

# Gastrointestinal tract pathology 2023-2024

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## Esophagus

### Lecture objectives

- Pathology of mechanical and functional esophageal obstruction.
- Definition of Esophageal atresia.
- Most common types of esophagitis.
- Definition of Barrett esophagus.
- Commonest types of esophageal tumors.

### **Mechanical Esophageal obstruction**

#### Esophageal stenosis

- It is an abnormal narrowing of the esophageal lumen.
- Congenital or acquired (more common)
- Acquired form due to inflammation and scarring secondary to chronic gastroesophageal reflux, irradiation, systemic sclerosis and ingestion of caustic agents
- It is presenting as progressive dysphagia.

#### Esophageal atresia

Defined as a thin, non-canalized cord that replaces a segment of the esophagus, most commonly at or near the tracheal bifurcation.

Atresia is usually associated with fistula connecting upper or lower esophagus to bronchus or trachea. This abnormal connection can result in aspiration, suffocation and pneumonia.

### **Functional Esophageal obstruction**

#### Achalasia

Characterized by the traid of

- 1- Incomplete lower esophageal sphincter (LES) relaxation
- 2- Increase LES tone
- 3- Esophageal aperistalsis.

Leading to **dilatation** of esophagus proximal to obstruction.

**Causes:** most of the cases are **unknown**, due to the degeneration of distal esophageal inhibitory neurons.

Secondary achalasia may occur in patient with chaga's disease in which Trypanosoma Cruzi infection causes destruction of the myenteric plexus, failure of LES relaxation and esophageal dilatation.

### **Esophageal varices:**

Dilated tortuous submucosal veins that develop due to portal hypertension as a result of formation collaterals bypass channels between portal and caval systems, as one of the sites of communication between these veins is the esophagus.

- Varices often asymptomatic, but their rupture can lead to massive hemorrhage and death.

### **Esophageal Lacerations** (Mallory-Weiss syndrome)

- Are vertical tears situated at the gastro-esophageal junction
- Induced by sever retching or vomiting
- Patients usually present with hematemesis

### **Esophagitis**

- Inflammation of the esophageal mucosa
- 1- Chemical esophagitis
  - 2- Infectious esophagitis
  - 3- Reflux esophagitis
  - 4- As a manifestation of other disease ( graft-versus host disease, cytotoxic drug and radiation)

### **Infectious esophagitis**

Occurs most frequent in immunosuppressed patients, in these patients infection usually by:

1. **Viral infections:** Herpes simplex or cytomegalovirus (CMV)
2. **Fungal infections:** e.g. candida albicans producing (Thrush) is the most common pathogen
3. **Bacterial infections:** B-hemolytic streptococcus.

### **Reflux esophagitis**

Is the most frequent cause of esophagitis, caused by persistent regurgitation of gastric juice into lower esophagus known as GERD (Gastro – Esophageal Reflux Disease).

### Causes of GERD

In many cases **no definitive** cause is identified, other due to:

- 1- **Increase in intra-abdominal pressure** (such as in pregnancy or obesity).
- 2- **Uncoordinated contraction and relaxation** due to the action of alcohol, fatty foods, cigarettes and drugs e.g. (Morphine and diazepam).
- 3- **Systemic sclerosis** (fibrous tissue replace smooth muscle cells weaken the sphincter)
- 4- **Hiatus hernia:** is characterized by separation of the diaphragmatic crura leading to widening of space around the esophageal wall, which lead to gastro-esophageal junction is pulled up into the thorax above the diaphragm.

### **Histological features are:**

- Inflammatory cells infiltrate includes eosinophils, neutrophils, and lymphocytes.
- Basal cell hyperplasia
- Elongation of lamina propria papillae in to upper third of the mucosa.
  - **The clinical manifestation** includes dysphagia, heart burn (burning retrosternal pain), and regurgitation of a sour fluid in to the mouth.

### Complications of GERD

- Ulceration
- Bleeding
- Fibrosis
- Stricture formation
- Tendency to develop Barrett esophagus.

### **Barrett esophagus**

- Intestinal metaplasia of a normally squamous esophageal mucosa.
- 10% of individuals with symptomatic GERD develop barrett.
- The defining feature of intestinal metaplasia, and a feature of Barrett esophagus, is the presence of **goblet cells**
- Single most common risk factor for **esophageal adenocarcinoma.**

### **Esophageal tumors**

#### Risk factors for esophageal Carcinoma

- Environmental factors accounting for higher incidence of esophageal cancer in certain parts of Asia and Africa
- Smoking and chronic alcoholics
- Barrett esophagus
- Pre-existing esophageal disease such as achalasia and plummer vinson syndrome.

### **Squamous cell carcinoma**

Squamous cell carcinoma can occur in any portion of the esophagus but the most common site is the **midportion**.

Like squamous carcinoma arising in other location, those of esophagus begin as **in situ** lesion.

Early lesions appear as small, gray-white, plaque-like thickening of the mucosa but with progression, three gross patterns are encountered:

- 1- **Ulcerated**, with sharply demarcated margins.
- 2- **Fungating** (polypoidal, project into lumen causing obstruction).
- 3- **Diffuse infiltrative** that tend to spread with in the wall causing thickening, rigidity of the wall and narrowing of the lumen.

### **Adenocarcinoma**

- Generally arise in Barrett esophagus, and long-standing GERD.
- Usually located in the **distal** esophagus.
- Initially appear as flat or raised patch that may develop in to large fungating mass, diffusely infiltrate, or deeply ulcerate feature.

#### **Histologically:**

- Usually moderate or well differentiated, typically mucin producing
- Adjacent barrett mucosa with high grade dysplasia is often present.

**THANK YOU**