reduce the rates of surgery or mortality

• The absolute risk reduction in re-bleeding was 6.2% (P < 0.01)

• Absolute risk reductions for surgery and mortality were, respectively, 1.7% and 1.0% (P=N.S.)

• Thus, ‘second look’ endoscopy has failed to prove that it has an effect on key outcome parameters

Marmo et al. Gastrointest Endosc 2003; 57: 62–
Messmann et al, Endoscopy. 1998
Chiu et al, GUT 2003
Failure Endoscopic Therapy

- Risk factors associated with treatment failure with combination injection therapy and heater probe:
  - Hypertension
  - Hb < 10 g/dL
  - Fresh blood in the stomach
  - Ulcer with active bleeding
  - Ulcer > 2 cm

Indication for Surgery

1. Continued active bleeding and unable to perform endoscopy
2. Require blood transfusion > 6 units/24 hr
3. Failure of endoscopic treatment
3. Rebleeding after successful endoscopic treatment
Classification of Gastric Varices

Sarin et al, Am J Gastro 1989; 84:1244
Esophageal variceal treatment
Seng-Staken Blakemore tube
Gastric Varices

Pretreatment cyanoacrylate

Post-treatment cyanoacrylate
ENDOSCOPIC IMAGES OF MILD AND SEVERE PORTAL HYPERTENSIVE GASTROPATHY

Mild

Mosaic pattern

Severe

Mosaic pattern + red spots

Carpinelli et al. Ital J Gastroenterol Hepatol 1997; 29:533
Gastric varix injection with Glue
## Treatment of Variceal Bleeding

<table>
<thead>
<tr>
<th></th>
<th>Endoscopic treatment</th>
<th>Somatostatin</th>
<th>S-B tube</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stop bleed</td>
<td>70-90%</td>
<td>60-75%</td>
<td>80-100%</td>
</tr>
<tr>
<td>Rebleeding</td>
<td>20%</td>
<td>40%</td>
<td>50%</td>
</tr>
<tr>
<td>Complication(^n)</td>
<td>2-22%</td>
<td>Low</td>
<td>15-68%</td>
</tr>
<tr>
<td>Onset</td>
<td>immediate</td>
<td>1-2 hrs</td>
<td>immediate</td>
</tr>
<tr>
<td>Cost</td>
<td>+++</td>
<td>++++</td>
<td>+</td>
</tr>
</tbody>
</table>
Recommendation for treatment acute variceal hemorrhage

- Variceal bleeding should be managed in the ICU
- Blood volume replacement should be performed using
  - Concentrated erythrocytes, to obtain a hemoglobin level of about 70-80 g/L
  - Plasma expanders (crystalloid or colloid), to maintain hemodynamic stability renal perfusion pressure
- Antibiotic prophylaxis should be given to all patients
- Endoscopy should be performed as soon as possible (within 12 h after hospital admission)

Dib N, et al. CMAJ 2006;174:1433
Recommendation for treatment acute variceal hemorrhage

Specific treatment should consist of combination therapy with a vasoactive drug and endoscopic treatment:

- Intravenous vasoactive therapy with one of the following drugs should be started as soon as possible after hospital admission, before diagnostic endoscopy, and maintained for 2(3)-5 d:
  - Terlipressin: #1-2 mg every 4 h
  - Somatostatin: bolus of 250 µg following by infusion of 250 µg/h
  - Octreotide: infusion of 25-50 µg/h, possibly preceded by bolus of 50-100 µg
  - Vapreotide: bolus of 50 µg followed by infusion of 50 µg/h

Dib N, et al. CMAJ 2006;174:1433
Recommendation for treatment of acute variceal hemorrhage

• Either EVL or EVS can be performed
• but EVL is the recommended first-line treatment
• In cases of acute gastric variceal bleeding, variceal obturation with a tissue adhesive (N-2-butyl-cyanoacrylate) is recommended

• If combined therapy fails, endoscopic treatment should be repeated or TIPS performed (second-line treatment). If repeat endoscopic treatment fails, TIPS is justified

Note: TIPS = transjugular intrahepatic portosystemic shunt.
*These recommendations are based on information from recent consensus statements on the management of portal hypertension.

Dib N, et al. CMAJ 2006;174:1433
Algorithm for treatment acute variceal hemorrhage

Variceal bleeding suspected

Early vasoactive drug therapy, endoscopic screening (within 12 h after admission) and antibiotic prophylaxis

Variceal bleeding confirmed

Endoscopic therapy: maintain vasoactive drug therapy for 2(3)-5 d

Bleeding controlled

Secondary prophylaxis by 5 days

Nonselective Beta-blocker therapy or endoscopic band ligation or both

Bleeding not controlled

Second attempt at endoscopic therapy

Bleeding not controlled

TIPS; if massive bleeding, conduct balloon tamponade as “bridge”

Dib N, et al. CMAJ 2006;174:1433
Antibiotic Prophylaxis

• Antibiotic prophylaxis after endoscopy for UGIB
  - Norfloxacin 400 mg BID X 7 days after endoscopy or iv. Ciprofloxacin*
  - In patients with advanced cirrhosis iv. ceftriaxone (1gm/day) may be preferable particularly in centers with high prevalence of quinolone-resistant organisms*
  - ↓ rate of bacterial infection 19%
  - ↓ rate of SBP 7%
  - ↓ mortality rate 9%
  - “Standard recommendation”

Obscure GI bleeding: Definition

- Obscure GI bleeding = bleeding from the GI tract that persists or recurs without an obvious etiology after
  - esophagastroduodenoscopy (EGD)
  - colonoscopy, and
  - radiologic evaluation of the small bowel such as small bowel follow-through or enteroclysis

- Categorized into
  - obscure overt
  - obscure occult

Raju GS, et al. Gastroenterology 2007;133:1694-1717
Double balloon enteroscopy (DBE)
Single balloon enteroscopy (SBE)
Spiral enteroscopy
Enteroscopy: Indications

Indications:
• Included all patients who were evaluated for small bowel pathology
  • Diagnosis
  • Treatment
  • Surveillance: Polyposis syndrome

Relative contraindications:
• Adhesion bands from prior surgery
• Underlying disease: Crohn’s disease
• Large esophageal varices (antegrade approach)

Absolute contraindications:
• Perforation
• Not suitable condition: Shock

## Etiology of Obscure GI Bleeding

<table>
<thead>
<tr>
<th>Upper GI and lower GI bleeding overlooked</th>
<th>Mid GI bleeding</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Upper GI lesions</strong></td>
<td>Younger than 40 years of age</td>
</tr>
<tr>
<td>Cameron’s erosions</td>
<td>Tumors</td>
</tr>
<tr>
<td>Fundic varices</td>
<td>Meckel’s diverticulum</td>
</tr>
<tr>
<td>Peptic ulcer</td>
<td>Dieulafoy’s lesion</td>
</tr>
<tr>
<td>Angiectasia</td>
<td>Crohn’s disease</td>
</tr>
<tr>
<td>Dieulafoy’s lesion</td>
<td>Celiac disease</td>
</tr>
<tr>
<td>Gastric antral vascular ectasia</td>
<td>Older than 40 years of age</td>
</tr>
<tr>
<td><strong>Lower GI lesions</strong></td>
<td></td>
</tr>
<tr>
<td>Angiectasia</td>
<td>Angiectasia</td>
</tr>
<tr>
<td>Neoplasms</td>
<td>NSAID enteropathy</td>
</tr>
<tr>
<td></td>
<td>Celiac disease</td>
</tr>
<tr>
<td><strong>Uncommon</strong></td>
<td></td>
</tr>
<tr>
<td>Hemobilia</td>
<td></td>
</tr>
<tr>
<td>Hemosuccus pancreaticus</td>
<td></td>
</tr>
<tr>
<td>Aortoenteric fistula</td>
<td></td>
</tr>
</tbody>
</table>

Raju GS, et al. Gastroenterology 2007;133:1694-1717
Single or Double Balloon Enteroscope
Principles of Insertion (Antegrade)

1. Scope advancement
2. Balloon deflated
3. Balloon inflated
4. Splinting tube advancement
5. Balloon deflated
6. Balloon inflated
Enteroscopy: Indication (Siriraj experience)

- Chronic diarrhea: 16%
- Other: 13%
- IBD (Crohn and UC): 4%
- GI Bleeding: 56%
- Tumor: 4%
- Partial small bowel obstruction: 4%
- Small bowel ulcer: 3%

Leelakusolvong S, et al. 2010

# of patients = 97
# of procedures = 107
Male = 55
Female = 42
Antegrade = 100
Retrograde = 7
62 y/o female with AML in complete remission, 10 bouts of melena with negative prior bidirectional endoscopy and CE
70 y/o male with repeated melena and maroon stool and negative bidirectional endoscopy

Leelakusolvong S, et al. 2010
70 y/o male with repeated melena and maroon stool with negative bidirectional endoscopy

Leelakusolvong S, et al. 2010
## SBE: Results (Siriraj experience, N=107)

<table>
<thead>
<tr>
<th>Finding</th>
<th>Number (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ulcer</td>
<td>17 (16)</td>
</tr>
<tr>
<td>Diverticulosis (Jejunal=6, colon=4)</td>
<td>10 (9)</td>
</tr>
<tr>
<td>IBD (Crohn’s=5, UC=1)</td>
<td>6 (6)</td>
</tr>
<tr>
<td>Jejunal polyp</td>
<td>4 (4)</td>
</tr>
<tr>
<td>Lymphangiectasia</td>
<td>4 (4)</td>
</tr>
<tr>
<td>Small bowel cancer</td>
<td>3 (3)</td>
</tr>
<tr>
<td>Enteritis</td>
<td>3 (3)</td>
</tr>
<tr>
<td>Angiodysplasia</td>
<td>3 (3)</td>
</tr>
<tr>
<td>Small bowel TB</td>
<td>3 (3)</td>
</tr>
<tr>
<td>CBD stone</td>
<td>2 (2)</td>
</tr>
<tr>
<td>Capillariasis</td>
<td>1 (1)</td>
</tr>
<tr>
<td>Lymphoma</td>
<td>1 (1)</td>
</tr>
<tr>
<td>Normal finding</td>
<td>50 (45)</td>
</tr>
</tbody>
</table>

Leelakusolvong S, et al. 2010
พอที่ ไม่อยากฟัง
พอที่ ไม่อยากฟัง
พอที่ ไม่อยากฟัง