COMPLICATIONS OF PUD: BLEEDING & PERFORATION

FLAME LECTURE: 80

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OBJECTIVES

- To understand the complications of peptic ulcer disease (PUD) with respect to bleeding and perforation.
- To describe symptoms associated with bleeding and perforation of peptic ulcers.
- To learn the diagnostic tests for diagnosing bleeding and perforated ulcers.
- To develop a treatment plan for bleeding and perforated ulcers.
- See also:
  - FLAME LECTURE 78: Diagnosing Peptic Ulcer Disease
  - FLAME LECTURE 79: Management and Treatment of Peptic Ulcer Disease

EPIDEMIOLOGY

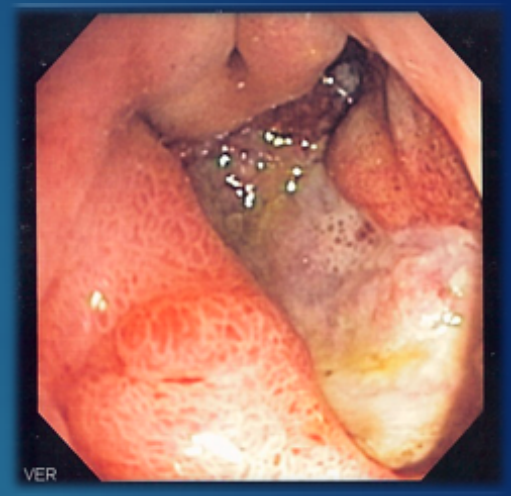
- 375 hospitalizations per 100,000 individuals per year in the U.S.
- Bleeding:
  - Most frequently encountered complication of PUD (~70% of cases)
  - 40% morbidity and mortality if not diagnosed and treated appropriately
- Perforation:
  - Major risk factors: smoking (10x), NSAID use (5-8x)

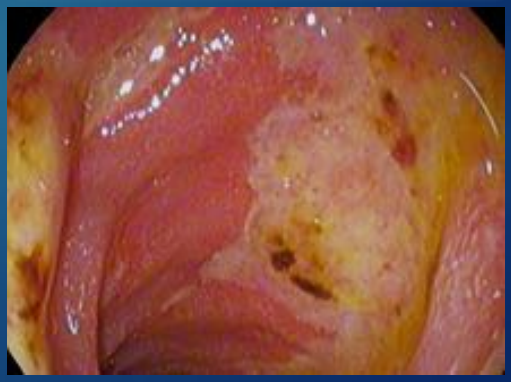
BLEEDING PUD: SYMPTOMS

- Hematemesis
  - Vomiting of blood
- Melena
  - Stool that is dark and tarry and contain partially digested blood
- Hematochezia
  - Stool that contains bright red blood
  - Indicative of massive bleed as blood is passing through the colon so quickly that it is not digested

BLEEDING PUD: DIAGNOSIS

- Upper endoscopy (most common)
  - Pro: 98% sensitivity, 100% specificity; direct visualization.
  - Con: Specialized physician required. In cases of massive hemorrhage, may be difficult to visualize source.
- Catheter angiography
  - Pro: Extravasation directly visualized. Can also be used as treatment modality.
  - Con: Invasive, high dose of radiation
- Radionucleotide scan
  - Pro: Can detect bleeding as low as 0.05 – 0.1 ml/min.
  - Con: Prolonged imaging times. Cannot provide precise bleeding locations.





BLEEDING PUD: TREATMENT

- Medical Management
  - Aggressive acid suppression with PPI
    - Example: Pantoprazole 40 mg IV BID
  - Reduce splanchnic (visceral) blood flow
    - Somatostatin and octreotide
  - Medical optimization
    - Ex: transfusion of blood products, d/c NSAIDs, hold anticoagulants
  - Testing for H. pylori
    - If positive, treatment is indicated

BLEEDING PUD: TREATMENT

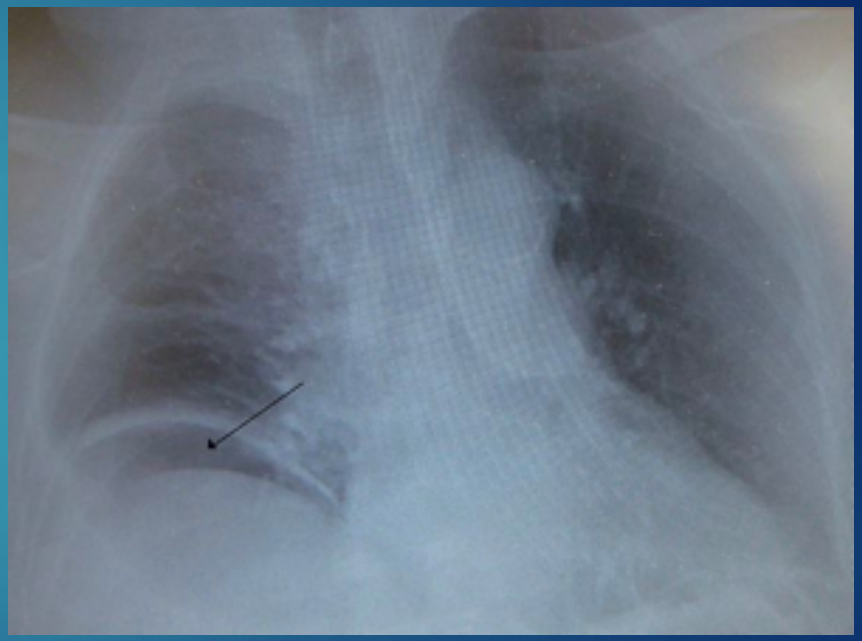
- Surgical management
  - Direct hemostatic therapy (stable, controlled environment)
    - Thermal coagulation, hemostatic clips, fibrin sealant, plasma coagulation
  - Interventional angiography (unstable, hemorrhagic emergencies)
    - Embolization with temporary (gelatin sponge) or permanent (coils)

PERFORATED PUD: SYMPTOMS

- History indicative of prior PUD
- Initial phase:
  - 0-2 hours - sudden, sharp abdominal pain causing collapse or syncope
- Second phase:
  - 2-12 hours - overall improvement of abdominal pain, however, abdomen is rigid and pain is worsened with movement
- Third phase:
  - >12 hours: increasing abdominal distention, fever, hypovolemia, peritonitis

PERFORATED PUD: DIAGNOSIS

- Detailed history and physical
- Upright chest and abdominal XRs
  - Evaluate for free air
    - Free air → no other imaging needed
    - No free air → CT with oral contrast or US



PERFORATED PUD: TREATMENT

- Non-operative treatment:
  - NG tube
  - Aggressive IV fluid/hematologic resuscitation
  - Aggressive acid suppression with PPI
  - Antibiotics Directed at: Enteric gram (-) rods, Anaerobes, Oral flora
    - Beta-lactam/beta-lactamase inhibitor (piperacillin-tazobactam [Zosyn])

      OR
    - 3rd gen cephalosporin (ceftriaxone [Rocephin]) **AND** metronidazole [Flagyl]
    - If local prevalence of extended spectrum beta-lactamase (ESBL) producing bacteria, consider carbapenems (meropenem, imipenem, ertapenem)
  - No peritoneal signs: reasonable to assume perforation has sealed spontaneously

PERFORATED PUD: TREATMENT

- Operative treatment:
  - Indications:
    - Acute perforation with rigid abdomen + free air
    - Two failed endoscopic attempts at achieving hemostasis
  - Operative considerations:
    - Sectioning the vagus nerves (vagotomy)
    - Eliminating hormonal stimulation from the antrum (antrectomy)
    - Decreasing the number of acid-producing parietal cells (subtotal gastrectomy)
    - Placement of an omental patch
    - Any combination of the above

REFERENCES

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