Gastrointestinal tract pathology 2022-2023

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Esophagus

Is a muscular tubular structure that carries ingested food and fluid from the pharynx to the stomach.

The esophagus is lined by stratified non-keratinized squamous mucosa. The submucosa contains scattered esophageal glands, and the muscularis propria is inner circular and outer longitudinal layers.

Mechanical Esophageal obstruction

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 loss of ganglion cells from lower esophagus.

Secondary achalasia may occur in patient with chaga's disease in which Trypanosoma Cruzi infection causes obstruction of 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.

Esophagitis

Inflammation of esophageal mucosa

Causes:

1- Chemical (reflux esophagitis)
2- Infectious
3- 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, although mucormycosis and aspergillosis may also occur.
3. **Bacterial infections:** B-hemolytic streptococcus.

Chemical 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:

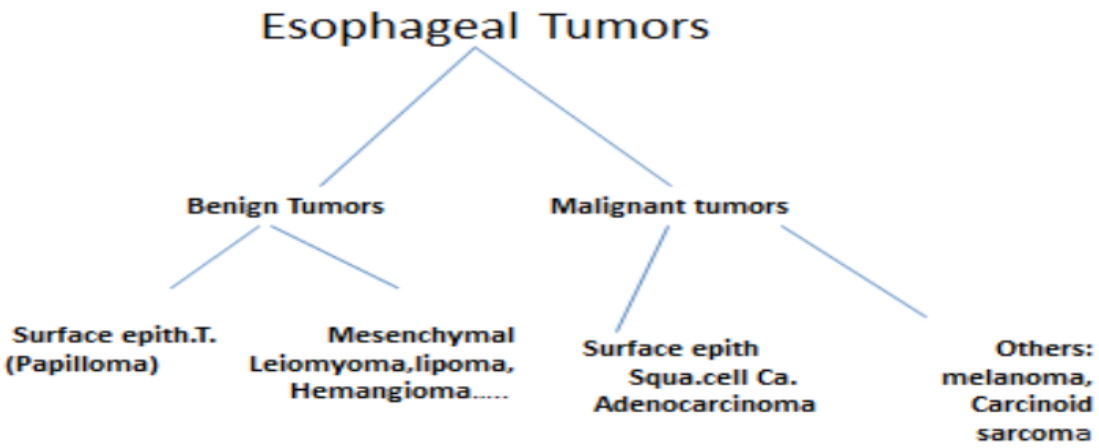
- Inflammatory Cells infiltrate includes eosinophils, neutrophils, and lymphocytes.
- Basal cell hyperplasia
- Extension of lamina propria papillae in to upper third of the mucosa.
  - **The clinical manifestation** includes dysphagia, heart burn (burning retrosternal pain), and regurgitation of a sour 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 Gastroesophageal reflux diseases develop barrett.
- Single most common risk factor for esophageal adenocarcinoma.



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 (10 times risk)
- 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
Most common site is 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, or exhibit 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.