EM CASE OF THE WEEK.

BROWARD HEALTH MEDICAL CENTER
DEPARTMENT OF EMERGENCY MEDICINE

BROWARD HEALTH
Care Warriors

Author: Robin Joseph | Editor: Stanley Linder, DO

June 2017 | Vol 3 | Issue 43

Peptic Ulcer Disease

A 63 year old man reports a 5 day history of melena and one episode of hematemesis. The patient has a history of a bleeding ulcer 2 years ago for which he was treated for. Patient currently reports black liquid stools, SOB, nausea, vomiting, diaphoresis, generalized abdominal pain, weakness, and lightheadedness. Patient denies recent weight loss, hematochezia, hematuria, and pain with defecation. Patient currently takes Plavix due to recent MI. VS: 132/55, pulse 96, RR 19, O2 sat 100% RA. Stool sample is FOBT (+). Bedside urea breath test is positive for urease. Patient received upper endoscopy 2 days ago, showing an ulcer in the gastric antrum.

What is the definitive treatment for the etiology of the patient's GI bleed?

A. Clarithromycin and Metronidazole for 1 week

B. Bismuth, omeprazole, metronidazole, and tetracycline for 14 days

C. Bismuth, vancomycin, tetracycline, and TMP-SMX for 14 days

D. Metronidazole, tetracycline, and TMP-SMX for 14 days

E. Vancomycin, clarithromycin, metronidazole, and omeprazole for 1 week

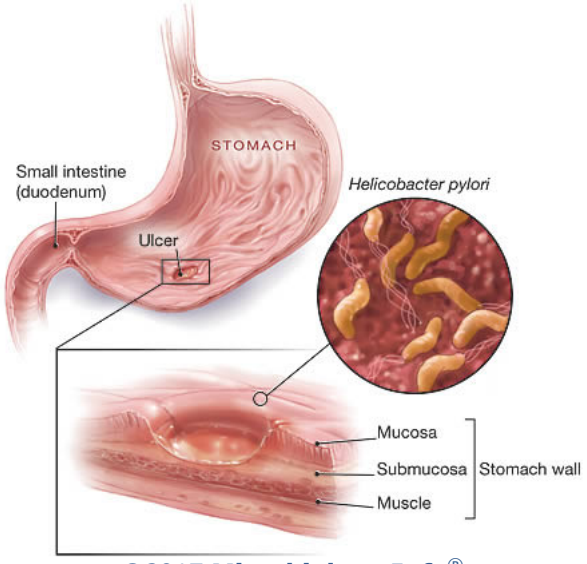
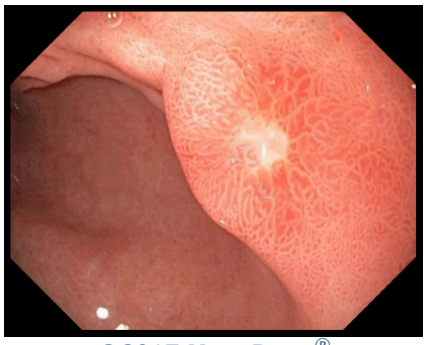


Diagram of sites where *H. pylori* can cause ulcers. *H. pylori* can erode the gastric and duodenal mucosa, penetrating mucosal blood vessels and cause melena or hematemesis.



View of a gastric ulcer. There is a blanched white base, showing no signs of active bleeding.

EM Case of the Week is a weekly "pop quiz" for ED staff.

The goal is to educate all ED personnel by sharing common pearls and pitfalls involving the care of ED patients. We intend on providing better patient care through better education for our nurses and staff.

BROWARD HEALTH MEDICAL CENTER

Department of Emergency Medicine
1625 SE 3rd Avenue
Fort Lauderdale, FL 33316

Warriors

BROWARD HEALTH MEDICAL CENTER

June 2017 | Vol 3 | Issue 43

The correct answer is B. Bismuth, omeprazole, metronidazole, and tetracycline for 14 days. Quadruple therapy consists of **PPI**, **bismuth**, and **two antibiotics** (Gram negative coverage). Newer medications include a bismuth-metronidazole-tetracycline combination capsule, which have shown in recent studies to have good *H. pylori* eradication rates.

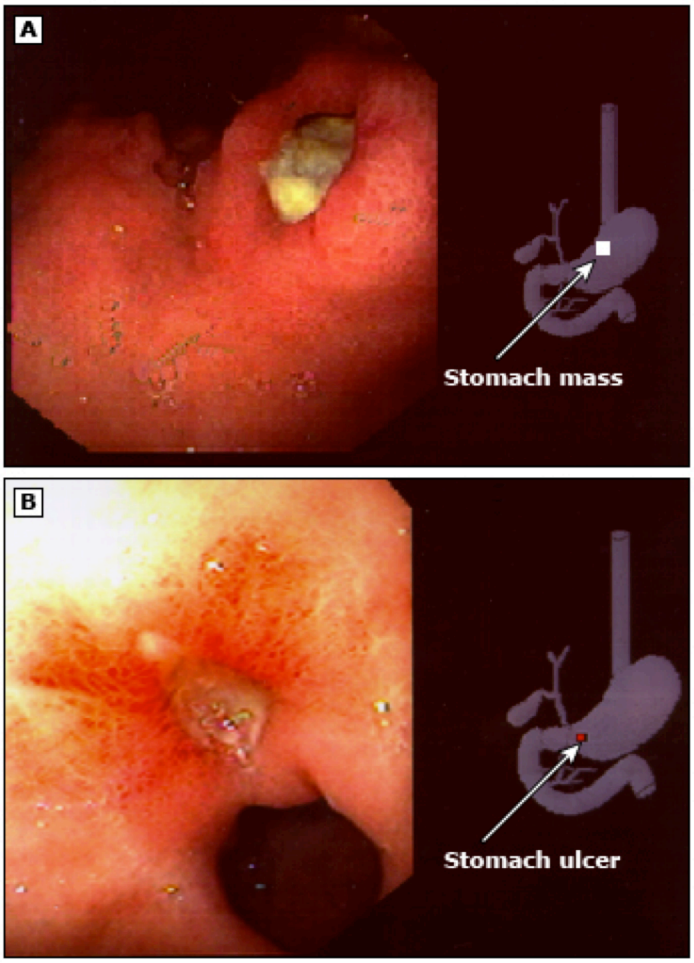
Peptic ulcers result from defects of the muscular mucosal layers by hypersecretion of acid or by decreasing the protective mucosal layers. They can occur in the stomach or in the duodenum. The most common causes of peptic ulcer disease are *H. pylori* and NSAID-use. *H. pylori* is present in 95% of patients with duodenal ulcers and 70% of patients with gastric ulcers. NSAIDs inhibit prostaglandin production through the inhibition of COX-1 and COX-2. Prostaglandins compose and protect the gastric and duodenal mucosa from acid.

Peptic ulcers are more likely to occur in individuals with an *H. pylori* infection, ETOH use, cigarette use, NSAID use, or those on anticoagulant medication. Furthermore, cigarette use increases free radical production, decreases epidermal growth factor, and decreases mucosal nitric oxide synthase activity. These actions together alter the process of angiogenesis in ulcers, leading to delays in ulcer healing.

Patients with peptic ulcers may experience a wide range of symptoms, depending on the location of the ulcer. Those who experience epigastric pain shortly after eating are likely to have a gastric ulcer. Patients who have epigastric pain hours after eating are more likely to have a duodenal ulcer. Patients who feel symptoms of gastric retention such as bloating, early satiety, nausea or vomiting may have an ulcer located in the pyloric channel. Independent of location ulcers can cause hematemesis and melena, both indicative of upper GI bleeding.

Peptic ulcers are best diagnosed with direct visualization via endoscopy. Because H. pylori infection can lead to malignancy, biopsies are taken from the ulcer site. An ulcer with nodular edges or a lesion invading the lumen is more likely to be malignant.

H. pylori can be diagnosed during endoscopy by a biopsy urease test and histology. Non-invasive methods to test for *H. pylori* include blood tests for antibodies and the stool antigen assays.



©2017 UptoDate®
Image A shows a malignant gastric ulcer in the cardia of the stomach.
Image B shows a benign gastric ulcer near the gastric pylorus.

For a list of educational lectures, grand rounds, workshops, and didactics please visit ***BrowardER.com*** and **click** on the ***"Conference"*** **link**.

All are welcome to attend!

Warriors

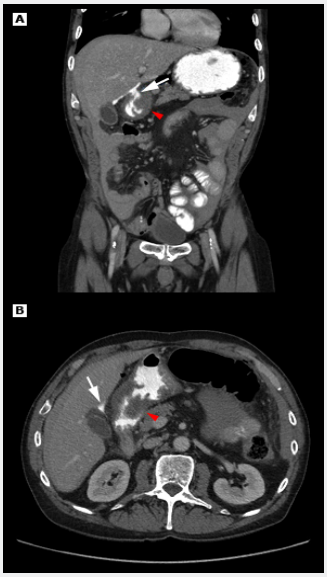
BROWARD HEALTH MEDICAL CENTER

June 2017 | Vol 3 | Issue 43

Serious complications of PUD include perforation of the GI wall and hemorrhagic shock. A posterior ulcer may perforate into the pancreas, causing pancreatitis. Perforation typically presents with sudden abdominal pain, tachycardia, cool extremities, and abdominal rigidity.

Treatment options for patients with stable peptic ulcers include triple or quadruple therapy coverage for H. pylori and avoiding NSAID use. Patients with refractory ulcers, large ulcers on endoscopy (>2cm), H. pylori and NSAID negative ulcers, and those with consistent NSAID use are recommended to take PPIs daily as maintenance therapy. Bleeding ulcers can be treated endoscopically by thermal coagulation, hemostatic clips, and direct epinephrine injection into the ulcer site. A small percentage of patients with active bleeding peptic ulcers require interventional angiography or surgery for treatment. These patients have typically failed endoscopic therapy, show signs of hemodynamic instability despite reperfusion attempts, or show signs of GI wall perforation.

Patients shown to have acute severe GI bleed from peptic ulcers are to be admitted to the hospital, given 2 large bore IVs, IV fluid, Type & Screen, and IV PPIs (Pantoprazole) for stabilization. Patients can be stratified using the Rockall or Blatchford score to determine if patients can be treated outpatient vs hospitalized. Both scores use several variables in their calculations such as older age, blood pressure, comorbidities such as renal failure or heart disease, BUN, hemoglobin, and systolic blood pressure.



©2017 UptoDate®
Perforated duodenal ulcer. White arrow in A points to hole in duodenum, from where contrast is extravasating. Red arrow in B shows thickened duodenal wall, resulting from a perforated duodenal ulcer.

Takeaway Points

- Definitive diagnostic test of peptic ulcer disease is by direct visualization via endoscopy.
- *H. pylori* and NSAID use are the most common causes of peptic ulcer disease.
- Ulcers can be malignant and should be biopsied when undergoing endoscopy.

ABOUT THE AUTHOR

This month's case was written by Robin Joseph. Robin is a 4th year medical student from FIU. She did her emergency medicine rotation at BHMC in January 2017. Robin plans on pursuing a career in Internal Medicine after graduation.

REFERENCES

1)Fashner J, Gitu A. Diagnosis and Treatment of Peptic Ulcer Disease and H. pylori Infection. Journal of AAFP. 2015 Feb 15; 91(4):236-242.
2)Ko JK, Cho CH. Alcohol drinking and cigarette smoking: a "partner" for gastric ulceration. Jrnl of the Chinese Medical Association. 2000 Dec;63(12):845-54.
3)Stead, LG. First Aid for the Emergency Medicine Clerkship. 3rd ed. New York: McGraw Hill; c2011. Gastrointestinal Emergencies; p. 219-20.
4)UpToDate: Peptic Ulcer Disease; Treatment regimens for Helicobacter pylori