Predicting In-hospital Recurrence of Non-variceal Upper GI Bleeding

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Introduction

Non-variceal upper gastrointestinal bleeding (NVUGIB) remains a significant source of morbidity and mortality worldwide. In U.S, the incidence rate of NVUGIB ranges from 103 to 172 events per 100,000 adults with hospital admissions well over 300,000 annually.1,2 Despite substantial improvement in outcome in large part due to the advancement of endoscopic hemostasis technology and pervasion of Proton Pump Inhibitors (PPI) use, the mortality rate in patients hospitalized with NVUGIB still remains at 8-9%.3,4 In addition, although endoscopic treatment boasts high rate of success in initial hemostasis, there still remains a significant portion of patient who suffers from recurrent bleeding, some with catastrophic outcome.

Body

Endoscopic hemostasis for NVUGIB suffers from 10-15% re-bleeding rate.5 There are multiple, validated factors that are associated with increased risk of re-bleeding. In general, these factors can be divided into two broad categories: lesion related risk factors and patient related risk factors.

There are endoscopic findings/stigmata that portend high rate of bleeding recurrence. In NVUGIB from peptic ulcer disease (PUD) related etiology, the Forrest classification exists to risk stratify these cohorts. Endoscopic findings of ulcers with spurting vessel (Ia), oozing vessel (Ib) and visible vessel (IIa) carry risk of re-bleeding 20-25%, 10-15% and 5% respectively even after successful initial hemostasis (Table 1).6 In addition,

<table>
<thead>
<tr>
<th>Stigmata based on Forrest Classification</th>
<th>Risk of recurrent bleeding without endoscopic intervention</th>
<th>Risk of recurrent bleeding with endoscopic intervention</th>
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<tbody>
<tr>
<td>Active spurting (Ia)</td>
<td>85-95%</td>
<td>15-25%</td>
</tr>
<tr>
<td>Visible vessel without bleeding (IIa)</td>
<td>50%</td>
<td>5-15%</td>
</tr>
<tr>
<td>Adherent clot (IIb)</td>
<td>30%</td>
<td>&lt;5%</td>
</tr>
<tr>
<td>Flat spots (IIc)</td>
<td>7%</td>
<td>Not indicated</td>
</tr>
<tr>
<td>Clean based ulcer (III)</td>
<td>3%</td>
<td>Not indicated</td>
</tr>
</tbody>
</table>

Data from Kovacs & Jensen
NVUGIB from atypical focal source such as malignant tumor, diffuse mucosal bleeding such as radiation induced hemorrhagic esophagitis also pose significant challenge in long term hemostasis due to multi-focal source of bleeding and permanent change in histological architecture.\(^7\) Other endoscopic findings associated with increased risk of re-bleeding include ulcer size greater than 2cm, bleeding lesions located at post bulbar area and lesser curvature of stomach.\(^8\) Finally, sub-par endoscopic hemostasis methods such as injection mono-therapy alone, and non-compliance with post procedure PPI also function as independent risk factors of bleeding recurrence.\(^9\)

Patient related risk factors of recurrent bleeding refer to underlying comorbid conditions and their sequelae that render long term endoscopic hemostasis ineffective. Such patients include those with severe ischemic cardiomyopathy, end-stage renal disease, end-stage liver disease and/or patients with hematologic derangement.\(^10\) Not only these patients suffer from diminished clotting ability, but they also often carry lesions (e.g. gastro-intestinal angiodysplasia) that are diffuse and recur despite successful treatment. Iatrogenic compromise in clotting function from anti-coagulants and anti-platelet agents use are also more prevalent in these populations. It is imperative for endoscopists to be well versed with rapidity of onset of action and duration of such medications before considering resumptions.

**Conclusion**

Managing acute NVUGIB remains as a significant challenge in the area of luminal gastroenterology. Although there has been steady improvement in success rate of endoscopic hemostasis, a substantial portion of patients suffer from bleeding recurrence. Understanding risk factors associated with ineffective hemostasis and re-bleeding would afford physicians involved in care to better risk stratify and optimize the outcome by addressing factors that are correctible. Finally, emergence of new hemostatic technology will broaden the range of patients who will benefit from endoscopic treatment.

**References**


