Upper GI bleeding

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Upper GI bleeding

- Variceal hemorrhage
- Non-variceal upper GI bleeding (NVUGIB)
Upper GI bleeding

[Pie chart showing the causes of upper GI bleeding:
- Peptic ulcer: 40%
- No obvious cause: 24%
- Other: 6%
- Neoplasm: 6%
- Erosive disease: 5%
- Mallory-Weiss tear: 10%
- Oesophagitis: 5%
- Varices: 5%]
Nonvariceal bleeding

- Approximately 80% of ulcers stop bleeding.
- The overall mortality rate is approximately 10%
- Elderly with significant comorbidity: increase mortality.
Mortality/Morbidity

- Retrospective chart review
- 73.2% of deaths occurred in patients older than 60 years.
- One or more comorbid illnesses were noted in 98.3% of patients who died.

ED approach

- Initial resuscitation
- Clinical assessment and risk stratification
- Identification source of bleeding
- Specific therapy
Early resuscitation

Early intensive resuscitation of patients with upper gastrointestinal bleeding decreases mortality.

- Aggressive hemodynamic resuscitation, correction of hematocrit (>28%) and coagulopathy (INR>1.8)
- Mortality significantly decrease in intensive resuscitation group
- No difference in rebleeding, surgical intervention

Initial resuscitation

- ABC, IV, Oxygen
- Intubation
- NPO
- Fluid resuscitation
- PRC, FFP transfusion
- Foley catheter
- Nasogastric Aspiration
  - Severity assessment
  - Remove clot
ED approach

- Initial resuscitation
- Clinical assessment and risk stratification
- Identification source of bleeding
- Specific therapy
Initial clinical assessment

- Diagnosis of UGIB
  - Signs and Symptoms
  - NG tube placement
- Severity of bleeding
- Risk stratification
Signs and Symptoms

- Age, Sex
- Symptoms: weakness, dizziness, syncope
  - melena (50-100ml)
  - Hematemesis (1000ml)
  - Coffee ground
  - Hematochezia (>1000ml/hr)
- Associated symptoms: pale, jaundice, ascites
- History of previous bleeding
- History of severe vomiting
- Medication: NSAID, ASA
Signs and Symptoms

Underlying diseases
- Peptic ulcer disease/ gastritis
- Liver disease: cirrhosis, hepatitis, alcoholism
- Malignancy
- Hematologic disease: coagulopathy, chronic anemia
- Cardiovascular disease
- Pulmonary disease
- Renal disease
Nasogastric lavage

Diagnosis

- confirm recent bleeding (coffee ground appearance)
- possible active bleeding (red blood in the aspirate that does not clear)
- a lack of blood in the stomach (not exclude an upper gastrointestinal lesion).

Severity of the hemorrhage

- The characteristics of the nasogastric lavage fluid (eg, red, coffee grounds, clear) and the stool (eg, red, black, brown) can indicate the severity of the hemorrhage.
Risk Factors

American Society for Gastrointestinal Endoscopy (ASGE),

Risk factors associated with increased mortality, recurrent bleeding, the need for endoscopic hemostasis, or surgery

- age older than 60 years
- severe comorbidity
- active bleeding (e.g., witnessed hematemesis, red blood per nasogastric tube, fresh blood per rectum),
- Hemodynamic instability: hypotension
- red blood cell transfusion greater than or equal to 6 units
- severe coagulopathy.

High clinical risk factors

- **Host factors**

  - Age > 60
  - Comorbidity: renal failure, cirrhosis, ischemic heart disease, COPD
  - Hemodynamic instability: HR > 100, SBP < 100 mmHg
  - Coagulopathy
High clinical risk factors

- **Bleeding character**
  - Continuous red blood from NG after irrigation
  - Red blood per rectum
  - Need blood transfusion
  - Rebleeding
  - Inpatient hemodynamic instability
Risk stratification

- Low clinical risk factors
  - Mortality rate: 3%

- High clinical risk factors
  - Mortality rate: 16%
  - Rebleeding: 36%
Very low risk criteria

- No comorbid disease
- Normal vital signs
- Normal or trace positive stool guaiac
- Negative gastric aspiration
- Normal or near normal hematocrit
- No problem home support
- Proper understanding symptoms and signs of significant bleeding
- Follow up arrange within 24 hours

Rosen
ED approach

- Initial resuscitation
- Clinical assessment and risk stratification
- Identification source of bleeding
- Specific therapy
Identification source of bleeding

- Endoscopic for diagnosis
- Intervention for diagnosis
Early endoscopy in upper gastrointestinal hemorrhage: associations with recurrent bleeding, surgery, and length of hospital stay.

Demonstrated a lower rate of rebleeding and shorter length of stay when endoscopy is performed within 24 hours of admission.

Early endoscopy

- High risk patients
  - Stop bleeding and save life
- Low risk patients
  - Discharge early from hospital
## Stigmata of recent hemorrhage

<table>
<thead>
<tr>
<th>SRH</th>
<th>Prevalence</th>
<th>Rebleeding</th>
<th>Surgery</th>
<th>Mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clean base</td>
<td>42%</td>
<td>5%</td>
<td>0.5%</td>
<td>2%</td>
</tr>
<tr>
<td>Flat spot</td>
<td>20%</td>
<td>10%</td>
<td>6%</td>
<td>3%</td>
</tr>
<tr>
<td>Adherent clot</td>
<td>17%</td>
<td>22%</td>
<td>10%</td>
<td>7%</td>
</tr>
<tr>
<td>Visible vessel</td>
<td>17%</td>
<td>43%</td>
<td>34%</td>
<td>11%</td>
</tr>
<tr>
<td>Active bleeding</td>
<td>18%</td>
<td>70%</td>
<td>35%</td>
<td>11%</td>
</tr>
</tbody>
</table>
Endoscopic risk

High endoscopic risk: Need endoscopic therapy and medication
- Arterial bleeding, spurting, oozing
- Non-bleeding visible vessel
- Adherent clot

Low endoscopic risk: Need medical therapy
- Clean-base ulcer
- Flat spot
# Rockall scoring system

<table>
<thead>
<tr>
<th>Variable</th>
<th>Score</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Age</td>
<td>&lt;60 Years</td>
<td>60–79 Years</td>
<td>&gt;=80 Years</td>
<td></td>
</tr>
<tr>
<td>Shock</td>
<td>‘No shock’, systolic BP &gt;=100, pulse &lt;100</td>
<td>‘Tachycardia’, systolic BP &gt;=100, pulse &gt;=100</td>
<td>‘Hypotension’, systolic BP &lt;100</td>
<td></td>
</tr>
<tr>
<td>Comorbidity</td>
<td>No major comorbidity</td>
<td></td>
<td></td>
<td>Cardiac failure, ischaemic heart disease, any major comorbidity</td>
</tr>
<tr>
<td>Diagnosis</td>
<td>Mallory-Weiss tear, no lesion identified and no SRH</td>
<td>All other diagnoses</td>
<td>Malignancy of upper GI tract</td>
<td>Renal failure, liver failure, disseminated malignancy</td>
</tr>
<tr>
<td>Major SRH</td>
<td>None or dark spot only</td>
<td></td>
<td></td>
<td>Blood in upper GI tract, adherent clot, visible or spurting vessel</td>
</tr>
</tbody>
</table>

Maximum additive score prior to diagnosis = 7. Maximum additive score following diagnosis = 11.
Predictive value of Rockall Score

Low risk defined as score of $\leq 2$
- 4.3% rebleeding
- 0.1% mortality

Rockall, Lancet 1996; 347:1138
Intervention for diagnosis

- **Angiography**: bleeding at least 0.5-1 mL/min
  - Bleeding persists and endoscopy fails to identify a bleeding site.
  - As salvage therapy, embolization of the bleeding vessel can be as successful as emergent surgery in patients who have failed a second attempt of endoscopic therapy.
ED approach

- Initial resuscitation
- Clinical assessment and risk stratification
- Identification source of bleeding
- Specific therapy
Specific therapy

- Medical therapy
- Endoscopic therapy
- Radiologic intervention
- Surgery
Role of Acid in Hemostasis

- **Impairs clot formation**
  - Impairs platelet aggregation & causes disaggregation

- **Accelerates clot lysis**
  - pH<5 pepsin accelerate clot lysis

- **May impair integrity of mucus/bicarbonate barrier**
Role of Acid in Hemostasis

- pH > 6
  - Effective platelet aggregation
  - Irreversible inactivation of pepsin
  - Optimal maintenance of hemostasis
H2-receptor antagonists

- Intra gastric pH >4 in 65-85% of day
- Tolerance in 72 hours
Meta-analysis: the efficacy of intravenous H2-receptor antagonists in bleeding peptic ulcer.

- 30 RCT, 3786 bleeding GU and DU
- The use of H2-receptor antagonists has not been shown to be effective in altering the course of UGIB.

Conclusion: There was a possible minor benefit with intravenous H2 antagonists in bleeding gastric ulcers but no benefit in duodenal ulcers.

Proton pump inhibitor therapy for peptic ulcer bleeding: Cochrane collaboration meta-analysis of randomized controlled trials.

A meta-analysis of 24 randomized controlled trials that evaluated PPIs for bleeding ulcers (with or without endoscopic therapy)

Significant reduction in the risk of rebleeding, the need for repeat endoscopic hemostasis, and surgery.

Not effect overall mortality, but reduced mortality in Asian trials and in patients with active bleeding or nonbleeding visible vessels.

Comparison of intravenous pantoprazole with intravenous ranitidine in prevention of rebleeding from gastroduodenal ulcers

Result:
• During 72 hours rebled was 3.2% in Pantoprazole group versus 12.9% in Ranitidine group

Conclusion: **Intravenous Pantoprazole is significantly superior** to intravenous ranitidine in the prevention of rebleeding from gastroduodenal ulcer after initial endoscopic haemostasis.

Effect of PPI on gastric pH

- Increase intragastric pH
  - pH > 6.0 for 84-99% of day

- No reported tolerance

- Continuous infusion (CI) superior to intermittent bolus administration

- Clinical improvements in rebleeding and/or surgery with:
  Bolus 80mg + CI 8mg/h
PPI dose and administration
Effect of pantoprazole i.v. on gastric pH – intermittent bolus vs continuous infusion

Median % time 24-hour intragastric pH above indicated value after treatment with pantoprazole

- Loading dose of 80mg superior to 40mg
- CI dose of 8mg superior to 4mg

Brunner et al; 1996
Pantoprazole i.v. in patients with UGIB after endoscopic hemostasis (1)

Dose: 80 mg bolus then 8 mg/hour

Intragastric pH of >6 is achieved over prolonged period
Pantoprazole sodium

- **Particulate matter** จากการผสมยาต้นตำรับ pantoprazole iv ดูตรีมิ่งต้องใช้ in-line filter

- 4 ปีต่อมาหลังการวางตลาดขายใน USA ได้มีการปรับสูตรผงยาป้องกัน pantoprazole ใหม่ โดยผสม EDTA และ sodium hydroxide

- จนถึงปัจจุบัน USA ยังคงไม่พิจารณาให้ขึ้นทะเบียนยาสามัญของสูตรผงยาป้องกัน pantoprazole sodium
PPI after endoscopic therapy

An increasing amount of evidence in the literature states that therapy with high-dose PPIs (IV bolus followed by continuous infusion) may decrease the rate of rebleeding after endoscopic therapy. By increasing the gastric pH above 6, the clot is stabilized.
Pantoprazole infusion as adjuvant therapy to endoscopic treatment in patients with peptic ulcer bleeding: Prospective randomized controlled trial

Method

- Setting: double-blind, placebo-controlled, prospective trial
- Patients: above 18 years of age with peptic ulcer bleeding and undertaken successful endoscopic therapy

Endoscopy to confirm peptic ulcer bleeding

Endoscopic Tx (epinephrine inj & heat probe)

Random

Pantoprazole IV (n=102)
- IV 80mg + 8 mg/hr for 72 hrs

Placebo IV (n=101)

Pantoprazole 40 mg tab for 6 wks

Efficacy measurement
- Primary: rate of rebleeding
- Secondary: need for rescue therapy, need for surgery, mortality, duration of hospital stay, and blood transfusion requirement
Result

Rebleeding, surgery, and mortality

- Pantoprazole therapy was associated with significant reductions in rates of rebleeding
Result

- Hospital stay & blood transfusion
  - Pantoprazole→↓ blood transfusion & ↓ duration of hospital stay (less than placebo)
High-dose intravenous proton pump inhibition following endoscopic therapy in the acute management of patients with bleeding peptic ulcers in the USA and Canada: a cost-effectiveness analysis.

The suggested dose of intravenous pantoprazole is 80-mg bolus followed by 8-mg/h infusion. The infusion is continued for 48-72 hours. This therapy has been shown to be cost-effective.

Omeprazole before Endoscopy in Patients with Gastrointestinal Bleeding

James Y. Lau, M.D., Wai K. Leung, M.D., Justin C.Y. Wu, M.D.,
Francis K.L. Chan, M.D., Vincent W.S. Wong, M.D., Philip W.Y. Chiu, M.D.,
Vivian W.Y. Lee, Ph.D., Kenneth K.C. Lee, Ph.D.,
Frances K.Y. Cheung, M.B., Ch.B., Priscilla Siu, B.Sc., Enders K.W. Ng, M.D.,
and Joseph J.Y. Sung, M.D.

BACKGROUND
A neutral gastric pH is critical for the stability of clots over bleeding arteries. We investigated the effect of preemptive infusion of omeprazole before endoscopy on the need for endoscopic therapy.

METHODS
Consecutive patients admitted with upper gastrointestinal bleeding underwent stabilization and were then randomly assigned to receive either omeprazole or placebo (each as an 80-mg intravenous bolus followed by an 8-mg infusion per hour) before endoscopy the next morning.
Figure 2. Numbers of Ulcers Found during the First Endoscopic Examination.

A total of 187 patients in the omeprazole group and 190 patients in the placebo group had ulcers.
Conclusion
High dose PPI before endoscopy

- Reduced the need for endoscopic therapy
- Accelerate resolution of signs of bleeding in ulcers
- No significant different in
  - Amount of blood transfusion
  - Recurrent bleeding (both groups received PPI after endoscopic therapy)
  - Underwent emergency surgery
  - Mortality within 30 days

Pre-endoscopic proton pump inhibitor therapy reduces recurrent adverse gastrointestinal outcomes in patients with acute non-variceal upper gastrointestinal bleeding

L. KEYVANI, S. MURTHY, S. LEESON & L. E. TARGOWNIK
Objective

To determine whether using PPI therapy prior to the performance of endoscopy is associated with improved clinical outcomes in patients presenting with signs of ANVUGIB.
Methods
We performed a retrospective review to identify patients presenting to two tertiary care centres with acute non-variceal upper gastrointestinal bleeding between 1999 and 2004. Subjects receiving PPI therapy before endoscopy were compared with those not receiving pre-endoscopic PPI therapy. The primary outcome measure was the development of any adverse bleeding outcome (rebleeding, surgery for control of bleeding, in-hospital mortality, readmission within 30 days for acute non-variceal upper gastrointestinal bleeding).
385 ANVUGIB

132 (pre-endoscopic PPI therapy)

120 oral : 12 IV

253 (not received pre-endoscopic PPI therapy)
Figure 1. Comparison of outcomes between patients receiving and those not receiving pre-endoscopic proton-pump inhibitor therapy (all subjects).

Figure 2. Comparison of outcomes between patients receiving and those not receiving pre-endoscopic proton-pump inhibitor therapy (endoscopy 6–24 h).
Conclusion

- Rebleeding, surgery, mortality, length of hospital stay decrease in pre-endoscopic PPI group
Therapeutic Endoscopy

- Controls Active Bleeding in 85%-90% of Patients
- Prevents Rebleeding in High Risk Patients
- Improves Morbidity
- Decreases Mortality

Radiological intervention

- Angiography with Injection vasopressin
- Angiography with Embolic materials

Indication
- Endoscopic therapy failure
- Not stable enough to undergo surgery
Surgery

Indications

- Severe bleeding, not response to resuscitation
- Endoscopic therapy failure
- Rebleeding after endoscopic therapy
- Surgical condition: perforation, obstruction, malignancy
Surgery

- Aim: Stop bleeding, not to reduce acid secretion
- Contraindications to emergency surgery include impaired cardiopulmonary status and bleeding diathesis
แนวทางการดูแลรักษาผู้ป่วยที่มหาริwerคลาเลือดออกในทางเดินหายใจส่วนด้านในประเทศไทย

สมาคมแพทย์ทางเดินอาหารแห่งประเทศไทย
Hematemesis /Melena

Initial Assessment and Resuscitation and risk stratification

Supportive Treatment and Elective endoscopy

No

High Risk

Yes

Consider Drug therapy

Somatostatin or analogues for suspected Variceal bleeding
PPI for suspected non-variceal bleeding

Endoscopy Available

No

Refer

Yes

Ulcer bleeding
Variceal bleeding
Others
Note

Suspect non variceal bleeding

– Continuous iv infusion or bolus PPI

  Continuous iv infusion PPI: Pantoprazole or Omeprazole 80 mg iv bolus then infusion drip 8 mg/hr

  Bolus PPI: Pantoprazole or Omeprazole 40 mg iv twice daily
Antisecretory Therapy

Consider surgical interventions or refer

Reendoscopy

Yes

No

High risk of Rebleeding

Yes

No

Endoscopic Hemostasis

Success

Yes

No

Continue Drug and monitoring

Rebleeding

Yes

No

Variceal bleeding

Others

Ulcer bleeding
เสียงหายไปแล้วทั้งด้วยความทุกข์เช้า 
.... หมายความว่าเราจังวั้นชีวิตอยู่
บ้านที่อยู่ที่ร่มเรือน / หน้าที่อยู่ที่ร่มเรือนละลาย /
ด้านที่อยู่ข้อมนั่น

...... หมายความว่าเราบ้านอยู่
รู้สึกมีถ้อยข้าเหล่านี้ทำสำนวนไปแต่ละวัน
........ มากมายความว่าจะจึงพอแก้