Gastroesophageal Reflux Disease (GERD) | Heartburn

Gastroesophageal Reflux Disease (GERD) is a chronic condition that arises when reflux of gastric contents into the esophagus leads to troublesome symptoms and/or complications, such as esophagitis, strictures, or Barrett's esophagus.

Etiology and Risk Factors

GERD occurs due to a failure of the anti-reflux barrier at the gastroesophageal junction. Contributing factors include:

- **Lower esophageal sphincter (LES) dysfunction**: Transient LES relaxation or hypotensive LES tone.
- **Hiatal hernia**: Weakens diaphragmatic support of LES.
- **Delayed gastric emptying**: Increases intragastric pressure.
- **Obesity**: Increases intra-abdominal pressure.
- **Dietary and lifestyle triggers**: Fatty meals, caffeine, alcohol, chocolate, peppermint, and smoking.
- **Medications**: Calcium channel blockers, nitrates, anticholinergics, progesterone, and benzodiazepines.

Pathophysiology

The esophagus is normally protected by:

1. **LES tone** – maintains a barrier to prevent reflux.
2. **Diaphragmatic support** – crural fibers of the diaphragm reinforce LES.
3. **Esophageal peristalsis** – clears refluxate.
4. **Salivary and bicarbonate secretion** – neutralizes acid.
5. **The angle of His** – helps prevent backflow.

Failure in any of these mechanisms allows gastric acid, bile salts, and pepsin to damage the esophageal mucosa.

Clinical Features

Typical (Esophageal) Symptoms:

- **Heartburn** (retrosternal burning)
- **Regurgitation** (acidic or bitter fluid into the mouth)
- **Dysphagia** (from stricture or motility disorder)

Atypical (Extraesophageal) Symptoms:

- Chronic cough, hoarseness, asthma-like symptoms

- Laryngitis, sore throat, non-cardiac chest pain
- Dental erosion and otitis media (due to reflux reaching upper airways)

? *50% of patients with GERD-related asthma do not experience heartburn.*

Complications

- **Erosive esophagitis** – inflammation and ulceration
- **Strictures** – fibrotic narrowing due to chronic inflammation
- **Barrett's esophagus** – metaplasia of the distal esophageal epithelium (risk of adenocarcinoma)
    - Seen in ~10% of chronic GERD cases
- **Esophageal adenocarcinoma**

Esophagitis Classification (LA Grade):

- Grade A: ?5 mm mucosal breaks
- Grade B: >5 mm, non-confluent
- Grade C: Confluent, <75% of circumference
- Grade D: >75% of circumference

Diagnosis

Clinical Diagnosis:

- Often based on symptoms; empiric PPI trial may confirm.

Diagnostic Testing:

- **Endoscopy**: Recommended for alarm symptoms (dysphagia, weight loss, bleeding).
- **24-hour pH monitoring**: Gold standard for confirming GERD (sensitivity ~96%, specificity ~95%).
- **Esophageal manometry**: Assesses LES function and esophageal motility.
- **Barium swallow**: Can identify strictures or hiatal hernias.

Management

Lifestyle Modifications:

- Weight loss
- Elevate head of bed
- Avoid meals before bedtime
- Eliminate dietary triggers

Pharmacologic Therapy:

1. **Antacids**: Short-term relief (e.g., aluminum/magnesium hydroxide)
2. **H2-Receptor Antagonists**: Decrease acid secretion (e.g., ranitidine, famotidine)

3. **Proton Pump Inhibitors (PPIs)**: First-line for moderate to severe GERD (e.g., omeprazole, esomeprazole)

   ? *PPIs promote mucosal healing and symptom control.*

Surgical Management:

- **Fundoplication**: Laparoscopic wrapping of the gastric fundus around the LES.
- Considered in patients with refractory symptoms, large hiatal hernia, or medication intolerance.

Prognosis

- Most patients respond to medical therapy.

- Barrett's esophagus requires regular surveillance endoscopy due to risk of malignant transformation.

Key Points:

- GERD is the most common cause of non-cardiac chest pain.
- Always consider Barrett's esophagus in chronic GERD.
- Lifestyle modifications + PPIs are the first-line approach.
- Alarm features (e.g., weight loss, dysphagia, GI bleeding) warrant endoscopy.
- Long-standing GERD increases risk of adenocarcinoma, especially in white males.