Esophagitis

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Objectives

- Understand different causes of esophagitis
- Determine appropriate diagnostic workup based on history
- Treatment and management strategies
Gastroesophageal Reflux

Anti-Reflux Barrier:

- Diaphragmatic crural support
- Intra-abdominal segment of esophagus
- Angle of His

Sliding hiatal hernia compromises barrier
Gastroesophageal Reflux

Pathophysiology

- Transient lower esophageal sphincter relaxations (TLESR)
  - Postprandial period → gastric distension → increase intragastric pressure
- Large volume feeds and delayed gastric emptying worsen distension

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<td>Chest pain</td>
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Gastroesophageal Reflux

**Histamine-2 Receptor Antagonists (H2RAs)**
- Dec acid secretion by inhibiting H2 receptor on gastric parietal cell
- Onset in 30 mins, peak 2.5 hrs
- First-line therapy → famotidine (Pepcid)
- Tachyphylaxis with chronic use

**Proton Pump Inhibitors (PPI)**
- Suppress acid production by inhibiting the H+/K+ ATPase on GP cell
- Onset 1-2 hr, peak in several days
- Healing erosive/ulcerative esophagitis
- AE: HA, n/d, abd pain

If symptoms improve, wean after 4-8 weeks
Eosinophilic Esophagitis

Chronic immune-mediated disorder resulting in eosinophilic infiltration of the esophagus

Criteria for diagnosis:
- Clinical symptoms of esophageal dysfunction
- Histologic presence of $>15$ eosinophils/hpf
- Absence of other eosinophilic syndromes beyond esophagus
Eosinophilic Esophagitis

It is believed that when a food allergen enters through a disrupted epithelial barrier, esophageal Ag-presenting cells release a proinflammatory cascade leading to recruitment of eosinophils to the esophagus

- Prevalence highest in children with dysphagia or food impaction (63-88%)
- Fam Hx EoE or significant GERD
Eosinophilic Esophagitis: Signs and Symptoms

**Young Child**
- Regurgitation
- Vomiting
- Feeding diff/refusal
- Failure to thrive

**School-age**
- Vomiting and abd pain
- Food refusal
- Dysphagia

**Adolescents and adults**
- Reflux
- Dysphagia
- Heartburn
- Food impaction
- Epigastric abd pain

**Other symptoms**
- Anorexia
- Early satiety
- Malnutrition / FTT
- Esophageal dysmotility
- Hematemesis (rare)

**Personal hx atopy in 60-80%**
- Asthma
- Eczema
- Allergic rhinitis
- Food allergies
Eosinophilic Esophagitis: Diagnosis

**Endoscopy with Biopsy**
- Direct visualization:
  - Linear furrows
  - Concentric rings
  - Loss of typical vascular pattern
  - White exudates
  - Late findings of narrowing or stricture
  - 30% may appear normal
- Histology
  - Patchy disease, so obtain both distal and proximal esophagus samples
  - $\geq 15$ eosinophils/hpf
  - Excessive eosinophils in the stomach and/or duodenum would suggest alternate diagnosis

*Figure 2. Mucosal edema, loss of vascular pattern, and linear furrows in a patient with eosinophilic esophagitis.*
Eosinophilic Esophagitis: Treatment

**Proton Pump Inhibitor**
- Empiric tx for 6-8 weeks before EGD to r/o GERD or dx PPI-responsive EoE

**Swallowed Topical Corticosteroids (Fluticasone or Budesonide)**
- Deposited along esophageal mucosa
- 50-85% improvement
- AE: dry mouth, nosebleed, OP or esophageal candidiasis, some evidence of adrenal suppression

**Amino acid-based elemental formula diet (Neocate, Elecare)**
- 95% improvement
- Volume may require NG or GT
Eosinophilic Esophagitis: Treatment

Dietary Modification

6 Food Elimination Diet

- Empiric elimination of common food allergens (milk, soy, eggs, wheat, nuts/peanuts, fish/shellfish)
- For non-responders
- 75% demonstrate improvement
- Significant dietary restriction and need repeat EGDs to ensure reintroduced foods don’t cause relapse
Eosinophilic Esophagitis: Treatment

- Repeat EGD 6 weeks after dietary or medication change
- Clinical symptoms do not always correlate with histologic findings
- Once EGD resolution noted, foods can be systematically reintroduced while monitoring for redevelopment of clinical symptoms
- EoE almost always returns after discontinuing corticosteroids or reintroduction of eliminated food

Figure 1. Endoscopic appearance of normal esophagus.
Infectious Esophagitis

- Odynophagia, chest pain, and/or dysphagia with prodrome of fever and malaise
- Immunocompetent: HSV, CMV, Candida
- Immunocompromised: Cryptococcus, histoplasmosis, blastomycosis, aspergillosis, mycobacterium
- Endoscopy
  - Ulcerated lesions, white plaques
  - Biopsy for histology, culture and PCR
- Tx: Generally self-limited with antiviral or antifungal therapy
Esophagus

Three anatomical points of narrowing

- Cricopharyngeus muscle
- Broncho-aortic constriction
- Esophagogastric junction
Pill-induced Esophagitis

Usually occurs at anatomical sites of esophageal narrowing

Present with retrosternal pain or heartburn, odynophagia, dysphagia

Risk factors:

- Position of patient (supine, bedtime)
- Size of medication
- Amount of fluid ingested with medication (< 240 ml, dec saliva)
- Esophageal Anatomy (aortic arch compression, left atrial enlargement)
Pill-induced Esophagitis

Direct Irritant Effect
- Local acid burn - pH < 3 when dissolved in saliva
  - Antibiotics: Tetracycline, doxycycline, and clindamycin
- Local hyperosmolality - tissue destruction and vascular injury
  - Potassium chloride
- Bisphosphonates, Quinidine

Disruption of Cytoprotective Barrier
- Aspirin, NSAIDs disrupt prostaglandin barrier in stomach and esophagus
Pill-induced Esophagitis

EGD with biopsy - visualization of discrete ulcer with normal surrounding mucosa

Treatment

- If possible, dc med or switch to liquid formulation
- Unclear if antacids, H2RA, PPI, or sucralfate are effective; helpful for acid suppression to prevent exacerbation from GERD
Foreign Body Ingestions

80% of foreign bodies occur in children, mostly between 6mo - 3 yo

Multiple objects and repeated episodes usually in children with developmental delay or behavioral problems

Usually brought by parents for known ingestion and generally asymptomatic

Symptoms often related to location
Foreign Body Ingestions

**Indications for Urgent Removal**

- Signs of airway compromise
- Near-complete esophageal obstruction (drooling)
- Object is sharp, long (>5cm), superabsorbent polymer in esophagus or stomach
- High-powered magnet or magnets
- Disk battery in esophagus
- Inflammation or intestinal obstruction (fever, abd pain, vomiting)
- Objects in esophagus >24 hours or unknown duration
Foreign Body Ingestions

**Coin**
- 2/3 are in the stomach at time of XR, expectant management
- If in esophagus without respiratory symptoms, can observe for 24 hours prior to removal

**Battery** - Medical emergency in esophagus, can perforate
- Liquefaction necrosis from completed current
- Pressure necrosis
- Leakage of caustic material (alkali)
- Esophagram 1-2 days after and 4 weeks later
Foreign Body Ingestions

**Sharp Object** - high risk perforation
- Endoscopic retrieval, unless in small intestine can follow with serial XRs

**Magnets**
- Multiple high powered magnets may attract across layers of bowel leading to pressure necrosis, fistula, volvulus, perforation, infection, or obstruction
- Single can attach to metallic clothing
Caustic Ingestions

- Substance capable of burning or corroding organic tissue by chemical action
- In 2018, 2.1 million toxic exposures, ½ in children < 5 yo
- Most common:
  - Household cleaning products (bleach) ~11%
  - Cosmetics and personal care products
- Children - generally small and accidental
- Adolescents - generally deliberate (SI)
Caustic Ingestions

**Alkali**
- Esophageal injury if pH > 11.5-12.5 via *liquefaction necrosis*
- Early disintegration of the mucosa allowing deep penetration and perforation
- 10% lye - 1 min for deep burn
- 30% lye - 1 sec for transmural necrosis
- 2018 - increase in laundry pod ingestions by teens in response to “challenge” on social media

**Acid**
- Esophageal injury if pH < 2 via *coagulation necrosis*
- Tend to be attenuated and perforation less common due to coagulum that forms limiting deeper penetration
Caustic Ingestions

- Following initial necrosis, additional destruction takes place over the first week caused by inflammation and vascular thrombosis
- 10 days - granulation tissue formation and weakening of esophageal wall; vulnerable to perforation
- 3 weeks - fibrogenesis and stricture formation; perforation less likely
Caustic Ingestions

Identify type and brand of substance ingested, call poison control

**DO NOT attempt to dilute or neutralize agent,** use charcoal, or gastric lavage due to additional heat injury

Monitor for respiratory compromise; Drooling, dysphagia suggest OP or esophageal injury

CXR or CT w water soluble contrast - signs of perforation

EGD within 24 hours of ingestion for vocal cords, esophagus, stomach

Late complication - stricture formation → obstruction / dysphagia
Esophageal Perforation

Surgical emergency

>50% iatrogenic (EGD)

Leakage of esophageal and gastric contents into the mediastinum creates a necrotizing inflammatory process that can lead to sepsis, multiorgan failure, and death

NPO, IVF, Zosyn, ICU monitoring
Summary

- EoE requires EGD with bx, trial PPIs or food elimination
- Consider infectious esophagitis with fever and odynophagia
- There are 3 spots along esophagus objects are likely to get stuck
- Risk of pill esophagitis can be reduced by sitting up and drinking fluids
- Objects stuck in esophagus >24hr or unknown time need urgent removal
- Alkaline products generally worse, do not attempt to neutralize
- Chronic inflammation can result in strictures and perforation
References


