Disorders of the esophagus. Peptic ulcer

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Medical history:

• What is the patient’s complaint
• Which are the most common patient complaints? (for example, pain, pyrosis, etc.)
• Is there any pain, how is the pain described, where
• When (at night, correlated to mealtimes - on an empty stomach, on a full stomach, etc.)
• Correlate to something (eating tomato, drinking milk, coffee, use of certain forms of medication)
• Other symptoms include (e.g. nausea, feeling bloated, altered bowel habits)
• Other signs and symptoms? (e.g. loss of appetite, weight loss)
• Family history
Gastro-Esophageal Reflux Disease

• The condition of chronic, pathologic reflux of acidic stomach contents
  – Esophagus
  – Oropharynx
  – Larynx, even lungs

• Leads to symptoms and/or mucosal damage
  – **NERD** = symptoms without damage
  – Symptoms may be typical or atypical
Typical Symptoms

• Heartburn
  – Retrosternal burning sensation
  – Most commonly post-prandial, nocturnal
  – Fatty foods, spicy foods, acidic foods
  – Relived with antacids, water, milk

• Acid Regurgitation
  – Perception of gastric content reflux in the mouth or hypopharynx without nausea, retching or abdominal contractions
Atypical Symptoms

- Atypical
  - Dysphagia, odynophagia
  - Nausea
  - Chest pain
  - Dyspepsia = non-severe upper abdominal discomfort
    - Epigastric fullness
    - Heartburn

- Extraesophageal
  - Chronic cough
  - Hoarseness, laryngitis
  - Vocal Cord Dysfunction, Bronchospasm
  - Globus sensation
  - Dental erosions
Red Flags (alarm features)…think endoscopy

- Dysphagia/odynophagia
- Nausea/vomiting
- Melena, bleeding, iron deficiency anemia
- Unexplained weight loss, anorexia
- Extended duration of symptoms
- Continual pain
- No response to PPI
- Family history of GI cancer
Diagnosis

- History
- Trial of PPI

- Upper Endoscopy - in patients with alarm signs, those who fail a medication trial, those who require long-term treatment
  Important to distinguishing between esophagitis and Barrett’s metaplasia

- 24-hour esophageal pH monitoring - helps in establishing the presence of acid above the LES as the cause the symptoms or esophageal damage

- Presumptive GERD diagnosis can be based on clinical symptoms alone and can start with empiric therapy
Work up

• History + Empiric treatment
  – Although a response to PPIs is not a definitive diagnosis of GERD, in clinical practice it is more appropriate to start empiric treatment than to pursue reflux pH monitoring
Endoscopy with biopsy

• Upper endoscopy is not required for diagnosis
• Indicated for suspected GERD plus
  – Red flags, or
  – Symptoms resistant to twice daily PPI therapy
• Remember NERD
  – 62% of patients with typical symptoms of GERD will have a normal EGD (Esophagogastroduodenoscopy)
Gastroscopia

- Gastroscopia
  - 96 cm
  - Acut by bleeding, ulcer, carcinoma
  - Complication: perforation
GERD complications:

- Peptic ulcer
- Stenosis
- GI bleeding
- Pulmonary manifestations
- Barrett oesophagus
Medical treatment

Life-style modification:

- Obesity has been shown to have an association with peptic ulcer disease (PUD), and patients should be counseled regarding benefits of weight loss
- No large meal
- Diet - increase proteins, reduce fat and sugar
- No alcohol, tobacco, theophyllin, caffeine, anticholinergic agents, calcium-channel blockers, onions, garlic, peppermint, acidic foods
- Lying down within 3-4 hours after a meal
- Elevate head of bed 4-8 inches
- No medications that may potentiate GERD: NSAIDs, Aspirin, sedatives, nitrates

Stress reduction counseling might be helpful in individual cases but is not needed routinely.
**Hiatus hernia**

**Forms:**
1. sliding
2. paraoesophagealis sliding type, „rolling”
3. bradyoesophagus
Hiatus hernia

**Symptoms:**

1. gastro-cardiac heartburn, chest or abdominal pain
2. regurgitation
3. Asthma
4. Right side pneumonia
Epidemiology

GERD occurs in all ages, but most common in those older than 40 years of age. About 10-20% of people in western countries suffer from GERD symptoms. Except for pregnancy, no much difference in incidence between men and women. But for Barret’s esophagus, prevalence is more in male.
Pathophysiology I

1. Decreased lower esophageal sphincter (LES) pressure
   • Primary barrier to gastro esophageal reflux is the lower esophageal sphincter
   • LES normally works in conjunction with the diaphragm, if barrier disrupted, acid goes from stomach to esophagus

   • May be due to:
     • Spontaneous transient LES relaxation
     • Transient increase in intraabdominal pressure
     • An atonic LES

   • Factors affecting LES tone:
     • Drugs (Ca2+ channel antagonists, nitrates, oral contraceptives)
     • Foods (chocolate, garlic, onion, etc)
     • smoking
Pathophysiology II

2. Disruption of anatomical barriers
   Associated with hiatal hernia

3. Esophageal clearance
   The GI acid produced spent too much time in contact with the esophageal mucosa

4. Mucosal resistance
   On repeated exposure to refluxate or due to some defect of normal mucosal defences H+ diffuse into the mucosa, leading to cellular acidification and necrosis, leading to esophagitis

5. Delayed gastric emptying
**Pathogenesis of acute erosions/ulcer:**

- Inbalance between defensive factors (mucus-bicarbonate layer, prostaglandins, cellular regeneration, mucosal blood flow) and aggravating factors (hydrochloride acid, pepsin, bile salts, etc)
- Impaired phospholipid-rich layer in the mucosa that maintains mucosal hydration and integrity of the gastric epithelial barrier
- Inflammatory response in gastric mucosa

(normal mucosa)  (ulcusos)
Forrest III
Chronic stomach and duodenal ulcer

Pathogenesis:

• high chlorhydro-peptic gastric secretion, as a result of either parietal cell hyperplasia, excessive secretory response (i.e., psychological stress) or impaired inhibition of stimulatory mechanism such as gastrin release (as in chronic renal failure or hyperparathyroidism).

• Impaired duodenal mucosal defense

• Other
  – smoking
  – **Helicobacter Pylori** (92% of patients)
  – genetics
  – duodenitis
- Helicobacter Pylori associated peptic ulcer
Helicobacter Pylori

• 1983: Marshall & Warren

• More than half the world's population has a chronic H. pylori infection of the gastroduodenal mucosa, yet only 5-10% develops ulcers.

• Very high urease activity, producing ammonia to protect the organism from the acidic gastric environment.

• Urease catalyzes production of ammonia → toxic complexes impair the phospholipid-rich layer in the mucosa that maintains mucosal hydration and integrity of the gastric epithelial barrier.
H. pylori colonies → proliferation

Bacterial LPS

Acute followed chronic immune response

Inflammation of gastroduodenal mucosa leads to release of IL 1β, IL 2, IL 6, IL 8 and TNF that damages mucosal tissue.

Gastric acid/pepsin cause mucosal damage
Helicobacter pylori

Acute gastritis

- Gastritis in the antrum
  - Duodenal ulcer (92%)

Chronic active gastritis

- Antrum/corpus gastritis, mainly corpus
  - Stomach ulcer (70%)

Chronic inactive gastritis

- Gastritis with chronic atrophy
  - Malt-lymphoma
  - Cancer (70%)

- Duodenal ulcer (92%)
H. pylori tests

Invasive:

- rapid urease test
- Mucosal biopsies, histology

Non-invasive:

- carbon-13-urea breath test
- serology
**Recommended primary therapy for Helicobacter pylori infection:**

**Triple-therapy regimens**
PPI-based triple therapy regimens for H pylori consist of
- PPI
- Amoxicillin
- and clarithromycin for 7-14 days.
Amoxicillin should be replaced with metronidazole in penicillin-allergic patients only

**Quadruple therapies** are generally reserved for patients in whom the standard course of treatment has failed.
Quadruple treatment includes the following drugs, administered for 14 days:

- PPI, standard dose, PO bid
- Bismuth 525 mg PO qid
- Metronidazole 500 mg PO qid
- Tetracycline 500 mg PO qid

Consider maintenance therapy with half of the 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 or if an H pylori negative ulcer is present.
**Medication I.:**

Treatment of peptic ulcers varies depending on the etiology and clinical presentation. The initial management of a stable patient with dyspepsia differs from the management of an unstable patient with upper GI hemorrhage.

**Antacids:**

Antacids are agents that neutralize the gastric acid and raise the gastric pH, so are used to treat dyspepsia and are used as short term symptomatic relief of peptic ulcer eg. salts of magnesium, aluminium and calcium.
Two classes of acid-suppressing medications currently are in use:

**histamine-2 receptor antagonists (H2RAs)**
Competitively block the histamine receptors in gastric parietal cells
Faster healing of erosive esophagitis
Can use regularly or on-demand
include ranitidine, cimetidine, famotidine, and nizatidine

**proton pump inhibitors (PPIs)**
Include ezomeprazole, lanzoprazole, omeprazole, pantoprazole, rabeprazole

Both classes are available in intravenous and oral preparations.
Medication III.

**Gastroprokinetic agents:**
type of drugs which enhance gastrointestinal motility by increasing the frequency of contractions in the small intestine or making them stronger, but without disrupting their rhythm eg. Metoclopramid, domperidon

**Adhesive substance:**
Sucralfate binds with positively charged proteins in exudates and forms a viscous adhesive substance that protects the GI lining against pepsin, peptic acid, and bile salts. It is used for short-term management of ulcers.

**PGE1, PGE2 analogs:**
imiprostol – Cytotec® is a prostaglandin analog that can be used to decrease the incidence of peptic ulcers and complications in long-term NSAID users at high risk.
Drug associated gastroduodenal lesion:

NSAIDs play an important role in the pathogenesis. (RA, etc.)

Forms:
- acute hemorrhagic gastritis
- acute erosive gastritis
- acute stomach or duodenal ulcer
- or combination

Drugs:

NSAID use is a common cause, ethanol, chemotherapeutic agents, such as 5-fluorouracil (5-FU), methotrexate (MTX), and cyclophosphamide, oral steroid agents
Prophylactic regimens that have been shown to dramatically reduce the risk of NSAID-induced gastric and duodenal ulcers include the use of a prostaglandin analog or a PPI according to the following regimens:

- (es) omeprazole, pantoprazol 20-40 mg PO every day
- Lansoprazole 15-30 mg PO every day

Primary prevention of NSAID-induced ulcers: don't use unnecessary NSAIDs, using acetaminophen when possible, and using the lowest effective dose of an NSAID
Complications:

- bleeding
- Patients with perforated PUD usually present with a sudden onset of severe, sharp abdominal pain. Most patients describe generalized pain; or severe epigastric pain. These patients assume a fetal position.
- However, the degree of peritoneal findings is strongly influenced by a number of factors: including the size of perforation, amount of bacterial and gastric contents contaminating the abdominal cavity, time between perforation and presentation, and spontaneous sealing of perforation.
- These patients may also demonstrate signs and symptoms of septic shock, such as tachycardia, hypotension, and anuria. These indicators of shock may be absent in elderly or immunocompromised patients or in those with diab...
- malignant transformation (MALT)
- pylorus stenosis