

Evidence based management of haematemesis

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Haematemesis (vomiting of fresh blood) is a feature of acute upper gastrointestinal bleeding (UGIB) and is the presenting feature in 30-40 % of patients with UGIB. The amount of blood loss can vary from a few millilitres to litres and the initial management depends on the volume lost, as well as the underlying cause.

The management can be described in 3 steps.

1. Resuscitation
2. Identification of the cause and the site
3. Definitive management
(variceal vs. non variceal)

Resuscitation

The airway must be protected and aspiration prevented. A nasogastric tube can be used in a conscious patient with copious vomiting but a semiconscious or unconscious patient will need to be turned to the left lateral position, with an oropharyngeal airway or endotracheal intubation. If facilities are available, the adequacy of respiration should be assessed continuously with pulse oximetry or with blood gas analysis.

Two 14 FG (orange) cannulae should be inserted to both arms, and blood should be taken for full blood count (to assess the haemoglobin level, packed cell volume and platelets), PT / INR, cross matching, blood urea, serum electrolytes and liver function tests when suspecting hepatic pathology. The patient should be catheterized to measure the urine output.

The patient should be assessed to estimate the blood loss (table 1). If the patient is not in shock, a slow infusion of 0.9 % NaCl should be started to keep the cannulae patent.

If the patient is in shock he should receive 8 – 10 litres of oxygen/min via face mask and a rapid infusion of fluid with the aim of euvolaemic resuscitation as guided by a urine output of 0.5 – 1 ml/kg/hr. In most patients, 1 – 2 litres of crystalloids will correct the losses, but further replacement should include plasma expanders as this suggests that at least 20 % of blood volume has been lost.

If the bleeding is extreme or if the haemoglobin is less than 80 g/l, red cell concentrate should be transfused.

Omeprazole 80 mg should be given intra venous as a bolus and continued as 8 mg/hour over the next 72 hours.

Identification of cause and site

A quick history and examination may be useful in identification of the cause and the site i.e. dyspepsia or NSAID use (peptic ulcers), episodes of vomiting prior to haematemesis (Mallory Weiss syndrome), stigmata of chronic liver disease (variceal bleeding).

Upper gastro intestinal endoscopy will demonstrate the lesion as well as offer several treatment options.

Management of Non-Variceal bleeding

Several endoscopic and pharmacological treatment modalities are available (Table 2).

Table 1: Estimation of fluid and blood losses in shock

	Class 1	Class 2	Class 3	Class 4
Blood loss (ml)	Up to 750	750 - 1500	1500 - 2000	> 2000
Blood loss (% of total)	Up to 15 %	15 – 30 %	30 - 40 %	> 40 %
Pulse rate (/ min)	< 100	100- 120	120 - 140	> 140
Blood pressure	Normal	Normal	Decreased	Decreased
Respiratory rate	Normal / Decreased	Normal / Decreased	Decreased	Decreased
Mental status	Slightly anxious	Mildly anxious	Anxious , confused	Confused , lethargic
Fluid replacement	Crystalloid	Crystalloid	Crystalloid and blood	Crystalloid and blood

Table 2: Management options for gastric bleeding

Treatment option	Dose / Method	Evidence base
Endoscopic		
Injection	Adrenaline 1:10,000 in normal saline, injected first to quadrants around the bleeder, then in to the vessel	No single solution is superior to another (1)
Application of heat	20 – 30 Joules repeatedly applied using heater probe or multipolar coagulation.	No difference of re-bleeding, surgery or mortality when compared to injection therapy (2, 3),
Mechanical clips	Clips applied to bleeding vessels, particularly useful for large vessels.	2 studies have shown that its superiority to injection or heater probe, but 1 study showed higher failure rates (4). Combination with injection is not better than injection alone or clips alone (4, 5)
Pharmacological		
Omeprazole	80 mg bolus 8 mg / hour for 72 hours.	Reduced re-bleeding and need for surgery when compared to H ₂ Antagonist or placebo (6).
<i>H. pylori</i> eradication	Amoxicillin 1 g bd Metronidazole 400 mg bd Omeprazole 20 mg bd	Reduce ulcer recurrence and re-bleeds (7, 8).

Bleeding not responding to both the above methods could be managed surgically. Gastric ulcers could be treated by excision of the ulcer or partial gastrectomy and duodenal ulcers could be managed with distal gastrectomy with Billroth I or II reconstruction, or under running the ulcer or the right gastro epiploic artery.

H₂ receptor antagonists, somatostatin/octreotide and antifibrinolytics cannot be recommended until further studies are available .

Management of variceal bleeding

Management could be pharmacological, endoscopic, tamponade or surgery (Table 3).

Table 3: Management of variceal bleeding

Treatment option	Dose / Method	Evidence base
<i>Pharmacological</i>		
Vasopressin	20 units in 200 ml normal saline bolus, followed by 0.2 – 0.4 units / minute infusion.	Does not confer a survival benefit (9). However, Terlipressin improves survival(10).
Somatostatin / Octreotide		
Recombinant factor VII		Improved bleeding end points in severe cirrhotics (11).
<i>Tamponade</i>		
		Initially effective in 85%, but re-bleeding occurs (12).
<i>Endoscopic treatment</i>		
Banding	Placement of a rubber band around the varix thereby strangulating it.	Lower mortality, re-bleeding, perforation and stricture formation than sclerotherapy (13)
Sclerotherapy	Ethanolamine or Polidocanol injected either intra-variceal or para-variceal to create fibrosis in the mucosa.	
Cyanoacrylate glue	Liquid tissue adhesive that is injected to the varix and rapidly polymerizes into a hard glue.	90 % effective in the initial bleed (14) More effective than sclerotherapy.
<i>Surgical</i>		
Shunts	Decrease portal hypertension without compromising liver function.	> 90 % effective.(15)
Liver transplantation		

References

1. Barkun A, Bardou M., Marshall JK. Consensus recommendations for managing patients with nonvariceal upper gastrointestinal bleeding. *Annals of Internal Medicine* 2003;139(10):843-857.
2. Choudar, CP, Rajgopal C, Palmer KR. Comparison of endoscopic injection therapy versus the heater probe in major peptic ulcer haemorrhage. *Gut* 1992;33(9):1159-1161.
3. Chung SC, *et al.* Injection or heat probe for bleeding ulcer. *Gastroenterology* 1991;100(1):33-37.
4. Chung IK, *et al.* Comparison of the hemostatic efficacy of the endoscopic hemoclip method with hypertonic saline-epinephrine injection and a combination of the two for the management of bleeding peptic ulcers. *Gastrointestinal Endoscopy* 1999;49(1):13-18.
5. Gevers AM, *et al.* A randomized trial comparing injection therapy with hemoclip and with injection combined with hemoclip for bleeding ulcers. *Gastrointestinal Endoscopy* 2002;55(4):466-469.
6. Lin HJ, *et al.* A prospective randomized comparative trial showing that omeprazole prevents rebleeding in patients with bleeding peptic ulcer after successful endoscopic therapy. *Annals of Internal Medicine* 1998;158(1):54-58.
7. Graham DY, *et al.* Treatment of *Helicobacter pylori* reduces the rate of rebleeding in peptic ulcer disease. *Scandinavian Journal of Gastroenterology* 1993;28(11):939-942.
8. Rokkas T, *et al.* Eradication of *Helicobacter pylori* reduces the possibility of rebleeding in peptic ulcer disease. *Gastrointestinal Endoscopy* 1995;41(1):1-4.
9. D'Amico G, Pagliaro L and Bosch J. The treatment of portal hypertension: a meta-analytic review. *Hepatology* 1995;22(1):332-354.
10. Yavorski RT, *et al.* Analysis of 3,294 cases of upper gastrointestinal bleeding in military medical facilities. *American Journal of Gastroenterology* 1995;90(4):568-573.
11. Bosch J, *et al.* Recombinant factor VIIa for upper gastrointestinal bleeding in patients with cirrhosis: a randomized, double-blind trial. *Gastroenterology* 2004;127(4):1123-1130.
12. Kupfer Y, Cappell MS, Tessler S. Acute gastrointestinal bleeding in the intensive care unit. The intensivist's perspective. *Gastroenterology Clinics of North America* 2000;29(2):275-307.
13. Laine L, Cook D. Endoscopic ligation compared with sclerotherapy for treatment of esophageal variceal bleeding. A meta-analysis. *Annals of Internal Medicine* 1995;123(4):280-287.
14. D'Imperio N, *et al.* Evaluation of undiluted N-butyl-2-cyanoacrylate in the endoscopic treatment of upper gastrointestinal tract varices. *Endoscopy* 1996;28(2):239-243.
15. Corson J, Williamson R. *Surgery*. Elsevier Inc.;2001.