Vol 13,2010 PEDGIHEP: Evidence based Pediatric Gastroenterology and Hepatology.

Dr.Yogesh Waikar, Dr. Kamayani Deshpande.

NON-VARICEAL UGIB IN CHILDREN:

INCIDENCE:

Lacroix : 6.4 %
ICH Chennai: 60%
SGPGI:5%

CAUSES:

Esophagitis,
Gastric erosions,
Peptic ulcer disease,
Mallory Weiss tear,
Vascular malformations,
Dieulafoy's lesion ,
Polyp,
Hematobilia, duplication,
Vasculitis as in HSP
Tumours.

PEDGIHEP

PATHOLOGICAL ASPECTS OF PEDPTIC ULCER DISEASE:

Biopsy should be taken from the ulcer edge, at least from each quadrant. Repeat endoscopy may be necessary if biopsies are negative.

SITE:

- Duodenum: First portion Anterior wall is more often affected.
- Stomach: Usually antrum. Lesser curvature more common as compared to Anterior and posterior wall and greater curvature
- In the margins of a gastroenterostomy called stomal ulcer
- In the duodenum, stomach or jejunum of patients with Zollinger-Ellison syndrome.
- Within or adjacent to a Meckel's diverticulum that contains ectopic gastric mucosa.

GROSS FEATURES

- Gastric ulcers are usually single well delineated , round, oval or linear lesion.. Usually less than 2cm in diameter.May also reach upto 10cm
- Margins are usually level with the surrounding mucosa or slightly raised.

The proximal margin has a overhanging border and distal margin has a sloping border.

Converging mucosal folds extend to its margin.Heaping up of margins rare in benign ulcer.

- Superficial ulcer penetrate the mucosa into the muscularis mucosae. Deeply excavated ulcers having their bases on the muscularis propria.

- Base of ulcer is smooth and clean due to peptic digestion of exudates.At times thrombosed or patent blood vessels are evident at the base.

- Surrounding gastric mucosa may show Puckering. The mucosal fold radiates from the crater in a spoke- like fashion and are edematous .

MICROSCOPIC FEATURES:

- Three distinct zones are present in a peptic ulcer.
  Superficial zone of purulent neutrophilic exudate, bacteria and necrotic slough.

  And Fibrinoid necrosis.

  Middle zone consists of chronically inflamed granulation tissue.

  Deep zone showing fibrosis replacing the muscle wall and extending into

  subserosa. with vessels showing endarteritis obliterance.Hypertrophy of nerve

  bundles also noted

- Mucosa surrounding the ulcer mostly show evidence of gastritis , pattern of gastritis depend on the location of ulcer.
- Edge of ulcer show reactive epithelial changes which should be differentiated from dysplasia
- Necrotic surface may shows superimposed infection by candida albicans.
- Ulcers in pyloric and prepyloric canal are usually accompanied by H. pylori infection showing multifocal atrophic gastritis or intestinal metaplasia
- During healing process-Regenerating epithelium grows over the surface and may show intestinal metaplasia. Gastritis remains after ulcer has healed

PEDGIHEP

Endoscopic therapies FOR NONVARICEAL UPPER GI BLEED.: Med Clin N Am 92 (2008) 511–550)

- Epinephrine, at a concentration of 1:10,000, is the injection agent effective for hemostasis.
- Risk factors for failure of this therapy include active bleeding, large ulcers, proximal gastric ulcers, posterior duodenal bulb ulcers, or significant coagulopathy.
- Sclerosants cause greater vascular thrombosis than Epinephrine AND can induce greater tissue inflammation leading to iatrogenic ulcers or strictures: 0.2 ml/s with a maximal total volume of 0.6 to 0.1.2 ml.
- Sclerosants are not combined with epinephrine injection because of an increased risk of tissue injury, without improved hemostatic efficacy.
- Biologic glues are rarely used as injection therapy
- Use of fibrin sealant does not add efficacy to the use of epinephrine alone.
- Contact methods use co-aptive coagulation, wherein the endoscopist forcefully presses the probe on the lesion while delivering electrical current and generating heat to compress, fuse, and seal the open wall of a bleeding vessel, much like a welder who applies pressure to fuse two pieces of metal together.
- Argon plasma coagulation (APC) has supplanted the Nd:YAG laser as the noncontact ablative modality of choice for NVUGIB because of superior efficacy, greater portability, easier application, and lower cost.
- APC can be used to treat (‘‘paint’’) diffuse, extensive lesions, such as the watermelon stomach
- Contact therapies are designed to treat point sources of bleeding.
- APC, heater probe, and BICAP electrocautery have comparable efficacy for NVUGIB.
- Ablative therapy diminishes the need for blood transfusions, decreases the need for surgery, and decreases morbidity, but has not been demonstrated to decrease mortality.
- Metallic clips (endoclips) are the mechanical therapies of choice.
- Arterial vessel larger than 2 mm in diameter may not be amenable to clipping.
- Banding is useful to treat larger (>2 mm) bleeding vessels..
- Dual therapy offers little advantage over ablative or mechanical monotherapy.
- A meta-analysis has demonstrated the superiority of dual therapy over injection monotherapy in rebleeding, need for surgery, and mortality, but dual therapy had a moderate, increased gastrointestinal perforation,
- Hemorrhagic esophagitis is difficult to treat with focal endoscopic therapy, such as epinephrine injection or thermocoagulation, because of the diffuse nature of the injury, but point sources of bleeding within hemorrhagic esophagitis may be considered for endoscopic therapy.

- Bleeding is attributed to angiodysplasia only when it is active bleeding, has an overlying clot, or all other causes are excluded.

- patients who had angiodysplasia had a milder hospital course with fewer transfusions of packed erythrocytes, shorter hospitalizations, and lower mortality.

- An asymptomatic angiodysplasia, incidentally discovered at EGD, is generally not treated endoscopically because of a low likelihood of subsequent bleeding.

- actively bleeding angiodysplasias are sometimes first injected by epinephrine or alcohol, followed by thermocoagulation, electrocoagulation, or photocoagulation-→ APC-→angiographic embolization.

- Untreated gastrointestinal telangiectasias require multiple sessions,OC therapy is controversial.

- Nasogastric tube erosions appear at EGD as multiple, colinear, round, and relatively uniform erythematous erosions that are in register with the apertures of the nasogastric tube and that are at the same stage of evolution because of their simultaneous creation.

- Small intestinal bleeding beyond the ligament of Treitz is most commonly caused by angiodysplasia, but may be caused by Crohn disease,Meckel diverticulum, jejunoileal ulcers, including ulcers related to NSAIDs or gastrinomas, ectopic varices, hemangiomas, masses, polyps, and submucosal lesions

- Intravenous PPI therapy is expensive, but this cost is offset by its reducing the need for blood transfusions and the hospital length of stay

Leontiadis GI, Sharma VK, Howden CW. Systematic review and meta-analysis: protonpump inhibitor treatment for ulcer bleeding reduces transfusion requirements and hospital staydresults from the Cochrane Collaboration. Aliment Pharmacol Ther 2005;22(3): 169–74.

- Mild to moderate anticoagulation only modestly increases the risk for severe rebleeding after endoscopic therapy for NVUGIB

Wolf AT, Wasan SK, Saltzman JR. Impact of anticoagulation on rebleeding following endoscopic therapy for nonvariceal upper gastrointestinal hemorrhage. Am J Gastroenterol 2007;102(2):290–6.

- The duration of PPI therapy after therapeutic EGD for PUD is unclear. The duration is much shorter if H pylori is eradicated and NSAIDs are avoided.

Gisbert JP, Khorrami S, Carballo F, et al. Meta-analysis: Helicobacter pylori eradication therapy vs. antisecretory non-eradication therapy for the prevention of recurrent bleeding from peptic ulcer. Aliment Pharmacol Ther 2004;19(6):617–29.

- Repeat (second look) EGD after therapeutic endoscopy is controversial And not routinely recommended

- Overall, 5% to 15% of patients who have NVUGIB rebleed despite endoscopic therapy. Reversal of any severe coagulopathy, by platelet or fresh frozen plasma transfusions, is essential for endoscopic hemostasis.

- NSAID-induced ulcers often lack inflammation beyond the ulcer margin, whereas H pylori–induced ulcers usually occur in a background

of chronic active gastritis Lichtenstein DR, Syngal S, Wolfe MM. Nonsteroidal antiinflammatory drugs and the gastrointestinal tract: the double-edged sword. Arthritis Rheum 1995;38(1):5–18.

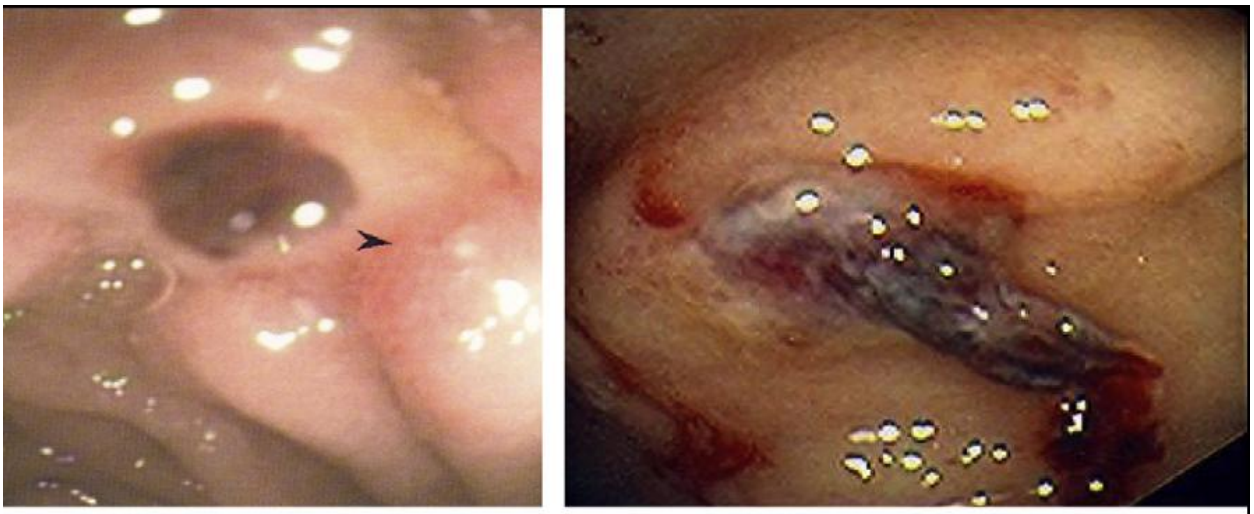
International Consensus recommendations:

- Early endoscopy.
- Low risk can be managed medically with PPI as outpatient.
- Second look endoscopy is not recommended as a routine.

ENDOSCOPIC MANAGEMENT OF PEPTIC ULCERS IN CHILDREN.

The role of endoscopy in the management of patients with peptic ulcer disease-Pediatric aspects. Gastrointestinal Endoscopy vol71,april 2010

1. We recommend that testing for the **presence of *H Pylori*** be performed in all patients with PUD because it is a common etiology.
2. Endoscopy is not recommended to evaluate benign-appearing, uncomplicated duodenal ulcers identified on radiologic imaging
3. We suggest that surveillance endoscopy be considered in patients with duodenal ulceration who **experience persistent symptoms despite an appropriate course of therapy**, specifically to rule out refractory peptic ulcers and ulcers with nonpeptic etiologies
4. In patients with refractory PUD, we suggest surveillance endoscopy be performed until the ulcer has healed or the etiology has been defined
5. Because **endoscopy is an effective tool in the diagnosis, prognostication, and therapy** of bleeding peptic ulcers, we recommend that it be performed early in the course of hospitalization.
6. In patients who rebleed after initial endoscopic hemostasis, repeat endoscopic therapy is recommended before considering surgical or radiologic intervention
7. We recommend **against endoscopy in patients with clinical evidence of acute perforation**.
8. We suggest endoscopic balloon dilation be considered for the management of benign gastric outlet obstruction



Visible vessel | Visible vessel with clot

Relevant clinical recommendations for proton pump inhibitor–related use in the acute management of patients with non-variceal upper gastrointestinal bleeding.

1. **Somatostatin and octreotide are not recommended** for routine use in patients with acute ulcer bleeding
2. **H2-receptor antagonists are not recommended** in the management of patients with acute upper gastrointestinal bleeding.

3. **An intravenous bolus followed by continuous-infusion PPI is effective** in decreasing rebleeding in patients who have undergone successful endoscopic therapy.

4. The use of intravenous bolus followed by continuous-infusion PPI is **cost-effective** after endoscopic therapy in the management of patients bleeding peptic ulcers.

5. In patients awaiting endoscopy, **empiric therapy with a high-dose PPI** should be considered.

6. Patients should be discharged with a prescription for a single daily dose of oral PPI for a duration dependent on underlying etiology

7. Strategy of PPI treatment while awaiting endoscopy for suspected upper gastrointestinal bleeding **should not replace adequate resuscitation and the practice of early endoscopy**.

Barkun A, Bardou M, Marshall JK. Consensus recommendations for managing patients with nonvariceal upper gastrointestinal bleeding. Ann Intern Med 2003;139(10):843–57.
Barkun AN, Bardou M, Kuipers EJ, et al. International consensus recommendations on the management of patients with nonvariceal upper gastrointestinal bleeding. Ann Intern Med 2010;152(2):101–13.

Possible anti-inflammatory effects of PPIs when used during upper GI haemorrhage :

Effect on neutrophils:
Impaired neutrophil migration.
Reduced phagocytosis.
Suppression of oxidative burst.
Decreased expression of adhesion molecules.
Anti-oxidant effects.
Scavenging of reactive oxygen species.
Sulfhydryl molecule replenishment in the gastric mucosa.
Generation of bilirubin and carbon monoxide by activation of heme-oxygenase-1.

Effects on endothelial and epithelial cells
Diminished production of proinflammatory cytokines.
Decreased expression of adhesion molecules.

Effects on gut microflora
Selective antibacterial and antifungal effects.

Kedika RR, Souza RF, Spechler SJ. Potential anti-inflammatory effects of proton pump inhibitors: a review and discussion of the clinical implications. Dig Dis Sci 2009;54 (11):2312–7.

PEDGIHEP