REVIEW ARTICLE

MANAGEMENT OF UPPER GASTRO INTESTINAL BLEEDING

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ABSTRACT: upper gastrointestinal bleeding is a common medical emergency, with mortality rate of 10 percent. Adequate early resuscitation and early diagnosis and whenever therapeutic Interventions needed-timely are keys to the successful management of acute upper gastrointestinal bleeding. In this article, and attempt has been made to discuss the various management strategies against this dreadful condition.

KEYWORDS: upper gastrointestinal bleeding, endoscopic measures, resuscitative measures, pre endoscopy medication.

INTRODUCTION: DISCUSSION: Bleeding in the gut, proximal to the ligament of Treitz is defined as upper gastrointestinal bleeding.[1] It may present as haematemeasis or haematochezia, or melena sometimes patent may come with Coffee ground vomitus.

Management Strategies: All patients with upper gastrointestinal bleeding, resuscitation measures take precedence over the diagnostic pursuit. Evaluation of severity of bleeding and site of bleeding is also equally important and should go hand in hand with resuscitative measures.

Primary resuscitation and Evaluation: All patients with upper gastrointestinal bleeding should be admitted in the hospital. Two large bore intravenous lines are must for adequate fluid administration. Blood should be withdrawn for grouping and cross matching and other basic investigations including coagulation profile. When the patient is in shock central venous lines are passed and fluid given according to the central venous pressure. Oxygen by mask or catheter should be given when the patient is in shock. Nasogastric tube is must in all case, to decompress the upper gastrointestinal tract.

Usually one to two liters of crystalloid fluid is given as an initial fluid resuscitative measure. The patent will response haemodynamically to this fluid challenge, if there is no ongoing bleeding. If there is no response to rapid infusion of two liters of crystalloid, it indicates massive upper gastrointestinal bleeding, and blood transfusions and early therapeutic intervention is indicated in such cases. Pharmacological treatment before endoscopy- Intravenous proton pump inhibitors should be used in all the cases while awaiting for upper gastrointestinal scopy in some patients. Proton pump inhibitors reduce the need for endoscopy treatment of ulcers with recent stigmata of bleeding.[2]

When one is suspecting varices as the cause for the bleeding, it is wise to start intravenous stomatostatin or octreotide injections, even before endoscopy. These agents reduce splanchnic blood flow and portal venous pressure, there by controlling variceal bleeding at least temporarily. Coagulation disorders attributing significantly to the bleeding should also be

corrected before endoscopy. While resuscitating the patient rapid evaluation should be done. While evaluating the patient one should answer the following questions.

1. **What is the severity of the bleeding?:** History and physical examination often gives an idea about the amount of blood lost and also often help to diagnose the possible cause of the bleeding.

History of recurrent abdominal pain often indicates ulcer disease in the upper gastrointestinal tract.

History of ingestion of alcohol, drugs like NSAID should also be asked as these agents are often responsible for upper gastrointestinal bleeding. Abdominal examination should always be done to rule out liver diseases and its effects.

Initial degree of hemodynamic instability and degree of early response to the resuscitative measures often give clue to the severity of the bleeding.

Severity of hemorrhage can be graded based upon various parameters and fluid and blood can be given accordingly.

Class 1: Upper gastrointestinal hemorrhage---In this class, the amount of blood lost is upto 15%.These patients are hemodynamically stable with normal pulse rate and blood pressure. Urine output is also normal.

Anxiety may be the only abnormal finding.

Class 2: Patients with 15% to 30% blood lost are put in this category. These patients will have tachycardia with normal blood pressure. Urine output will be in between 30 to 40 ml per hour and patient will be slightly anxious.

Class 3: Here patient's blood loss is in between 30% to 40% These patients will have marked tachycardia with pulse rate more than 120per minute Blood pressure will also be low and urine output will be in between 20 to 30ml per minute and patent will be anxious and confused.

Class 4: Severe bleeding with blood loss more than 40percent are categorized in class 4.
These patents will have thread pulse with rate more than 140per minute. Blood pressure will be markedly low and often non-recordable Urine output will be significantly low, in between 14 to 20ml per minute. Signs of symptoms of myocardial ischemia may also be evident in some case. Multi organ failure leading to death is inevitable if such patents are not treated rapidly.

2**. What is site of bleeding?**: AS mentioned earlier, once patient is stabilized, one should search for site and cause of the bleeding and the first invasive diagnostic maneuver should be gastroscopy.

It should be done as early as possible, preferably within 12 hours after initial resuscitation and stabilization of the patient.[3]

It has got 95%diagnostic accuracy and complication rate less than 1%

Many times therapeutic intervention can also be done, endoscopically in the same sitting.

Gastroscopy also gives clue about prognosis of the disease in many cases. It tells us about the chance of rebleeding.

Very rarely when upper gastrointestinal scopy fails to localize the bleeding, celiac axis angiography is used to localize the bleeding. If bleeding is less than 0.5ml per minute, angiography fails to localize the pathology. It is also not useful in case of venous oozing. But it is useful to demonstrate angiodysplastic lesions, such lesions can be seen even in absence of active bleeding. Angiography can also be used to embolise the bleeders.

Specific causes of upper gastrointestinal bleeding and their Management: Peptic ulcer disease--- It is the most common cause of upper gastrointestinal bleeding. Bleeding duodenal ulcers are usually located on posterior wall. These ulcers penetrate through the duodenal wall and engulf the gastroduodenal artery giving rise to upper gastrointestinal bleeding.

Gastric ulcers at any site can cause upper gastrointestinal bleeding. Bleeding from gastro duodenal ulceration usually present with acute onset intermittent bleeding. Many patients have history of dyspepsia or abdominal pain but some patients may present without such symptoms in past.

Rebleeding is common in gastroduodenal ulcer disease and every attempt should be made to point out such high risk patients with chance of rebleeding.[4]

Following are the predictors of Rebleeding:

1. Patients presenting with shock
2. Patients with age above 60yrs
3. Ulcer diameter above one cm [endoscopy finding]
4. Active pulsatile bleeding [endoscopy finding]
5. Visible vessel or adherent red clot at the floor of the ulcer [endoscopy finding].

In all such cases early endoscopic or surgical intervention is must so as to avoid rebleeding and its associated morbidity and mortality.

Non-operative management of bleeding gastrodudenal ulcer---Though no pharmacological agent is effective in stopping bleeding from gastroduodenal ulcer, pre endoscopy intravenous proton pump inhibitors at least downstage the bleeding lesion and decrease the need for intervention in some of the case.[5]

Erythromycin and Metochloropromide increase gastric emptying, and thus improve the diagnostic yield of endoscopy and facilitate endoscopic intervention.

Endoscopy procedure: A close monitoring of vital functions is must during endoscopy. Once peptic ulcer is identified, the endoscopist should access the ulcer and see if there is bleeding from the ulcer and if the bleeding has been stopped, risk of rebleeding should be accessed.

Endoscopic haemostatic treatment is not required if there is low risk stigmata. But if there is high risk stigmata, endoscopic intervention is must so as to prevent rebleeding.

There are three options for endoscopic treatment of such ulcer:

1. Injection therapy.
2. Thermocoagulation or Electrocoagulation.
3. Mechanical therapy with haemoclips or band ligation.

Injection Therapy: Injection therapy with diluted epinephrine is most commonly used method for initial treatment of bleeding peptic ulcers. It promotes hemostasis by a combination of local tamponade, vasospasm and induction of thrombosis.

By controlling bleeding with epinephrine injection, one can think of further targeted therapies. As epinephrine injection brings about temporary cessation of bleeding it should always be combined with other endoscopic methods so as to avoid chance of rebleeding in high risk cases.

30 ml of diluted injection Epinephrine [1:10000] is supposed to be adequate dose for controlling bleeding in most of the patients.

Slerosants can also be used in addition to epinephrine injection or as an alternative to injection epinephrine. But nowadays sclerosants have limited role in treatment of bleeding ulcers because of its local side effects and very marginal benefit over injection epinephrine.

Ablative Therapy: In this method intense heat is delivered so as to cause coagulation of tissue proteins, edema and vasoconstriction.

Ablative therapies can be divided into contact methods and Non-contact methods. In contact methods [e.g. thermocoagulation and electrocoagulation] - Here probe is directly placed over the bleeding site.

In Noncontact method, Argon plasma coagulation is used. In this technique monopolar electrocoagulation is used to ionize argon gas into a plasma that coagulates tissue nearest to the catheter tip. Though it is safer and has a lower cost, it carries a small risk of perforation. More ever, heater prober and clips offer more targeted closed treatment hence these techniques are nowadays more preferred.

Laser photocaoagulation has also become obsolete because of high incidence of gastrointestinal perforation.

Mechanical Therapy: Metallic hemoclips are currently the most popular mechanical therapy. They occlude the bleeding vessels, arresting the bleeding. In addition small gastrointestinal perforations or tears can also be sealed. It has no adverse effects. Though. It is superior to injection therapy. It's challenging job and requires skilled endoscopist.

In case of severe bleeding despite of adequate medical treatment and endoscopic intervention, transcatheter arterieal embolisation should be tried.

Surgery is also another option when endoscopic intervention fails to control the bleeding. Suture ligation and truncal vagatomy usually controls bleeding from duodenal ulcers, and for bleeding gastric ulcers distal gastrectomy to include the ulcer in the operation is the operation of choice.

Hemorrhagic Gastroduodenitis: Alcohol, NSAIDS are common causes of haemorrhagic gastritis. Bleeding in these case is usually self-limiting and responds well to withdrawal of the causative agent, and administration of proton pump inhibitors and protective barriers like sucralfate.

But sometimes there is severe bleeding and for multiple bleeders heater probe should be used, whereas for diffuse bleeding, selective intra-arterial infusion of vasopressin has been reported to stop bleeding in 70% to 80% of patients.[6]

Sometimes when bleeding is severe and everything fails, subtotal or total gastrectomy is the only option.

Variceal Bleeding: Bleeding varices is major cause of morbidity and mortality in cases of liver cirrhosis esophageal varices are found in approximately 50% of patients with liver cirrhosis. Each episode of active variceal bleeding is associated with 30% mortality.

Most patients present with massive intermittent bleeding.

Initial resuscitation and medical Management: Initial resuscitation is similar as in any other case of upper gastrointestinal bleeding. Many times these cases are associated with hepatic encephalopathy and coagulopathies and treatment of these abnormalities should be included in management strategy of these patients. Fresh frozen plasma, injection vitamin k should be used whenever required so as to correct the coagulopathy. Thrombocytopenia is a common feature in these cases and if the platlate count is below 50, 000per cubic mm, platelet transfusions should be considered.

Preendoscopy medical Management: Injection vasopressin: Injection vasopressin constricts mesenteric vessels and reduces portal flow. There by reducing variceal bleeding. But because of its limited role in controlling variceal bleeding and its unwanted cardiovascular effects, it has lost its popularity in management of bleeding esophageal varieces.

If at all it is to be used it should be given in combination with intravenous injection of nitroglycerine.

So as to counteract its cardiovascular effects terlipressin is a synthetic analogue of vasopressin with longer biological half-life and fewer side effects a meta-analysis showed that terlipressin significantly reduced failure to control bleeding and mortality terlipressin was also found to be as effective as sclerotherapy in controlling bleeding, rebleeding and mortality.[7]

Stomatostatin or its analogue octreotide given intravenously reduces splanchnic blood flow and portal venous pressure there by reducing variceal bleeding.It has no cardiovascular side effects and is found to be safer than vasopressin. Stomatostatin or octreotide are as effective as sclerotherapy alone for acute management of variceal bleeding Injection octreotide should be given in a dose of 50ug intravenous bolus dose followed by intravenous infusion at a rate of 50ug per hour. It should always be started before endoscopy and continued for 5days.

Injection metachloropromide constricts lower esophageal sphictre thereby reducing intravariceal venous pressure which in turn reduces variceal bleeding. Many times infection is the trigger for variceal bleeding and all patients should put on intravenous ciprofloxacin.

In centers where there is high prevalence of quiniolone resistant organisms, intravenous ceftraxone should be given. It should be a short term course [maximum 7days].

Endoscopy Therapy: Emergency endoscopy is must in all cases of variceal bleeding and should be done. As soon as after stabilization of the patient, It is diagnostic as well as therapeutic tool in cases of variceal bleeding. Slerotherapy and variceal band ligation are two modalities used for emergency control of variceal bleeding.

Slerotherapy: In sclerotherapy sclerosents like ethanolamine oleate, sodium tetradecyl sulfate, ethanol are given into or adjacent to varices. These agents bring about aseptic inflammation which in turn results in obliteration of varices. Though sclerotherapy is a safe procedure, it sometimes leads to complications like esophageal ulceration and bleeding from the ulcer, esophageal stricture, mediastinitis and pleural effusion.

Endoscopic variceal Ligation: Endoscopic variceal ligation involves placing of small elastic bands around varices in distal 5 to 7 cm of the esophagus. Endoscopic variceal band ligation is as effective as sclerotherapy in controlling bleeding. It also not associated with complications seen after sclerotherapy. But during active bleeding it is more difficult to perform hence many times scleroptherapy is the initial procedure of choice and once bleeding is controlled, the varices can be ligated with bands more easily in a relatively clean field in the same sitting. For complete obliteration of varices it requires repeated sessions of sclerotherapy or band ligation. A combination of octerotide or stomatostatin and sclerotherapy or band ligation is more effective than any single modality.[8]

Fundic Varices: Sclerotherapy or band ligation is not effective in controlling bleeding from fundic varices. Interavariceal Cynoacrylate is the only effective nonsurgical treatment for bleeding fundic varices.

Surgical treatment of bleeding varices.

Emergency surgery is a last resort for bleeding varices when bleeding fails to stop after two sessions of therapeutic endoscopy. Patients entering in the operation t heater for surgery should have reasonable hepatic function.

In general two types of operations are done:

1. Esophagogastric devascularization procedures.
2. Surgical decompression of portal venous system.

Esophagogastric decompression Procedures: Esophageal transaction and reananstomosis using a circular stapling device is simplest form of surgery in such a critical patients, but sometimes extensive gastroesophageal devascularization procedure of Sugiura is required to control bleeding.

Surgical decompression of portal venous System: End to side portocaval shunt is the simplest decompressive operation to stop bleeding.

Distal splenorenal shunt is also tried to decompress the esophageal varices, but it has showed no advantage over portocaval shunt, more ever it's a technically demanding operation, hence not recommended in patients with acute bleeding.

TIPS: TIPS is used as a salvage therapy for Child-Pugh class A or B patients with recurrent bleeding despite an adequate trial of endoscopic therapy. It reduces increased portal pressure by creating a communication between hepatic vein and portal vein.

Balloon Tamponade: Balloon tamponade is nowadays rarely used. It is used as a means of short term haemostasis to stabilize a patient with massive bleeding prior to definitive therapy. Esophageal rupture, aspiration pneumonia and airway obstruction are the serious complications of this procedure.

Portal hypertensive Gastropathy: Portal hypertension often leads dilated mucosal capillaries in stomach, giving rise to typical snake-skin like gastric mucosa. This congestive pathology, secondary to portal hypertension is called as portal hypertensive gastropathy.

Sometimes in severe cases portal hypertensive gastropathy can give rise to upper gastrointestinal bleeding. In such cases measures should be taken to control portal hypertension, which is the key factor in this condition.

Injection stomatostatin or octreotide can be used to lower the portal pressure. In case of severe bleeding. Surgical portocaval shunts or TIPS can be tried.

Mallory-weiss Syndrome: Sometimes forceful vomiting or retching with closed glottis results in steep rise in intraluminal esophageal pressure resulting in linear tears It is common after ingestion of alcohol. The mucosal tears bleed. Most of the time this bleeding is self limiting. In rare cases of severe bleeding endoscopic measures like heater probe technique or electrocoagulation is required.

Operative intervention is very rarely needed.

Vascular Malformations: 2% to 4% cases of upper gastrointestinal bleeding are because of vascular malformations These lesions respond well to endoscopic measures like argon plasma coagulation, bipolar electrocoagulation. But if the lesions are large and fail to control after endoscopic treatment, surgical resection is the treatment of choice so as to control repeated episodes of bledding.

Deulafoys Lesion: This is an abnormally large submucosal artery in the stomach, that bleeds after erosion of its wall. Approximately 80% of these lesions are found within 6 CM of esophagogastric junction on lesser curvature of stomach.[9] Dieulafoy lesions can be easily missed during endoscopy and sometimes require repeated scopies with change in position and clearance of blood clots.

Endoscopic treatment in form of clipping or banding of the lesion is the first choice of treatment If endoscopic treatment fails to control bleeding-surgical wedge resection is the safest surgical way to control life threatening bleeding.

Bleeding Tumours of upper Gastrointestinaltract: Gastric neoplasams like leomyoma, leomyosarcoma, adenocarcinoma, lymphoma can cause heavy bleeding whereas esophageal and duodenal tumors are usually slow bleeders leading to anemia.Except in advanced unresectable malignancies, endoscopic measures have no role in controlling bleeding from upper gastrointestinal tumours. Surgery is the mainstay of treatment for control of bleeding neoplasm's of upper gastrointestinal tract. Surgery depends upon the type of the tumors and it may vary from simple wedge resection to radical removal of the organ, depending upon the pathology.

Haemobilia: Blunt or penetrating liver injury sometimes results in formation of fistula in between a vessel and biliary ductal system in live parenchyma. The patient presents with mild to moderate bleeding. Sometimes the blood clots may block the biliary cananliculi resulting in obstructive jaundice. Upper gastrointestinal scopy in such cases shows no abnormality except bleeding from ampula of vater. Visceral angiography is the procedure of choice to localize and embolise the vascular feeders. Patients who fail to respond to embolisation require right or left hepatic artery ligation. Hemosuccus Pancreaticus. In some cases of chronic pancreatitis, autodigestion can cause weakening of the surrounding arteries leading to pseudoaneurysm.

Splenic, gastroduodenal pancreatduodenal and left gastric artery are most commonly involved.[10] The pseudoaneurysm can rupture in stomach or duodenum leading to upper gastrointestinal bleeding. Many times upper gastrointestinal scopy fails to demonstrate any abnormality except blood in the stomach or duodenum. Sometimes bleeding can be seen from the ampula. It requires high index of suspicion to diagnose this condition. History of chronic pancreatitis often leads to suspicion of the disease especially if one sees bleeding from ampula in absence of jaundice or billiary colic.

Whenever the condition is suspected, visceral arteriography of the celiac axis and its branches should be undertaken immediately. Arterial embolization should be done both proximally and distally to the pseudo aneurysm. If this fails, emergency laprotomy should be done. The artery involved should be ligated proximal and distal to the aneurysm.

CONCLUSION: Early adequate resuscitation and evaluation of patient followed be early upper gastrointestinal scopy is the mainstay of initial management of upper gastrointestinal bleeding. Because of different endoscopic measures, surgery is not needed in many cases. But in some cases where endoscopic measures fail to control bleeding, surgery plays an important role in the management.

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