

GIS



Sheet no.2

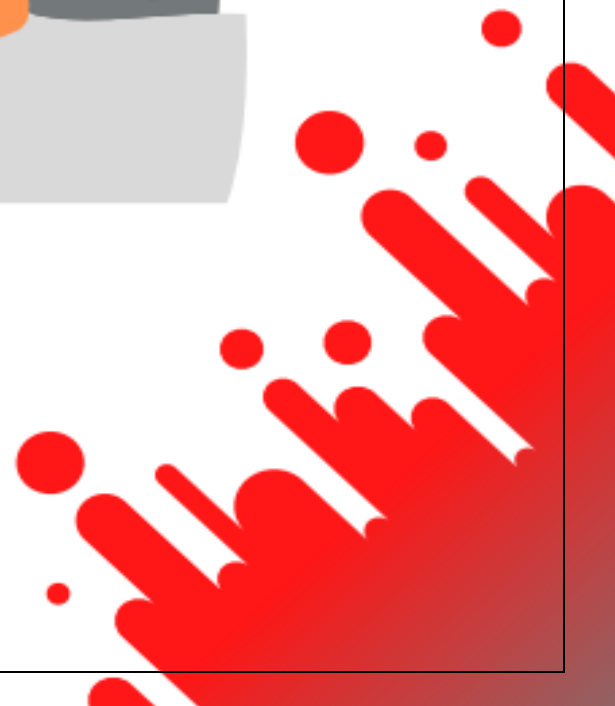
Pathology



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Diseases of the esophagus 2

REFLUX ESOPHAGITIS

-Reflux of gastric contents into the lower esophagus sphincter , its consider the most common cause of esophagitis , its Most common complaint by patients ,The patient will complain about heartburn in the epigastric area or the central chest. The reason for this is the reflux of the gastric contents into the lower esophagus. The gastroesophageal sphincter is relaxed in this case when it should be closed and this is called GASTROESOPHAGEAL REFLUX DISEASE (GERD).

-the normal lining of esophagus is Squamous epithelium it is sensitive to acids so when reflux of gastric content to it , it cause irritation

There are **protective factors**, for example mucous and bicarbonate that is produced from submucosal glands. So, when the patients always have recurrent reflux this protection will decrease , also we have Another **protection factor** is the closed sphincter, anything that causes sphincter to relax will cause symptoms in the patient (usually patient complain about heartburn(حرقة في المعدة)).

PATHOGENESIS:

- ▶ Decreased lower esophageal sphincter tone , the causes are (alcohol, tobacco, CNS depressants(**drug**))
- ▶ Increase abdominal pressure causing reflux of gastric content into the lower esophagus, the causes are: pregnancy (**enlarged uterus will put pressure onto the stomach which will raise the gastric acidic secretions**), obesity, hiatal hernia(**hernia of diaphragm**), delayed gastric emptying and increased gastric volume, tumors, ascites and **gases (irritable bowel syndrome)**
- ▶ Some cases can be idiopathic (**relaxed sphincter with an unknown cause**).

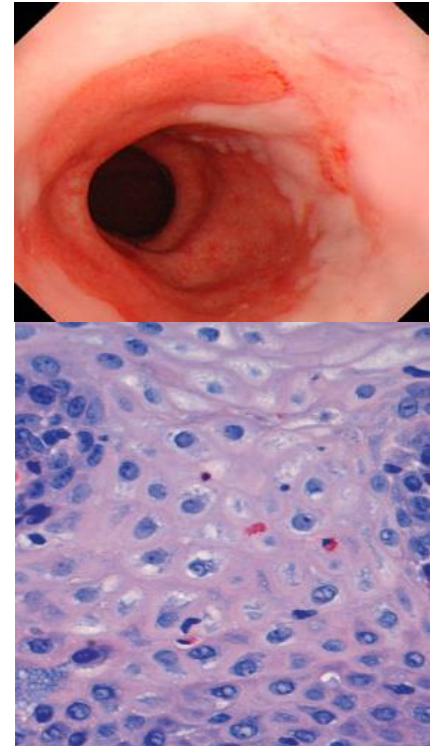
Morphology:

▶ **Macroscopy (endoscopy):**

Depends on severity (mild symptoms with unremarkable changes, simple hyperemia {redness}) **if it sever you may found ulcer**

▶ **Microscopic:**

1. **EARLIEST FEATURE** of reflux esophagitis is the infiltration of squamous epithelium by eosinophils
2. **In more severe cases**, it is followed by neutrophils
3. Basal zone hyperplasia (**first layer of lining epithelium we see high rate of proliferation for healing the irritation**)
4. Elongation of lamina propria papillae



Clinical Features:

-Most common over age of 40 years , but its May occur in infants and children

- **MOST COMMON SYMPTOM: HEARTBURN** (حرقة في المعدة)in retrosternal (تحديدا في راس المعدة) & in more sever cases dysphagia (difficulty in swallowing)

- Regurgitation of sour-tasting gastric contents (it reaches the mouth)

- Rarely: Severe chest pain , mistaken for heart disease **its similar to myocardial infarction or angina**

TREATMENT:

proton pump inhibitors (these drug decrease the acidity of stomach).

Complications : Esophageal ulceration may cause bleeding and patient come with Hematemesis, Melena (black stool due to bleeding too), stricture , Barrett esophagus (precursor of Ca.) metaplasia which can progress to dysplasia and then carcinoma so we should do regular endoscopy

Eosinophilic Esophagitis:

Its Chronic immune mediated disorder & inflammation dominated by presence of eosinophils microscopically

Symptoms :

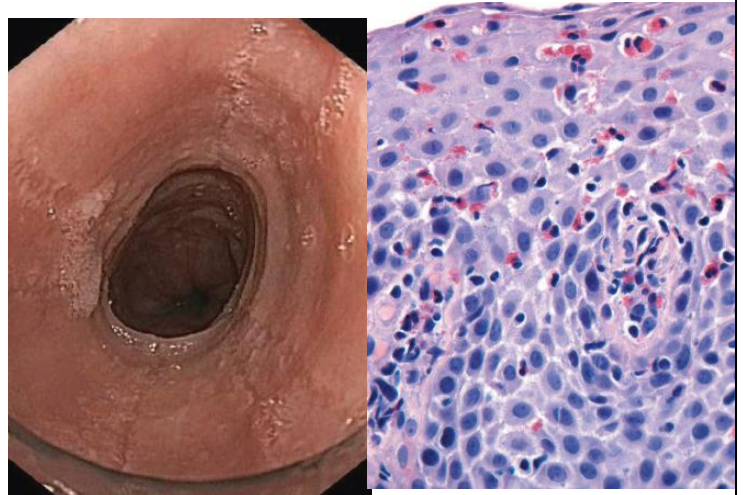
- Food impaction and dysphagia in adults
- Feeding intolerance or GERD-like symptoms in children
- In Infant Regurgitation high amount of milk

Endoscopy:

constricted rings in the upper and middle esophagus start in middle esophagus or lower

Microscopic:

numerous eosinophils within epithelium, far from the GEJ (Gastro-esophageal junction) but it can affect the lower part of esophagus



- ▶ Most patients are: atopic (atopic dermatitis, allergic rhinitis, asthma) or modest peripheral eosinophilia.

Treatment:

- Topical or systemic corticosteroids + Dietary restrictions (because it is an allergy ; cow milk and soy products)
- refractory to PPIs (patient does not improve on it, its similar to GERD symptoms so we go for endoscopy and know that it is an Eosinophilic Esophagitis)

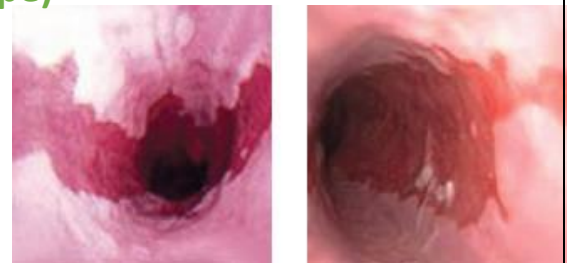
Barrett Esophagus

- Complication of chronic GERD
- Only 10% of individuals with GERD will develop Barrett esophagus
- Direct precursor of esophageal adenocarcinoma
- Metaplasia → Only 0.2 to 1% per year of people → dysplasia → adenocarcinoma
- Simply, it's a metaplasia where the squamous epithelium (which is very fragile and can not handle acidity) transforms into columnar epithelium that is more resistant to acid: glandular epithelium. The glandular epithelium can be gastric type or intestinal type epithelium (defining feature is goblet cells in intestinal type)
- males>>Females , 40-60yrs

MORPHOLOGY:

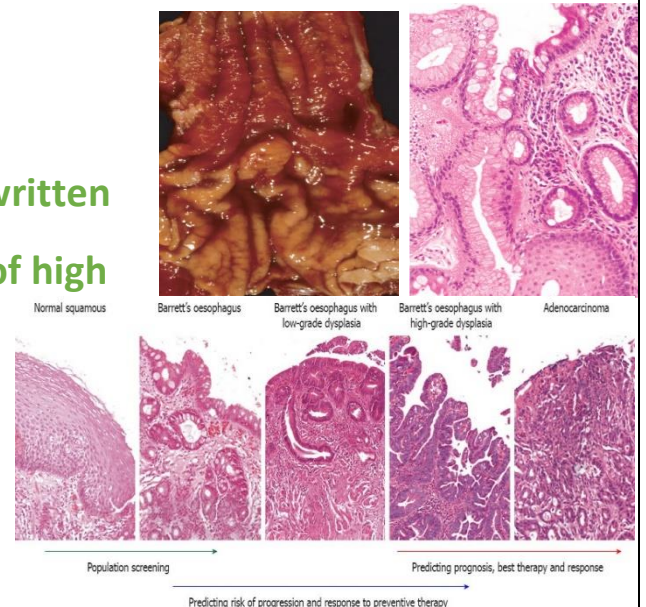
▶ Endoscopy:

red tongues extending upward from the GEJ



▶ Histology:

- Gastric or intestinal metaplasia (should written in patient history and follow up because of high risk of carcinoma if we find metaplasia)
- Presence of goblet cells (intestinal type)
- +/-Dysplasia : low-grade or high-grade (high grade of dysplasia increase risk of carcinoma)



-Intramucosal carcinoma: invasion into the lamina propria

Management of Barrett:

- Periodic surveillance endoscopy with biopsy to screen for dysplasia (Barrett is metaplasia and can regress with treatment, PPI can treat reflux on Barrett). This is very important to protect the patient from getting carcinoma.
- High grade dysplasia & intramucosal carcinoma needs interventions (surgical resection for example).

ESOPHAGEAL TUMORS

1. Squamous cell carcinoma: most common worldwide.
2. Adenocarcinoma: on the rise nowadays approximately half of cases.

Adenocarcinoma:

- Arises from a background of Barrett and long-standing GERD.
- Risk factors: dysplasia associated Barrett (causal relationship), smoking, obesity, radiotherapy.
- Male: Female (7:1)
- Geographic & racial variation (developed countries more affected)

PATHOGENESIS:

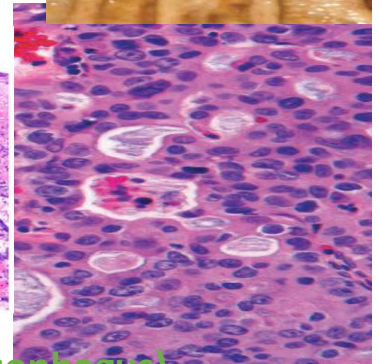
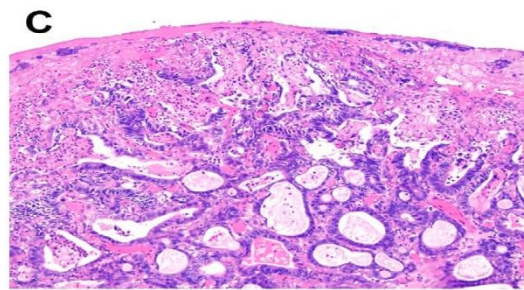
From Barrett → dysplasia → adenocarcinoma it's a sequence occur by Acquisition of genetic and epigenetic changes (mutation), and the most common mutation is TP53 mutation & Chromosomal abnormalities

MORPHOLOGY

- Distal third.(lower part of the esophagus)
- Early lesion : flat or raised patches
- Later lesion: exophytic (project to lumen large mass)
infiltrative masses (infiltrate the wall of esophagus)

Microscopy:

Forms glands and mucin.



Clinical Features

- ▶ Pain or difficulty swallowing (because of mass in esophagus)
- ▶ Progressive weight loss
- ▶ Chest pain
- ▶ Vomiting.
- ▶ Advanced stage at diagnosis: 5-year survival <25%.
- ▶ Early stage: 5-year survival 80%

Note : may delay diagnosed because symptoms need large mass to appear late

Squamous Cell Carcinoma

Male : female (4:1) in general esophagus cancer are more common in male
Underdeveloped countries.

Risk factor

- ▶ Alcohol
- ▶ Tobacco use
- ▶ Poverty
- ▶ Caustic injury
- ▶ Achalasia
- ▶ Plummer-Vinson syndrome (Associated with iron deficiency and anemia)
- ▶ Frequent consumption of very hot beverages
- ▶ Previous radiation therapy (Increases risk for many cancers)

Pathogenesis

In western countries: alcohol and tobacco use

Other areas: polycyclic hydrocarbons, nitrosamines, fungus-contaminated foods

HPV infection implemented in high risk regions

MORPHOLOGY

Middle third (50% of cases) (its not in the lower esophagus cancer)

Polypoid, ulcerated or infiltrative

Wall thickening, lumen narrowing

Its can Invade surrounding structures (bronchi, mediastinum, pericardium, aorta)

Microscopy

No gland and mucin its appear very ugly

-Pre-invasive: Squamous dysplasia & CIS , (It starts as squamous dysplasia which turn into squamous cell in situ (carcinoma in situ)

-Well to moderately differentiated invasive SCC.

- Intramural tumor nodules (Intramural mean you can see tumor in the muscle layer of the esophagus)

- Lymph node metastases at the beginning

Upper 1/3 (location of the tumor): cervical lymph nodes

Middle 1/3: mediastinal, paratracheal and tracheobronchial lymph nodes

Lower 1/3: gastric and celiac lymph nodes

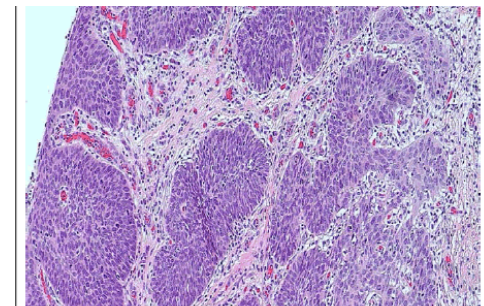
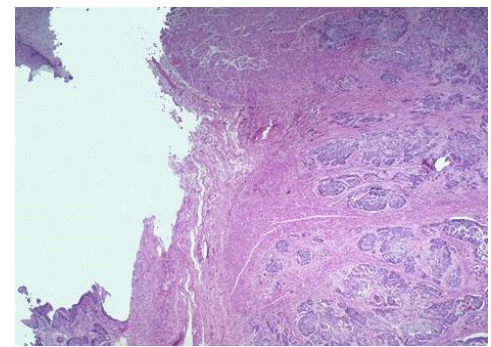


Figure 4: Squamous cell carcinoma of the esophagus with focal invasion into the muscularis mucosa and associated desmoplastic response.

Clinical Features:

Dysphagia

Odynophagia

Obstruction Weight loss —> very important in cancers

Debilitation

Impaired nutrition and tumor associated cachexia

Hemorrhage and sepsis if ulcerated

Aspiration via a tracheoesophageal fistula

5-year survival < 9% (bad prognosis)

Good luck <3