## **Epidemiology:**

- 486,000 new cases and 400,000 deaths which means that it has a very bad px
- Adenocarcinoma: most commonly in USA // SCC: worldwide
- In East : SCC , west : Adeno
- Extra Note: 6th decade is the most common age with men prevelance
- 8th most common cancer worldwide.

### **Etiology:**

ACA	SCC	
Reflux	Smoking	
Barrett esophagus	Alcohol	
Obesity	Low fruits and veg	
Alcohol	N. nitrous compound (processed and smoked food)	
H. pylori	Achalasia	
Smoking	Zinc + Folate deficiency	
	Toxins producing fungi (Aflatoxin)	
	Hot beverages	
	Tylosis	

ACA is most commonly found in lower 1/3 esophagus // M:F (10:1)

SCC is most commonly found in upper and mid esophagus // M:F (3:2 )

# ACA vs SCC:

- ACA ➤ They usually arise from Barrett esophagus (near GE junction), so they may present as an Ulcer, nodule, altered mucosal pattern or no visible endoscopic abnormality or they may not arise from an ulcer, plaque, nodule all near the GE junction / LN: to abdomen with small portion to mediastinum / mets : liver, peritoneum and bones
- SCC ➤ arises from small polypoid, denuded or plaques (can be easily missed on endoscopy at early stages) and when advanced, they will present as infiltrative and ulcerated masses which may be circumferential ➤ it invades the submucosa at early stages and extends towards the esophagus in a cephalad direction / LN: mediastinum and cervical lymph nodes / mets to lungs and thorax (common), cx: fistula formation (if invades into trachea) or hemorrhaage (invasion into aorta)

### **Classification:**

Based on location and Z line  $\succ$  a line that separates <u>squamous and columnar</u> epithelium (that is visible on endoscopy)

Туре	Location classification		
1	Center of the tumor located <u>1-5 cm above</u> the Z line (esophageal only) $\rightarrow$ spread to mediastinal and celiac LN // tx: Esophagectomy only		
2	Center of the tumor located <u>1 cm above to 2 cm below the Z line</u> $\rightarrow$ spread to abdominal LN // tx: Esophagectomy only		
3	Center of the tumor <u>located 2-5 cm below</u> the Z line (subcardiac gastric cancer) $\rightarrow$ spread to abdominal LN // tx: total gastrectomy with possible esophagogastrostomy = treated as gastric cancer		

# Lecture 1: esophageal cancer



- (1) Endoscopic Biopsy = Is used for <u>direct visualization</u> of the tumor and for <u>biopsy</u>
- (2) Barium Study: you will see <u>Stenosis and proximal dilation with asymmetric and irregular borders</u>
- (3) Brush cytology : easy and very cheap screening test that is used frequently in Asia
- ► Note: 17% of benign-appearing lesions turns out to be malignant

Staging investigations: (1) CT chest and abdomen (2) If CT  $\rightarrow$  negative ? do a PET (it shows mets less than 0.5 cm) (3) EUS with fine needle biopsy (for LN involvement) (4) Endoscopy

- ► Note :<u>CT and EUS together gives 92% accuracy</u> for T staging and 82% for LN staging
- ► Note: <u>PET and CT</u> together has **78% sensitivity for nodal disease and mets**



This is the gold standard for defining <u>T stage</u>: it allows detailed assessment of esophageal wall and surrounding structures.

• Also allows fine needle aspiration (FNA) of suspicious lymph nodes.

• EUS has several limitations: it is **poor** at assessing tracheobronchial invasion, may be unable to pass through very tight stenoses, and cannot detect distant metastases.

upper endoscopy

Early esophageal cancers appear endoscopically as superficial plaques, nodules, or ulcerations

Advanced lesions appear as strictures, ulcerated masses, circumferential masses, or large ulcerations.

**Treatment:** 

► In general:

 $ACA \rightarrow \frac{Neoadjuvant chemo}{SCC: Neoadjuvant chemo} then surgery or definitive chemo}$ 

## ► Options to tx:

- (1) Neoadjuvant chemo then Surgery
- (2) Primary Surgery
- (3) Post-operative chemo



- (4) Primary or definitive chemo
- (5) Palliative chemo and radiotherapy

# Candidates for surgery:

- 1 Diagnosed with cancer
- 2 No distant mets
- ③ not advanced locally

**Esophagectomy** as first line therapy for <u>T1N0M0 and T2N0M0</u> (So anything above <u>2B is not candidate</u>)

► Esophagectomy followed by **neoadjuvant chemo** in:

(1) Patient with thoracic or esophagogastric junction tumors and full thickness (T3) involvement of the esophagus with or without nodal involvement

2 T4 disease with invasion of local structures (pleura , pericardium , diaphragm) that can be selected without mets

► Adjuvant therapy  $\rightarrow$  R1 or R2 resection or residual post-operative N1 disease

- ► Not candidates:
- 1 Advanced age
- 2 Comorbid illness
- 3 Mets
- (4) Extra-regional LN (e.g., mesenteric or paraaortic)

Stage 0/1/2A = primary Surgery Stage 2B/3 = trimodality therapy Stage 4 = 1° chemoradio



# Lecture 1: esophageal cancer

Feature	Adenocarcinoma (ACA)	Squamous Cell Carcinoma (SCC)	
Location	Lower 1/3 of esophagus	Upper and middle 1/3 of esophagus	
Geographic	Western countries (USA, Europe)	Worldwide – esp. Asia, Africa	
prevalence			
Gender ratio	M:F = 10:1	M:F = 3:2	
Age group	Most common in 6th decade	Same	
Precursor	Barrett's esophagus (due to chronic	None specific, but begins in squamous lining	
	reflux)		
Main risk factors	GERD, Barrett's, Obesity,	Smoking, Alcohol, Hot beverages, Nitrites, Fungi	
	Smoking, Alcohol, H. pylori	(Aflatoxin), Achalasia, Zinc/Folate deficiency	
Early lesion type	Ulcer, plaque, or nodule near GE	Polypoid or plaque $\rightarrow$ infiltrative ulcerated mass	
	junction		
Spread pattern	Abdominal lymph nodes >	Mediastinal & cervical lymph nodes	
(lymph nodes)	mediastinal		
Metastasis sites	Liver, peritoneum, bone	Lungs, thorax, trachea	
Complications		Tracheoesophageal fistula, Hemorrhage from aortic	
		invasion	
Endoscopy findings	May appear normal or subtle lesion	Often missed early, later infiltrative/circumferential	
Treatment approach	Neoadjuvant chemo $\rightarrow$ surgery $\rightarrow$	Neoadjuvant chemo + surgery or definitive chemoradiation	
	chemo		
Classification (by Z-	Type 1, 2, 3 (depending on	Same if near GE junction	
line)	proximity to Z-line)		
Prognosis	Poor if late, slightly better in early	Poor if advanced, often detected late	
	ACA		