ESOPHAGEAL CANCER AND GERD

Prof Salman Guraya FRCS, Masters MedEd
Learning objectives

- Esophagus anatomy and physiology
- Esophageal cancer
- Causes, presentations of esophageal cancer
- Diagnosis and management
- Pathophysiology of GERD
- Management strategies for GERD
Esophagus anatomy

- 25 cm long and 2 cm wide tube from mouth to stomach
- Upper and lower esophageal sphincters open involuntarily for traffic of food
- 4 layers as other parts of GIT
- Cervical, thoracic and abdominal parts
Esophagus

- Esophagus is lined by stratified squamous epithelium
- At its junction with stomach, this changes to simple columnar epithelium
- Normal esophageal pH is almost 7.0
- LES protects against acid reflux
Esophageal cancer

- Common in 65-80 years
- Men are affected 3 times more than women
- SCC is the most common type of esophageal cancer
- SCC commonly affects middle of esophagus
- Adenocarcinoma affects lower part of esophagus
- SCC caused by smoking and alcohol
- Adenocarcinoma caused by GERD
Predisposing factors

- Smoking
- Alcohol
- GERD
- Barrett’s esophagus
- Obesity
- Achalasia
- Tylosis
- Plummer-Vinson syndrome
- Human papilloma virus
- Corrosive esophagitis
- Vitamin D deficiency (GIT, Breast, Thyroid, Prostate, lung)
Cancers caused by smoking

- Esophageal/pharyngeal
- Tracheobronchial
- Lung
- Pancreatic
- Urinary bladder
- Kidney
Presenting features

- Dysphagia, first for solids and then liquids
- Weight loss
- Bleeding
- Epigastric or retrosternal pain
- Hoarseness
- Persistent cough
- Bone pain due to metastases
Signs of esophageal cancer

- Typically normal exam unless mets
- Lymphadenopathy (cervical, SC, mediastinal)
- Hepatomegaly (mets)
- Cachexia, emaciation, lethargic
- Stigma of weight loss and dehydration
Diagnosis

- Labs
- EGD (Localization and Bx)
- EUS, most sensitive for staging
- CT abdomen and chest
- Positron emission tomography (PET) scan
- Bronchoscopy (tracheo-bronchial invasion)
- Laparoscopy and thoracoscopy
- Barium swallow, now rarely used
EGD and EUS
CT and PET Scans
<table>
<thead>
<tr>
<th>T1S</th>
<th>Carcinoma in situ</th>
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<tbody>
<tr>
<td>T1</td>
<td>Lamina propria or submucosa</td>
</tr>
<tr>
<td>T1a</td>
<td>Muscularis mucosa</td>
</tr>
<tr>
<td>T1b</td>
<td>Submucosa</td>
</tr>
<tr>
<td>T2</td>
<td>Muscularis propria</td>
</tr>
<tr>
<td>T3</td>
<td>Adventitia</td>
</tr>
<tr>
<td>T4</td>
<td>Adjacent structures</td>
</tr>
<tr>
<td>N0</td>
<td>No regional nodal mets</td>
</tr>
<tr>
<td>N1</td>
<td>1-2 regional nodal mets</td>
</tr>
<tr>
<td>N2</td>
<td>3-6 regional mets</td>
</tr>
<tr>
<td>M0 and M1</td>
<td>No mets and positive mets</td>
</tr>
</tbody>
</table>
# Staging classification

<table>
<thead>
<tr>
<th>Stages</th>
<th>T</th>
<th>N</th>
<th>M</th>
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</thead>
<tbody>
<tr>
<td>Stage I</td>
<td>T1 and T2</td>
<td>N0</td>
<td>M0</td>
</tr>
<tr>
<td>Stage II</td>
<td>T3</td>
<td>N1</td>
<td>M0</td>
</tr>
<tr>
<td>Stage III</td>
<td>T4</td>
<td>N2</td>
<td>M0</td>
</tr>
<tr>
<td>Stage IV</td>
<td>Any T</td>
<td>Any N</td>
<td>M1</td>
</tr>
</tbody>
</table>
Management

- According to cancer staging
- Improve nutrition, electrolyte and hydration by TPN
- Stage I; endoscopic mucosal resection or submucosal dissection
- Stage II and III; chemoradiation and then surgery
- Stage IV; chemoradiation and palliative care
Endoscopic resections
Surgical modalities

- Transthoracic esophagectomy (TTE)
- Transhiatal esophagectomy (THE)
- Minimally invasive esophagectomy
- Robotic assisted esophagectomy
Tumor in distal esophagus
Colonic interposition after esophagectomy
Robotic assisted esophagectomy
Palliation
GERD

Impaired acid neutralization by saliva

Impaired esophageal motility

Incompetent LES

Hiatal hernia

Delayed gastric emptying
What causes GERD

- Obesity, if BMI > 30 kg/m²
- Smoking
- Diet
- Pregnancy
- Hiatus hernia
- Medicines; Aspirin and NSAIDs, Ca channel blockers, diazepam, anticholinergic drugs
- Incompetent LES
H pylori.... peptic ulcer and gastritis
The correlation of *Helicobacter Pylori* with the development of cholelithiasis and cholecystitis: the results of a prospective clinical study in Saudi Arabia

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**Abstract.** – OBJECTIVE: Gallstone disease is a common surgical ailment. *Helicobacter pylori* has a role in upper gastrointestinal disorders, including gallstones. This study aimed to evaluate the correlation between *H. pylori* infection and the development of cholelithiasis and cholecystitis.

**Methods:** A prospective clinical study was conducted involving 150 patients with symptomatic gallstones. *H. pylori* infection was assessed using the rapid urease test and the CLO test. The presence of *H. pylori* DNA in bile was determined using real-time PCR.

**Results:** The prevalence of *H. pylori* infection was significantly higher in patients with gallstones compared to controls. The presence of *H. pylori* DNA in bile was correlated with the development of cholelithiasis and cholecystitis.

**Conclusion:** *H. pylori* infection is a risk factor for the development of cholelithiasis and cholecystitis. Early diagnosis and treatment of *H. pylori* infection may prevent the progression of gallstone disease.
Presenting features

- Heartburn
- Retrosternal pain
- Chest pain
- Easily confused with angina pain
- Weight loss and loss of appetite
- Affects daily life
Phenotypic classification of GERD

- NERD 60-70%
- Erosive Esophagitis 20-30%
- Barrett’s Esophagus 6-10%

Fass et al. Alim Pharm Ther 2005
Complications of GERD

Esophageal stricture
Complications of GERD

**Barrett's esophagus**

- Associated with prolonged acid reflux
Complications of GERD

- severe dysphagia
- weight loss
- bleeding
- hematemesis
- mass in the upper abdomen
- anemia
A 31-year old man complains of heartburn since 6 months. His medical history is unremarkable. He has no dysphagia, odynophagia, anemia or weight loss. He feels symptoms several times a week, usually during stressful days at his job.

What should be done at this point?
Initial management of heartburn

- Antacids and lifestyle changes
- $H_2$-receptor antagonists
- Standard proton pump inhibitors (once a day)
- High-dose proton pump inhibitors (twice a day)
- Endoscopy and/or pH testing followed by therapy based on results
You place him on H$_2$-receptor antagonists, antacids and recommend lifestyle changes. BUT he returns a month later with no change in his symptoms.

You put him on once daily PPIs and request for an EGD.

He comes back with a normal EGD and he is still symptomatic.
Next management strategies

- Increase proton pump inhibitors to twice a day
- Endoscopic treatment
- Surgical treatment
- Perform pH study
- Esophageal manometry
Esophageal pH monitoring

Indicated to determine;

- Effectiveness of medications for GERD
- Whether chest pain is due to GERD or non-GERD origin
- If reflux is causing acid aspiration and chronic cough
Bravo wireless capsule
High resolution esophageal manometry
Further treatment

- Will depend upon tests results
- If no improvement with conservative steps, think of surgery consultation.
- Surgical indications:
  - Failure of medical therapy
  - Atypical symptoms from the start
  - Complications of GERD
Anti reflux surgery; Nissen’s fundoplication
Esophageal cancer is a disease of old men

Smoking, alcohol GERD are major causes

EUS, EGD and PET scan are key diagnostic tools

Stage I treated by endoscopic resection, II and III by chemotherapy and surgery

Stage IV palliation only

GERD can be managed by medicines and lifestyle changes

Non responsive or complicated GERD needs surgery