

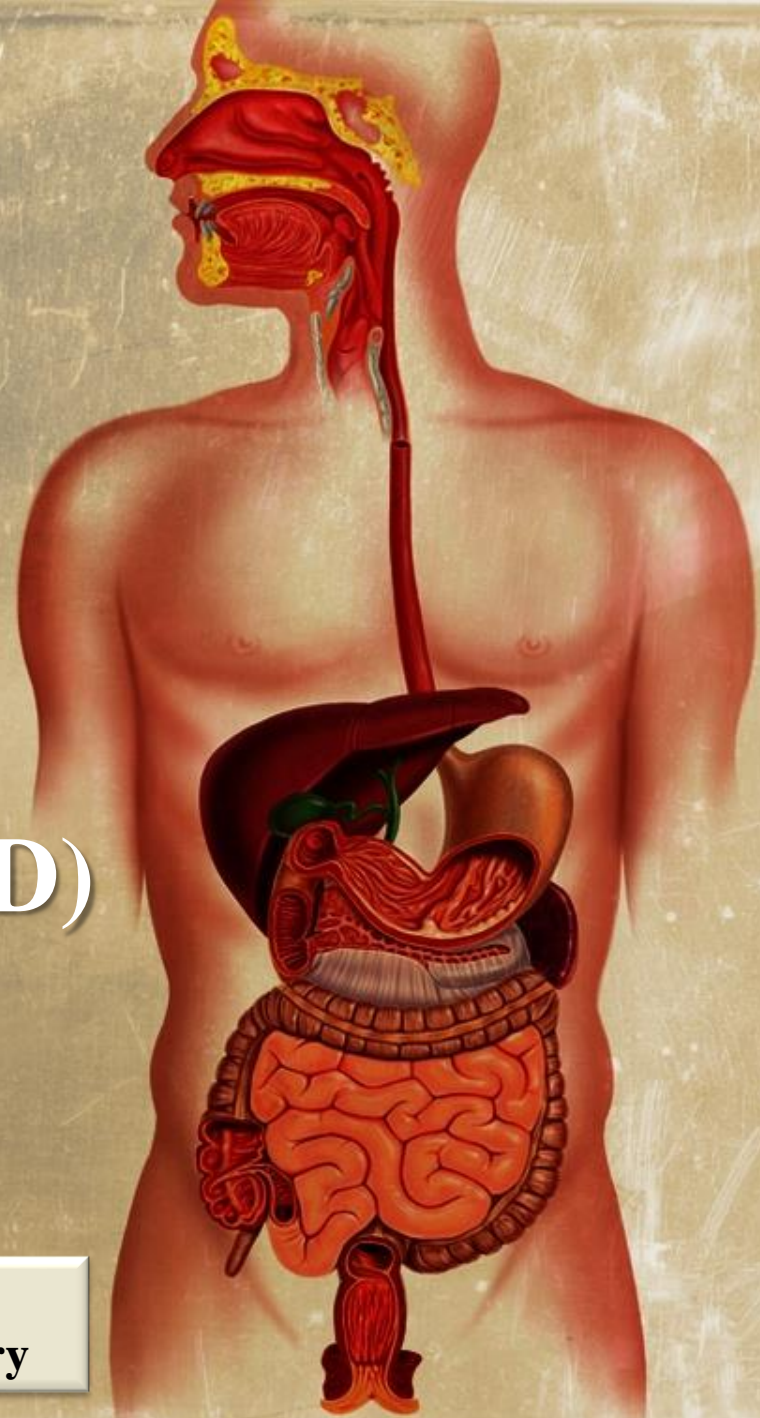


PATHOLOGY TEAM
2014-2015

Lecture 1 : Gastro-esophageal reflux disease(GERD)

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OBJECTIVES

Upon completion of this lecture the students will:

- I. Define gastroesophageal reflux disease
- II. Understand the Pathophysiology of reflux esophagitis.
- III. Know clinical features of reflux esophagitis
- IV. Describe the pathological features of reflux esophagitis
- V. Know the complications of reflux esophagitis

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Gastro Esophageal Reflux Disease

Definition

Symptoms OR mucosal damage produced by **the abnormal reflux** of gastric contents into the esophagus

- Often **chronic and relapsing**
- May see complications of GERD in patients who lack typical symptoms

Gastroesophageal reflux Physiologic GER

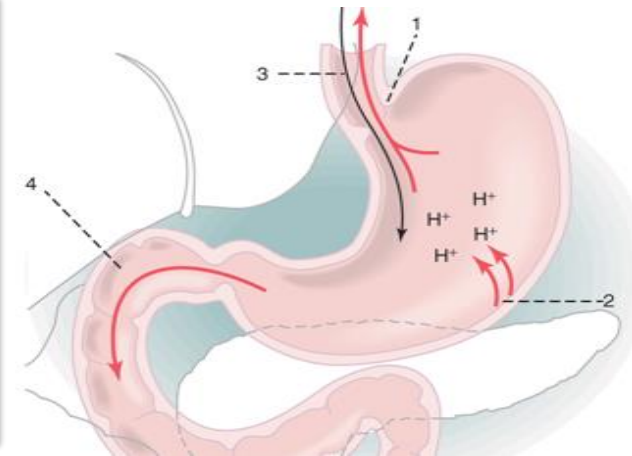
- A **normal physiologic** phenomenon experienced intermittently by most people
- **Postprandial** بعد الوجبة
- Short lived
- Asymptomatic
- **No** nocturnal symptoms.

Gastroesophageal reflux disease (GERD) Pathologic

- occurs when the amount of **gastric juice that refluxes** into the **esophagus exceeds the normal limit**
- Symptomatic
- **Mucosal injury** (with or without)
- Nocturnal symptoms (problems while sleeping at night)

Pathogenesis of GERD

1. Impaired lower esophageal sphincter.
2. Hypersecretion of acid.
3. Decreased acid clearance resulting from impaired peristalsis or abnormal saliva production.
4. Delayed gastric emptying or duodenogastric reflux of bile salts and pancreatic enzymes.



-Esophagitis : inflammation of the esophagus.

Esophagitis is **rarely caused by agents than reflux** (Most common cause is acid reflux also called Gastroesophageal reflux disease)

Causes of Acute Esophagitis

Infective agents

affects immunocompromised patients

- **Bacterial: very rare**
- **Fungal: is common** mainly by (**Candida albican**)
- **Viral: particularly by (herpes simplex and cytomegalovirus)** are seen **in AIDS patient**

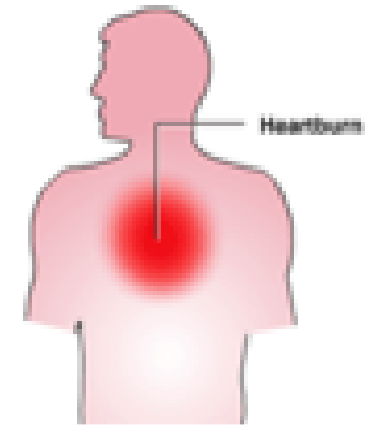
Physical agents

- **Irradiation**: Like radiation therapy to mediastinum lymph node which can affect the Esophagus
- **Ingestion of caustic agents**: Like some medications which cause chemical burn in the esophagus

N.B: GERD is most common in adults more than 40 years of age but also occurs in infants and children.

Clinical Manifestations

- **Typical symptoms** (Most common symptoms)
 - **Heartburn** - retrosternal burning discomfort
 - **Regurgitation** - effortless return of gastric contents into the pharynx without nausea, retching تهوع, or abdominal contractions.
- **Atypical symptoms** bronchial asthma like symptoms (alarm symptoms) Coughing, Chest pain, and wheezing.



Pathophysiology of GERD:

- Primary barrier to gastroesophageal reflux is **the lower esophageal sphincter (LES)**
- **LES** normally works **in conjunction with the diaphragm**
- If barrier **disrupted**, acid goes from stomach to esophagus

A- Abnormal lower esophageal sphincter:

(the most common cause of GERD)

- 1- Functional (frequent transient LES relaxation)
- 2- Mechanical (hypotensive LES)

(decrease the LES pressure)

- 3- Foods (e.g. coffee, alcohol, smoking)
- 4- Medications (e.g. Ca channel blockers)

5- Location

HIATAL HERNIA: Bulging of the stomach above diaphragm

TWO TYPE :

*1-Hiatal hernia (Sliding): More common

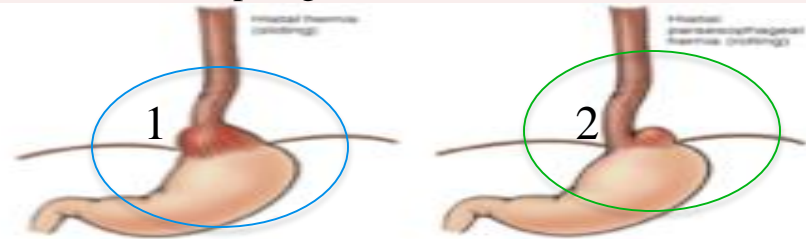
*2-Paraesophageal hernia (Rolling):

Less common more

& dangerous more complication

B-Increased abdominal pressure

- Obesity
- Pregnancy
- Increased gastric volume (↑food intake)



Diagnostic Evaluation

1- **From the signs and symptoms:** If classic symptoms of heartburn and regurgitation exist **with the absence of (alarm symptoms)**, the diagnosis of GERD can be made clinically and treatment can be initiated. يعني نكتفي بالاعراض التيكال كتشخيص للمرض.

2- **Esophagogastroduodenoscopy:** Endoscopy (with biopsy if needed):

- In patients with alarm signs/ symptoms (**atypical symptoms**)
- Those **who fail a medication trial**
- Those who **require long-term treatment**

3- **pH: 24-hour pH monitoring (the lower end of the Esophagus)**

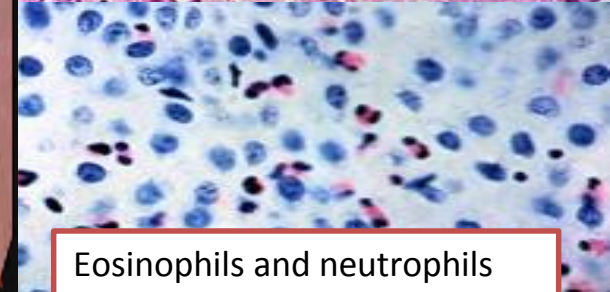
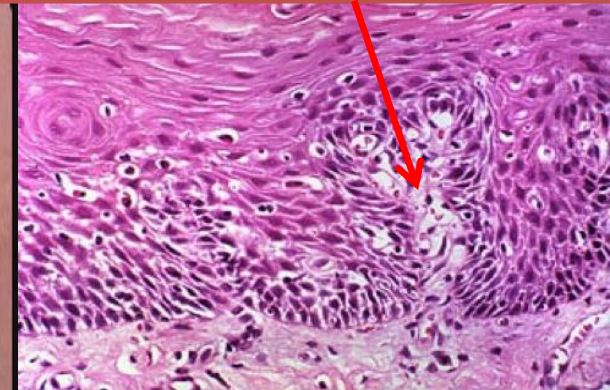
- Accepted standard for establishing or excluding presence of GERD for those patients who do **not have mucosal changes**.
- Trans-nasal catheter or a wireless capsule shaped device.

Morphology

- **Hyperemia** (Erythema due to vasodilation)
- **Inflammatory cells:** **eosinophil** are recruited into the squamous mucosa, followed by **neutrophils** in severe injury, (although it's chronic)
- **Basal zone hyperplasia**
- **elongation of lamina propria papillae** (the normal lining should be straight)



Elongation of lamina propria papillae



Eosinophils and neutrophils



Complications (Important)

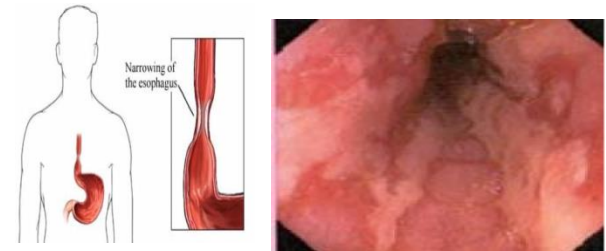
1- Erosive esophagitis

- Responsible for 40-60% of GERD symptoms.
- **Severity of symptoms** often **fail to match severity** of erosive esophagitis.
- **Red mucosa with erosions.**

***N.B.**: Erosion : invasion of part of the mucosa .

2- Esophageal stricture

- **Result of healing** of erosive esophagitis (by fibrosis which cause obstruction and causes swallowing difficulties)
- May **need dilation.**



3- Barrett's Esophagus (most sever) 8-15%

- Intestinal metaplasia of the esophagus.
- Associated with the development of **adenocarcinoma**
- Acid damages lining of esophagus and **causes chronic esophagitis.**
- Damaged area heals in a **metaplastic process** (intestinal metaplasia) and abnormal columnar cells replace squamous cells.
- This specialized intestinal **metaplasia** can progress to **dysplasia*** and **adenocarcinoma.**

Many patients with Barrett's are **asymptomatic** and some have symptoms similar to GERD's

* Hyperchromatism , non-invasive .



Summary from Robbins



SUMMARY

Diseases of the Esophagus

- *Esophageal obstruction* may occur as a result of mechanical or functional anomalies. Mechanical causes include developmental defects, fibrotic strictures, and tumors.
- *Achalasia*, characterized by incomplete LES relaxation, increased LES tone, and esophageal aperistalsis, is a common form of *functional esophageal obstruction*.
- *Esophagitis* can result from chemical or infectious mucosal injury. Infections are most frequent in immunocompromised persons.
- The most common cause of esophagitis is *gastroesophageal reflux disease (GERD)*, which must be differentiated from *eosinophilic esophagitis*.
- *Barrett esophagus*, which may develop in patients with chronic GERD, is associated with increased risk of esophageal adenocarcinoma.
- *Esophageal squamous cell carcinoma* is associated with alcohol and tobacco use, poverty, caustic esophageal injury, achalasia, tylosis, and Plummer-Vinson syndrome.

