

PEPTIC ULCER DISEASE

A peptic ulcer is a break in the mucosa, of 3 mm or greater in size, involving the stomach or duodenum.

- Important contributing factors: *H pylori*, NSAIDs.
- Additional factors include smoking, alcohol, bile acids, steroids, and stress.
- Important protective factors: mucus, bicarbonate, mucosal blood flow, prostaglandins, and epithelial renewal.

Frequency:

- One-year point prevalence is 1.8%.
- Lifetime prevalence is approximately 10%.
- PUD affects approximately 4.5 million people annually.
- Lifetime prevalence is approximately 11-14% for men.
- Lifetime prevalence is approximately 8-11% for women.

Mortality/Morbidity:

- Physician office visits and hospitalizations for PUD have decreased in the last few decades.
- The mortality rate has decreased modestly in the last few decades and is approximately 1 death per 100,000 cases.
- The hospitalization rate is approximately 30 patients per 100,000 cases.

History:

- Burning epigastric pain, possible radiation to back, relieved by foods or antacids.
- Possible nausea & vomiting (gastric outlet obstruction), anorexia, weight loss.
- Dyspepsia, including belching, bloating, distention, fatty food intolerance.
- Hematemesis or melena resulting from gastrointestinal bleeding

Physical:

- Epigastric tenderness,
- Guaiac-positive stool resulting from occult blood loss or melena.

Causes:

- *H pylori* infection - Most common cause of PUD - Assoc. with as many as 90% of duodenal ulcers and 75% of gastric ulcers
- Nonsteroidal anti-inflammatory drugs - Second most common cause of PUD - Addition of steroids potentiates risk
- Severe physiologic stress – burns/surgery
- Hypersecretory states (uncommon)
- Diseases associated with an increased risk of PUD include cirrhosis, chronic pulmonary disease, renal failure, and renal transplantation.

Studies:

- endoscopy.
- Detection of *H pylori* infection (rapid urease test)
- Antibodies (immunoglobulin G [IgG]) to *H pylori* can be measured in serum, plasma, or whole blood.
- Special studies
 - Obtaining a serum gastrin is useful in patients with recurrent, refractory, or complicated PUD and is useful in patients with a family history of PUD to screen for Zollinger-Ellison syndrome.
 - A secretin stimulation test can be performed to distinguish Zollinger-Ellison syndrome from other conditions with a high serum gastrin, such as achlorhydria and antisecretory therapy with a proton pump inhibitor.

Procedures:

- Upper GI endoscopy:
- Preferred diagnostic test in the evaluation of pts with suspected PUD
- Highly sensitive for the diagnosis of gastric and duodenal ulcers
- Allows for biopsies and cytological brushings to differentiate a benign ulcer from a malignant lesion
- Allows for detection of *H pylori* infection with antral biopsies for a rapid urease test and/or histopathology in patients with PUD

TREATMENT: the majority of patients with PUD are treated successfully medically with cure of *H pylori* infection and/or avoidance of NSAIDs, along with appropriate use of antisecretory therapy.

Surgical: With the success of medical therapy, surgery has a very limited role in the management of PUD.

Potential indications for surgery include:

- refractory disease
- complications of PUD including the following:
 - Refractory**, symptomatic peptic ulcers are a potential complication of PUD
 - Perforation** usually is managed emergently with surgical repair. However, this is not mandatory in all patients.
 - Obstruction** can complicate PUD and may persist or recur despite endoscopic balloon dilation.
 - Bleeding**, particularly in patients with massive hemorrhage.

The appropriate surgical procedure depends on the location and nature of the ulcer.

- oversewing of the ulcer
- vagotomy and pyloroplasty
- vagotomy and antrectomy with gastroduodenal reconstruction (Billroth I)
- vagotomy and antrectomy with gastrojejunal reconstruction (Billroth II)
- highly selective vagotomy

Medical: patients with peptic ulcers and associated *H pylori* infection need triple therapy – successful in 85-90% cases

NSAID-induced ulcers: cessation of NSAIDs + appropriate course of standard ulcer therapy with a histamine 2 (H₂)–receptor antagonist or proton pump inhibitor. If NSAIDs are continued, prescribe a proton pump inhibitor.

***H pylori* –negative** ulcers that are not caused by NSAIDs can be treated with appropriate antisecretory therapy, either H₂-receptor antagonists or proton pump inhibitors. Begin testing for other causes.

Triple therapies for H pylori infection -- Triple therapy for 10-14 days is the treatment of choice for *H pylori* infection.

Two forms of triple therapy are available:

- PPI-based triple therapy – PPI + 2 antibiotics, each BID for 2 weeks. In the setting of an active ulcer, continue daily proton pump inhibitor therapy for additional 2 weeks.
- bismuth-based triple therapy - bismuth subsalicylate and 2 antibiotics, each QID for 2 weeks. In the setting of an active ulcer, addition of an antisecretory agent, such as an H₂-receptor antagonist, is recommended to optimize ulcer healing.

PPI-based triple therapy

Omeprazole / lansoprazole plus clarithromycin and amoxicillin:

- Omeprazole (Prilosec): 20 mg **OR** Lansoprazole (Prevacid): 30 mg PO bid for 10-14 d **and**
- Clarithromycin (Biaxin): 500 mg PO bid for 10-14 d **and**
- Amoxicillin: 1 g PO bid for 10-14 d

Omeprazole / lansoprazole plus clarithromycin and metronidazole – **for PCN allergic:**

- Omeprazole: 20 mg PO bid for 10-14 d **OR** Lansoprazole: 30 mg PO bid for 10-14 d **and**
- Clarithromycin: 500 mg PO bid for 10-14 d **and**
- Metronidazole: 500 mg PO bid for 10-14 d

Bismuth-based triple therapy

Bismuth subsalicylate, tetracycline, and metronidazole (Helidac):

- Bismuth subsalicylate: 2 tab PO qid for 10-14 d **and**
- Tetracycline: 500 mg PO qid for 10-14 d **and**
- Metronidazole: 250 mg PO qid for 10-14 d

For ulcers that are *H. pylori* negative – use PPI as primary therapy (inhibit Na/K ATP pump of parietal cell):

Omeprazole (Prilosec)

- Decreases gastric acid secretion by inhibiting parietal cell H⁺/K⁺-ATP pump.
- Helps prevent peptic ulcers in chronic NSAID users at high risk.
- 20 mg/d PO for 4 weeks

Lansoprazole (Prevacid):

- Decreases gastric acid secretion by inhibiting parietal cell H^+/K^+ -ATP pump.
- Helps prevent peptic ulcers in chronic NSAID users at high risk
- 15-30 mg/d PO for 4 weeks

Esomeprazole (Nexium):

- Inhibits gastric acid secretion by inhibiting H^+/K^+ -ATPase enzyme system at secretory surface of gastric parietal cells.
- 20-40 mg PO qd for 4-8 weeks

Cytoprotectants: Agents with the ability to induce prostaglandin synthesis have cytoprotective effects in the GI tract.

Misoprostol (Cytotec): Prostaglandin analog
200 mcg PO qid

H2-receptor blockers: H2-receptor antagonists selectively block H2-receptors on parietal cells, resulting in diminished acid secretion and ulcer healing.

Cimetidine (Tagamet)

- Can be used as primary therapy to heal ulcers not associated with *H pylori* infection.
- Treatment duration is 6-8 wk.
- A longer treatment course might be required for gastric ulcers.
- 400 mg PO bid or 800 mg PO qhs for 6-8 wk

Ranitidine (Zantac)

- Inhibits histamine stimulation of the H2 receptor in parietal cells, which reduces gastric acid secretion, gastric volume, and reduced hydrogen concentration
- 150 mg PO bid or 300 mg PO qhs

Famotidine (Pepcid)

- Competitively inhibits histamine at H2 receptor of parietal cells, resulting in reduced gastric acid secretion, reduced gastric volume, and reduced hydrogen concentrations.
- 20 mg PO bid or 40 mg PO qhs

Nizatidine (Axid)

- Competitively inhibits histamine at the H2 receptor of the parietal cells, resulting in reduced gastric acid secretion, reduced gastric volume, and reduced hydrogen concentration
- 150 mg PO bid or 300 mg PO qhs

Further Outpatient Care: Endoscopy is required to document healing of gastric ulcers and to rule out gastric cancer. This usually is performed 6-8 weeks after the initial diagnosis of PUD.

In/Out Patient Medications: Consider maintenance therapy with half standard doses of H2-receptor antagonists at bedtime in patients with recurrent, refractory, or complicated ulcers, particularly if cure of *H pylori* has not been documented.

Prognosis:

- When the underlying cause is addressed, the prognosis is excellent.
- Most patients are treated successfully with the cure of *H pylori* infection, avoidance of NSAIDs, and the appropriate use of antisecretory therapy.
- Cure of *H pylori* infection changes the natural history of the disease, with a decrease in the ulcer recurrence rate from 60-90% to less than 10% per year (in some reports, recurrence is 1-2%).

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