Upper Gastrointestinal Bleed (UGIB) – Aetiologies, Approach and Endoscopic management

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Introduction
Acute UGIB is a potentially life-threatening abdominal emergency. This article will cover some of the important aspects of UGIB as the topic is too broad to cover in this one section. UGIB is defined as bleeding derived from a source proximal to ligament of Treitz (Figure 1). UGIB causes are divided into variceal or non-variceal bleed. Variceal bleed (oesophageal or gastric in isolation or both i.e. gastric oesophageal varices, GOV) is a complication of end stage liver disease or decompensated liver cirrhosis. UGIB is 4x more common that lower gastrointestinal bleed with higher incidence in male gender.

Assessment
Urgent inpatient endoscopy requests are usually triaged directly by Consultant Gastroenterologists and in some centers by senior Gastroenterology SpRs/Registrars. UGIB inpatient referrals, will take precedence and patients’ risk stratification is crucial.

The use of PPE gown, FFP2 mask and visor (Figure 2) is mandatory when performing endoscopic procedures for urgent bleeders on highly suspicious or confirmed cases of COVID 19. This policy should be in line with the departmental endoscopy standard operating procedure (SOP).

Endoscopists are ‘front liners’ for upper and lower gastrointestinal GI bleed cases. It is crucial to prioritize and risk stratify cases and obviously few important questions come to mind for any referrals. These would include:

- Why (indications, likely aetiology, variceal vs non variceal)
- When and how urgent is it for patients to have their endoscopic procedures
- Where (endoscopy room / operating theatre).
- Is the patient hemodynamically stable, safe to be done under conscious sedation vs general anesthesia, complication expectations etc.
- Which methods (endoscopic therapeutic modalities)

There are pre assessment scoring systems that are used widely to risk stratify the patient with UGIB. The long existing Rockall score (Figure 3) includes clinical parameters but as well incorporates endoscopic findings for Full Rockall score calculation. The later Glasgow Blatchford Score (GBS) (Figure 4) was introduced in the later years and can be fully calculated without the incorporation of endoscopic findings”.

The GBS score has been used more commonly to risk stratify UGIB cases at presentation and prioritizing endoscopic procedures.

Calculation of Rockall Score

<table>
<thead>
<tr>
<th>Variable</th>
<th>Score</th>
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<tbody>
<tr>
<td>Age</td>
<td>0-60</td>
</tr>
<tr>
<td>Shock</td>
<td>No shock SBP&lt;100 PR&lt;100 Cardiac Failure, IHD, any major co-morbidity</td>
</tr>
<tr>
<td>Co Morbidity</td>
<td>No major Co-morbidity</td>
</tr>
<tr>
<td>Diagnosis</td>
<td>Mallory-Weiss tear, no lesion identified, no SRH or blood</td>
</tr>
<tr>
<td>Major SRH</td>
<td>None or dark spot</td>
</tr>
</tbody>
</table>

SBP = systolic blood in mmHg PR = pulse rate IHD=Ischaemic heart Disease
Gl= gastrointestinal SRH= Stigmata recent Haemorrhage

Figure 1: Ligament of Treitz

Figure 2: Full PPE gear for endoscopic procedure

Figure 3: Rockall Score, adapted from Church NL et al, Eur J Gastroenterol Hepato 13-1149-52

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Gastroenterology

Table 2: Glasgow-Blatchford Score (GBS).

<table>
<thead>
<tr>
<th>Points</th>
<th>Systolic blood pressure, mmHg</th>
<th>Blood urea nitrogen, mmol/L</th>
<th>Hemoglobin for men, g/dl</th>
<th>Hemoglobin for women, g/dl</th>
<th>Other risk variables</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>100 – 109</td>
<td>6.5 – 7.9</td>
<td>12.0 – 12.9</td>
<td>10.0 – 11.9</td>
<td>Pulse ≥ 100</td>
</tr>
<tr>
<td></td>
<td>90 – 99</td>
<td></td>
<td>10.0 – 11.9</td>
<td></td>
<td>Melena</td>
</tr>
<tr>
<td></td>
<td>&lt;90</td>
<td></td>
<td>&lt;10.0</td>
<td></td>
<td>Syncope</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Hepatic disease</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Cardiac failure</td>
</tr>
</tbody>
</table>

TOTAL GBS: GBS restricted for use only in nonhospitalized, ambulatory patients

Risk variables assessed at the time of presentation: GBS = 0 – 1 denotes "low-risk"

Symptoms of UGIB include:
- Coffee ground vomit is common and is due to digested gastric blood and indicates a slower bleeding rate than hematemesis.
- Melena (indicates proximal bleeding site i.e. proximal to the ligament of Treitz)
- Haematemesis (fresh blood/clots passing – indicates rapid bleeding)
- Dizziness, shortness of breath, chest pain and syncope
- Epigastric / abdominal pain
- Haematochezia – usually signifies lower GI bleeding. If due to upper GI tract aetiology may bleed so briskly
- Weight loss
- Jaundice

Management

In accordance with European Society of Gastrointestinal Endoscopy (ESGE) Guidelines for Non Variceal UGIB. Some of the main ESGE recommendations include:

- Stabilize the patient – intravascular volume replacement, achieve haemodynamic stability
- Restrictive transfusion strategy – aim Hb between 7 and 9g/dL
- Pre-endoscopy risk stratification – GBS score
- High dose PPI
- Early OGD ≤ 24 hrs
- Combination endoscopic hemostasis modalities (At least 2)
- IV erythromycin (single dose, 250mg given 30 – 120 mins prior to endoscopy) – to improve endoscopic visualisation, reduced the need for second look endoscopy

Variceal bleed

Can be of oesophageal or gastric aetiology in isolation or both co-existing. Grades of oesophageal varices is classified as small (Grade I), medium (Grade II) or large (Grade III). Indication for endoscopic intervention would include any obvious bleeding, presence of red wale marks / ‘white nipple sign’ (platelet-fibrin plug) (Figure 5).

Treatments of Variceal bleed

Medical management would include Terlipressin and prophylactic antibiotic therapy. Endoscopic therapeutic intervention would include endoscopic band ligation (EBL). EBL involves endoscopic suctions of the varices followed by rubber band being deployed at the neck of the varices to obliterate the vein and reduce the risk of further bleeding (Figure 6).

Medical therapy with terlipressin and antibiotic should be continued in the interim.

Gastric varices (GV) are present in around 20% of patients with cirrhosis. Bleeding gastric varices (usually present at cardio-fundal region) is by standard practice initially managed endoscopically using the glue ie lipiodol / histoacryl preparation (N-butyl-2-cyanoacrylate) (Figure 7). In patients bleeding from GOV1 varices, either EBL (if technically feasible) or cyanoacrylate glue injection, if available, are the recommended endoscopic treatments. Histoacryl glue is commonly mixed with lipiodol which slows the polymerisation process, allowing more time for injection, and being radio-opaque also permits post-procedural radiological examination. The glue is prepared after confirmation of the bleeding source is coming from gastric varices. A caution with the use of glue is risk of systemic embolization.

A Sengstaken Blakemore tube is reserved as temporary salvage treatment for uncontrolled bleed. This is in the case that endoscopic therapeutic measures failed whilst await other definitive treatment i.e. Transjugular intrahepatic portal systemic shunt (TIPSS). TIPPS is an interventional radiological procedure where a stent is inserted by interventional radiologist to divert pressure from portal to systemic vasculature for decompression.

Non-variceal UGIB aetiologies

These would include any haemorrhagic inflammation, peptic ulcer disease, neoplastic, vascular malformation is Dieulafoy’s, telangiectasias and aortoenteric fistula in the UGI tract. In the esophagus, Mallory Weiss tear can be the cause with significant retching / vomiting. Gastric antral vascular ectasia (GAVE) is another cause for gastric bleeding (Figure 8). Cameron lesions are linear gastric ulcers or erosions on the mucosal folds at the diaphragmatic impression in patients with a large hiatal hernia.

Dieulafoy lesions were first described in 1896. It is a vascular malformation of proximal stomach, usually within 6 cm of the gastroesophageal junction along the lesser gastric curvature (Figure 9). However, it can occur anywhere along the GI tract. This lesion accounts for 2%-5% of acute UGIB episodes.

Forrest classification is used to describe the appearance of peptic ulcer seen endoscopically (Figure 10).
The sprayed material will rapidly concentrate clotting factors at bleeding site, forming a coagulum (Figure 12). The TTS clips nowadays are rotatable, hence easy to target deployment focus before final placing.

MECHANICAL THERAPY – this options would include placement of hemostatic / endoclips (TTS / OTSC) (Figure 11) or band ligation devices. Mechanism of action is by mechanical compression of bleeding vessel. The TTS clips nowadays are rotatable, hence easy to target deployment focus before final placing.

TOPICAL THERAPY involves spraying powder/adhesive material over bleeding site (Figure 12). Some centers do have Gold probe catheter, which can institute dual treatment modalities with adrenaline injection and thermocoagulation function.

Treatment options for Non-variceal UGIB
ALWAYS Two endoscopic treatment modalities used in combination is better than one alone. Endoscopic options would include:

- Electrocautery / thermal – catheter probe / GOLD probe
- Mechanical injection (1:10,000)
- Mechanical hemostatic clips – TTS (through the scope clip) vs OTSC (over the scope clip)
- Topical treatment – Hemospray / Endoclot / Purestat

Take home messages
- Careful patient selection is crucial and it is imperative that these therapeutic procedures are done urgently but at the same time ensuring patient is stable hemodynamically before having the procedure.
- Two endoscopic treatment modalities used in combination is better than one.
- Successful patient management and endoscopic intervention involves multidisciplinary involvement from endoscopist, endoscopy staff nurses, prompt referral from primary team with initial resuscitation, risk stratification and patient selection.
- If endoscopic intervention fails, there should always be a planned next standard management plan i.e. TIPSS or embolization or surgical option.

References available on request