Upper GI neoplasias

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Question#1

- 59 yo male with solid food dysphagia. H/o tobacco, well controlled HTN. EGD was performed which showed 2 cm distal esophageal mass, biopsy confirmed Adeno Ca. CT scan negative for mets. EUS performed. Found to penetrate into adventia without local invasion. LNs negative.
- What should be the next step?
  A. Esophagectomy
  B. Neoadjuvant radiation therapy followed by esophagectomy
  C. Neoadjuvant chemoradiation followed by esophagectomy
  D. Chemoradiation alone
  E. Esophageal stent

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Esophageal Cancers
• SCC or AC
• 16,940 cases will be diagnosed each year, and 15,690 deaths are expected from the disease.
• AC>SC

ETIOLOGY
• Squamous cell carcinoma
  a. Male>Female
  b. Urban>Rural
  c. Lower socioeconomically>Higher
  d. Cigarette smoking and alcohol
  e. Foods containing N-nitroso compounds
  f. High temperature beverages and foods
  g. Chewing areca nuts and betel quid
  h. Red meat intake
  i. Low selenium and Zinc
  j. Preexisting esophageal diseases

SCC continued...
• Prior gastrectomy?
• Atrophic gastritis
• HPV, particularly serotypes 16 and 18
• Tylosis/Howell-Evans syndrome
• Bisphosphonates
• Poor oral hygiene
• Other H&N cancers
ETIOLOGY

- Adenocarcinoma
  a. From 1.8 per 100,000 in 1987 to 1991 to 2.5 per 100,000 during 1992 to 1996
  b. Barrett’s metaplasia
  c. Cigarette smoking and alcohol
  d. Obesity and metabolic syndrome
  e. Helicobacter pylori infection?
  f. Hypersecretory states
  g. Cholecystectomy?
  h. Nitroso compounds

SCC Vs AC

Diagnosis

- Barium swallow
- EGD
- Biopsy
Staging

**Primary Tumor (T)**

- T0: Primary tumor cannot be assessed
- T1: Tumor invades submucosa
- T2: Tumor invades muscularis propria
- T3: Tumor invades adjacent structures
- T4a: Tumor invades larynx, trachea, bronchus, or mediastinum
- T4b: Tumor invades other adjacent structures, such as auricle, thyroid, lung, breast, etc.

**Regional Lymph Nodes (N)**

- N0: No regional lymph node metastasis
- N1: Metastasis to ipsilateral lymph nodes
- N2: Metastasis to bilateral lymph nodes
- N3: Metastasis to supraclavicular lymph nodes

**Distant Metastasis (M)**

- M0: No distant metastasis
- M1: Distant metastasis

**EUS Staging**

Endoscopic ultrasound (EUS) of normal esophagus

- EUS examination of the normal esophagus showing the typical five-layered pattern: mucosal layer, submucosal layer, muscularis propria, and serosa.
PET scan

Laproscopy/Thoracoscopy

- Sometimes performed to detect occult intraperitoneal metastases.
- Potential to more accurately stage regional lymph nodes (particularly celiac and intrathoracic) as compared to EUS.

Question#2

- 40 yo W with solid food dysphagia. Lab suggestive of Hb 8.1 g/dL, MCV 68 fl, Ferritin 10 μg/L on examination you note.
Questions #2

• Which of these conditions are associated with this?
  A. Adenocarcinoma of pancreas
  B. Neuroendocrine tumor of stomach
  C. Barrett’s esophagus
  D. Colon cancer
  E. SCC

Management of Esophageal Ca

• Endoscopic resection with or without PDT
• For selected patients with superficial cancers that are limited to the mucosa (T1a)
• The ideal candidate has a solitary, small (i.e., <2 cm diameter), flat-type mucosal lesion without evidence of lymphovascular invasion within short segment BE.
• 349 patients with BE and either HGD (n = 61) or intramucosal adenocarcinoma (n = 288) who underwent ER alone (n = 279) PDT (n = 55), both ER and PDT (n = 13), or APC (n = 2). Complete response was found in 96.6 percent (n = 337) of treated patients
• https://www.youtube.com/watch?v=JvdSgGW9h-c
Esophagectomy

- treatment of choice for cancers invading the submucosa (T1b)
- for persistent positive margins after endoscopic therapy,
- Potential advantages
  - precise pathologic staging information
  - removal of all Barrett's mucosa at risk to develop a malignant focus
  - treatment is definitive, without the need for posttreatment surveillance
- Substantial risk
  - perioperative death: 2% in high-volume centers
  - Long recovery period
  - Long term dysphagia

Esophagectomy

- Medicare claims database for 1998 and 1999
  - elderly patients with significant comorbidity
  - advanced disease
  - Surgeon's experience
  - 19, 13, and 9 percent for surgeons performing fewer than two, between two and six, and more than six esophagectomies per year, respectively (p<0.001)
  - Hospitals that performed >20 resections per year had a perioperative mortality rate of only 4.9 percent,

Minimally invasive esophagectomy

- MIE/Ivor Lewis → Limited esophagectomy
  - Smaller incisions,
  - Less intraoperative blood loss
  - Reduction in some postoperative complications
  - Decrease in intensive care and overall hospital stay
  - Better preservation of postoperative pulmonary function
  - https://www.youtube.com/watch?v=6KLKlaKBKWU
Radiation with or without chemotherapy

- (EBRT), with or without concurrent chemotherapy, and/or intraluminal brachytherapy are alternatives for patients with superficial invasive cancer.
- Concurrent definitive chemoradiotherapy is considered a standard approach for patients with muscle-invasive squamous cell cancer
- 104 patients with superficial esophageal cancer underwent EBRT alone or with concurrent chemotherapy
- The one-, two-, and three-year survival rates for patients with mucosal cancer were 95, 90, and 90 percent, respectively.

Question#3

- Gastric adenocarcinoma is the 4th most common cancer worldwide. Which one of the following is the strongest environmental risk factor?
  A. High salt diet
  B. High red meat diet
  C. Smoking
  D. EBV infection
  E. H. pylori infection

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Gastric cancers

- Most patients with gastric cancer in the United States are symptomatic and already have advanced incurable disease at the time of presentation
- Surgically curable early gastric cancers are usually asymptomatic and only infrequently detected
- Screening is not widely performed, except in countries which have a very high incidence, such as Japan, Venezuela, and Chile

Clinical presentation

- Weight loss
- Persistent abdominal
- Dysphagia → Proximal
- GOO → Antral
- Occult GIB with or without iron deficiency anemia
- Overt GIB <20%

Gastric cancers

- Peritoneal spread can present with an enlarged ovary (Krukenberg's tumor)
- Mass in the cul-de-sac on rectal examination (Blumer's shelf)
- Ascites
- Liver disease → metastasis
Paraneoplastic manifestations

- Sudden seborrheic keratoses (sign of Leser-Trelat)
- Acanthosis nigricans
- Microangiopathic hemolytic anemia
- Membranous nephropathy
- Hypercoagulable states (Trousseau's syndrome)

DIAGNOSIS

- EGD
- Benign vs malignant ulcer
- Follow up
- Biopsy techniques

STAGING

<table>
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<tr>
<th>Pathological stage group</th>
<th>Patients (n)</th>
<th>1-year survival (%)</th>
<th>3-year survival (%)</th>
<th>5-year survival (%)</th>
<th>Median survival</th>
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<td>64.40</td>
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<td>27.70</td>
<td>17.90</td>
<td>18.5 months</td>
</tr>
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</table>
• Tumors involving the EGJ with the tumor epicenter no more than 2 cm into the proximal stomach are staged as esophageal cancers.

• EGJ tumors with their epicenter located more than 2 cm into the proximal stomach are staged as stomach cancers, as are all cardia cancers not involving the EGJ.

Clinical staging and the selection of treatment

• Patients who appear to have locoregional disease (stage I to III) after preoperative testing are potentially curable

• Tumor that is considered to invade through the submucosa (T2 or higher) or with a high suspicion of nodal involvement → tumor board

• Patients with advanced stage IV disease are usually referred for palliative therapy

Indicators of unresectability

• Distant metastases

• Invasion of a major vascular structure, such as the aorta, hepatic artery or celiac axis/proximal splenic artery

• Lymph nodes behind or inferior to the pancreas, aorto-caval region, into the mediastinum, or in the porta hepatis

• Linitis plastica
EUS & PET

- most reliable nonsurgical method available for evaluating the depth of invasion of primary gastric cancers.
- Integrated PET/CT imaging can be useful to confirm malignant involvement of CT-detected lymphadenopathy

Serum Markers

- CEA
- CA 125
- CA 19-9
- CA72 4

Surgical management
• Proximal and esophagogastric junction tumors,
• The Roux-en-Y reconstruction performed during total gastrectomy → low incidence of reflux esophagitis <2%.
• In comparison, approximately one-third of patients develop reflux esophagitis after a proximal subtotal gastrectomy
• Proximal subtotal gastrectomy may leave behind lymph nodes along the lesser curvature of the stomach, which is the most common site of nodal metastases

LN controversy
• D1 lymphadenectomy refers to a limited dissection of only the perigastric lymph nodes.
• D2 lymphadenectomy is an extended lymph node dissection, entailing removal of nodes along the hepatic, left gastric, celiac, and splenic arteries, as well as those in the splenic hilum (stations 1 to 11).
• D3 dissection is a superextended lymphadenectomy. (D2 plus the removal of nodes within the porta hepatis and periaortic regions)
• Multiple prospective randomized trials both in Asian and Western populations have failed to show an overall survival benefit with D2 versus D1 lymphadenectomy.

Br J Surg. 1991;78(7):825

D1 versus D2 dissection
• MRC trial → 400 Pts
  Postoperative morbidity was significantly greater in the D2 group (46 versus 28 percent), as was operative mortality (13 versus 6 percent).
• Dutch trial → 711 Pts
  Postoperative morbidity (43 versus 25 percent) and mortality (10 versus 4 percent) were higher in the D2 group
• Cochrane analysis → 5 RTs
  No significant advantage for D2 lymphadenectomy for overall survival
D2 versus D3 dissection

• JCOG trial 9501→500Pts
  The overall perioperative complication rate in the D3 group was significantly higher 28.1 versus 20.9 percent
  no differences in major complications (anastomotic leak, pancreatic fistula, abdominal abscess, pneumonia) and perioperative mortality was very low (0.8 percent) in both groups.

Summary

• Given the apparent impact of D2 lymphadenectomy on disease-specific survival, most major cancer centers are performing a D2 as compared to a D1 dissection.

• NCCN→ recommend that D2 lymph node dissection is preferred over a D1 dissection.

Open versus laparoscopic resection

• Open gastrectomy remains the preferred surgical treatment for gastric cancer worldwide
• Laparoscopic gastrectomy is most commonly performed for early gastric cancers
• Laparoscopic distal gastrectomy has also been used to treat more advanced gastric cancers
Adjuvant vs Neoadjuvant Chemoradiotherapy

- The benefit of postoperative adjuvant combined modality therapy using contemporary RT techniques and leucovorin-modulated 5-fluorouracil (FU) was shown in a United States Intergroup study (INT-0116)
- Three-year overall survival and disease-free survival were significantly better for patients receiving chemoradiotherapy
- Combined approach is preferred.
- Prognosis after resection varies according to the pathologic extent of disease, the tumor location, and the population studied

Posttreatment Surveillance

- History and physical examination every three to six months for one to three years, then every six months for years 4 and 5, then annually
- Complete blood count (CBC) and chemistry profile, as clinically indicated
- Radiologic imaging or endoscopy, as clinically indicated
- Monitor for vitamin B12 deficiency in surgically treated patients and treat as indicated

Metastasectomy

- Hepatic — Hepatic metastasectomy has been performed for the rare patient with isolated gastric cancer liver metastases
- Pulmonary — Pulmonary metastasectomy for metastatic gastric cancer can potentially result in long-term survival in a highly selected group of patients
• Thank You