Rockall Risk Score In Predicting 30days Non-variceal Upper GI Rebleeding and Mortality

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Disclosures

• Self Funded Study
• No conflict of interest declared
Introduction

• UGIB – common emergency

• Malaysia – 72 admission/100000

• Endoscopy and PPI’S - Treatment

• 14% mortality

Malaysian CPG April 2003
• Peptic ulcer disease – 55% NVUGIB
  
  *Enns et al. World Journal of Gastroenterology. 2006*

• H. pylori infection – one of major causes of peptic ulcer disease
  
  *Rahul et all. J Glob Infect Dis. 2013*

• It is a communicable disease – treatment consist of broad spectrum antibiotics and PPI’S
  
  *Malaysia CPG April 2013*
Rockall Score – 1996

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

- Rockall Score – Mortality
- \textit{Observed increased score} = Rebleeding
- High (≥8), Moderate (3-5), Low (≤2)

Rockall et al. GUT 1996; 38(3):316-321
Risk Stratification

• Use of Rockall Prognostic Score is found in various international UGIB management guidelines and consensus

• Only 19% UK patients had risk stratification done

Malaysian CPG UGIB April 2003
National Clinical Guidline Centre.CG141 June 2012.
Jairath et all. BMJ September 2014 Vol 61, no.9
Research Objective

1. To determine Rockall Score(grouped) of high(>8), moderate(3-7) and low(<2) risk group’s to identify NV UGIB patients at high risk for rebleeding and mortality.

2. To study the discriminative ability and calibration of Rockall’s individual scores (0-11) vs rebleeding and mortality
Study design

• Retrospective
• 2009-2014 (6 year)
• HSI Endoscopic Unit Records
• NMRR-15-29-23977
• Malaysia Research Ethics Committee (MREC) - approved
Methodology

Study Population:
All Emergency Endoscopy (n=1599)

**Inclusion Criteria**
1. All emergency OGDS done for patients for indication of UGIB
2. Endoscopy findings of non-variceal bleeding.
3. Patients age >15 yrs

**Exclusion Criteria**
1. Missing Data
2. Normal endoscopy findings
3. All confirmed and suspected esophageal/gastric/duodenal malignancies

Retrospective Audit and Rockall Scoring for each patient in inclusion criteria (n=1323)

1. Rebleeding
2. Mortality
3. Hemostatic Surgery

Flowchart of methodology and desired outcomes.
Statistical Analysis

- **SPSS 15**
- **Discriminative - AUROC**
- **Calibration for individual scores - Goodness-of-Fit (GOF) Test**
- **High (≥8), Moderate (3-5), Low (≤2) - Odds Ratio**
Results
Demography

- Total 1599 patients endoscopy

- **1323 patients included**

- Male 64%(n=847) : Female 36%(n=476)

- Mean Age 57.9yrs

- Mean LOS 9.5days
Rockall Risk stratification

- High risk – 30 patient
- Moderate risk – 832 patient
- Low risk – 461 patient
Rates (30days)

• Rebleeding 11.2% (n=148)

• Mortality 8.7% (n=115)

• Need for surgery 2% (n=26)
Rebleeding – Discriminative Ability

AUROC rebleeding = 0.63 (95% CI: 0.59-0.67) p<0.001
Mortality – Discriminative Ability

AUROC mortality = 0.58 (95% CI: 0.53-0.63) p<0.004
• Rebleeding – Calibration (Goodness-of-fit test)
• Mortality – Calibration (Goodness-of-fit test)

![Graph showing probability of mortality by Rockall risk score with observed and predicted proportions. The x-axis represents the Rockall risk score categories: ≤ 2, 3, 4, 5, 6, 7, ≥ 8. The y-axis represents the probability of mortality. The graph includes a chi-squared test result: $\chi^2(6) = 22.748$, $P = 0.001$.}
Odds Ratio for high risk patients for rebleeding

=> **4.02** (95% CI: 1.51, 10.66) p < 0.005
Mortality VS Risk Group

Odds Ratio for high risk patients for mortality

=> **4.55** (95% CI: 1.70, 12.18) p < 0.003
Discussion
Results
In total, 951 patients were included, with a median age of 71 years (range 2–100), of whom 25% were older than 80 years, and 60% were men. The rate of rebleeding was 16% (n=156) and the mortality rate was 14% (n=132) during hospitalisation. Detailed characteristics...

- Rebleeding 11.2% vs 16% (9)
- Mortality 8.7% vs 14% (9)
Validation of the Rockall scoring system for outcomes from non-variceal upper gastrointestinal bleeding in a Canadian setting

Robert A Enns, Yves M Gagnon, Alan N Barkun, David Armstrong, Jamie C Gregor, Richard N Fedorak, RUGBE Investigators Group

- Rebleeding $p<0.001$ vs $p=0.12$ \(^{(10)}\)
- Mortality $p=0.001$ vs $p=0.73$ \(^{(10)}\)
- GOF - Conflicting results

Discriminative Ability

Rebleeding \(0.63\) vs \(0.56\) \(^{(5)}\)

Mortality \(0.58\) vs \(0.67\) \(^{(5)}\)

AUROC - same – low quality
Risk assessment after acute upper gastrointestinal haemorrhage

T A Rockall, R F A Logan, H B Devlin, T C Northfield, and the steering committee and members of the National Audit of Acute Upper Gastrointestinal Haemorrhage

- Same results as Rockall – in risk groups rebleeding and mortality does increase
Is it useful then?

• Group scores used as a simple numerical score - effectively stratify patients into risk groups

• Can be used to triage patients – ICU, HDW, Normal wards

• Individual scores suitability for rebleeding/mortality prediction?
  – Poor AUROC
  – Poor GOF
Limitation

1. Retrospective study
2. No interventional radiology
3. Endoscopist variability
Conclusion

• Rockall Risk Score can effectively be used to stratify patients into risk groups of high, moderate and low risk

• Individual scores (0-11) vs rebleeding/mortality
  – Poor calibration
  – Poor discriminative ability
Thank You