Upper gastrointestinal haemorrhage

Mohamed Abdelrahman

Steve Hornby

Abstract

Upper gastrointestinal (UGI) haemorrhage is bleeding from any point of the GI tract proximal to the ligament of Treitz. There are multiple causes and various presentations, some of which can be quite subtle. With dramatic bleeding, aggressive resuscitation is required in the first instance. The gold standard investigation for diagnosis is endoscopy and this in turn can facilitate certain therapeutic interventions. Other forms of management include radiological and surgical interventions.

Keywords Blatchford score; endoscopy; proton pump inhibitors; Rockall score; transfusion; UGI bleeding; UGI haemorrhage; varices

Introduction

Upper gastrointestinal (UGI) haemorrhage is defined as bleeding from any point of the GI tract proximal to the ligament of Treitz. It has an incidence in England of 103 per 100,000 per year.[1] Overall mortality was reported as high as 14% in an isolated bleed and as high as 33% if it occurred after hospitalization with another illness.[1] Most patients are elderly, with significant co-morbidities and often taking anticoagulants.

Presentation

UGI haemorrhage usually presents as haematemesis, the passage of melaena or with, clinical or laboratory evidence of blood loss from the UGI tract. Haematemesis is defined as vomiting of blood or blood clots. This also includes coffee ground vomiting. Melaena is defined as the passage of dark, tarry stools or discovery of this during rectal examination.[1] In less common cases, patients can also present with haematochezia (frank red blood). Studies have shown that presentation with haematemesis is associated with higher mortality when compared to melaena or coffee ground vomiting.[1] Slow rate haemorrhage may not present with visible blood loss but with the signs and symptoms of anaemia. Where anaemia is iron deficient, occult gastrointestinal loss should always be considered.

Investigations

Patients presenting with UGI haemorrhage should have the following investigations.

- Blood samples for full blood count, group and save, cross match, clotting, urea, creatinine, electrolytes and liver function tests.
- Serial electrocardiograms and cardiac enzymes (including troponin) in patients at high risk of myocardial infarction.

The initial haemoglobin (Hb) concentration may be normal and therefore falsely reassuring as the patient is losing whole blood. Serial Hb monitoring is imperative to allow for effective transfusion management. Attention should also be paid to the haematocrit which can be more sensitive to blood loss in the acute setting. Blood is digested and absorbed in the small bowel. The high ammonia from the protein-rich enteric contents increases the plasma urea concentration. The higher the urea: creatinine ratio, the likely the source of the haemorrhage is the UGI tract.

The gold standard for diagnosis is UGI endoscopy. This allows both diagnosis and the opportunity for endoscopic treatment. Radiological imaging, usually in the form of computed tomographic angiography (CT-angio), which can include selective angiography for the UGI tract (e.g. coeliac and or superior mesenteric artery), can show active haemorrhage if the rate is greater than 0.5 ml per minute and where the services are available, embolization may be performed.

Causes of upper GI haemorrhage

Peptic ulcers

The most common cause of UGI haemorrhage is peptic ulcer disease. It accounts for 21–40% of episodes. *Helicobacter pylori (H. pylori)* infection and the use of non-steroidal anti-inflammatory drugs (NSAIDs) are the major causes of peptic ulceration complicated by haemorrhage. Patients over 65 years old taking chronic NSAIDs for arthritis were found to be at higher risk of developing UGI haemorrhage.[2] Duodenal ulcers are more common than gastric ulcers when secondary to *H. pylori*; however, there is no difference in the presentation of UGI haemorrhage. With improvement in eradication of helicobacter pylori, the frequency of UGI haemorrhage secondary to peptic ulcer disease has decreased significantly. Furthermore, the protective use of PPIs during a course of NSAIDs reduces the risk of peptic ulceration.

The endoscopic appearance of bleeding associated with peptic ulcers can be described according to the Forrest classification[3] (Table 1 and Figure 1).

This classification is helpful in deciding which endoscopic treatment should be applied. If endoscopic treatment fails then interventional radiology in the form of embolization or surgical management is required.

Oesophagitis

Oesophagitis is inflammation of the lining of the oesophagus. There are multiple causes but in relevance to this article the main cause to address is gastro-oesophageal reflux disease (GORD). Oesophagitis accounts for 2–5% of acute UGI haemorrhage.[4] In patients with positive faecal occult blood test, 9.3% were found to have oesophagitis.[5] Reflux oesophagitis does not cause relatively a massive UGI bleed.

There are two widely utilized classification of oesophagitis severity, The Savary-Miller classification[6] and Los Angeles classification[7] (Tables 2 and 3).

Mohamed Abdelrahman *MRCS BMBCh MA (Oxon) is a General Surgery ST4 in the South West Deanery at Gloucester Royal Hospital, Gloucester, UK. Conflicts of interest: none declared.*

Steve Hornby *MD MFSTEd FRCS is a Consultant Upper GI and Bariatric Surgeon at Gloucestershire Hospitals NHS Foundation Trust, Gloucester, UK. Conflicts of interest: none declared.*

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Forrest classification of peptic ulceration

Grade	Description
1a	Spurting haemorrhage
1b	Oozing haemorrhage
2a	A non-bleeding visible vessel
2b	An adherent clot
2c	A flat pigmented spot
3	Clean ulcer base

Table 1

Bleeding from oesophagitis is usually self-limiting. Treatment involves high-dose proton pump inhibition (PPI), control of life style measures such as cessation of smoking, and in some cases the addition of a H2 antagonist. Repeated episodes despite optimal PPI may require surgery such as laparoscopic anti-reflux procedures or repair of a para-oesophageal hernia. Oesophageal ulceration should be biopsied to rule out a malignant process and the endoscopy repeated to ensure healing.

Varices

Varices are dilated submucosal veins. They are found throughout the oesophagus or gastric fundus and are usually secondary to portal hypertension. Oesophageal varices are graded according to their size.

Grade 1: Small, straight oesophageal varices.

Grade 2: Enlarged, tortuous oesophageal varices occupying less than one third of the lumen.

Grade 3: Large, coil-shaped oesophageal varices occupying greater than one third of the lumen (Figure 2).

Variceal bleeding accounts for 10 % of UGI haemorrhage.

Cancer

Primary neoplasms of the upper GI tract include oesophageal, gastric and duodenal adenocarcinomas (ACA). Although these tumours often present with occult bleeding, they uncommonly present with acute upper GI bleeding. Other lesions which have an

Figure 1 Visual representation of Forrest classification: From left to right (first row 1a and b. Second row 2a,b and c. Third row 3.

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