Upper Gastrointestinal Cancers

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Deaths from Gastric and Esophageal Cancers:
United States (2001)
- Esophagus: 13,200
- Stomach: 21,700

Risk Factors for Esophageal Cancer
- Tobacco & alcohol
- Nitrosamines
- Achalasia
- Plummer Vinson syndrome
- Caustic injury
- Barrett’s epithelium
- Reflux esophagitis

GERD – Can We Prevent Cancers?
- Acid suppression
- Laparoscopic Nissen fundoplication
- Open tailored antireflux procedure
- Esophagectomy

Presenting Symptoms of Esophageal Cancer
- Dysphagia – (Lumen reduced to 1/3 or less of normal)
- Odynophagia
- Regurgitation
- Aspiration pneumonia
- Weight loss
- Hemaemesis
- Hoarseness
- Cough
- Chest pain
Case Presentation

- 65 yo woman, with long history of GERD
- Dysphagia for 2 months, weakness, 15 lb weight loss
- PE – Thin, malnourished
- Differential Diagnosis?

Dysphagia Diagnosis and Staging

- Barium swallow / Upper GI series
- Endoscopy and biopsy
- Computerized tomography
- Endoscopic ultrasound

Endoscopic Image

Barium Swallow

EUS

Staging
Lymph Nodes

Esophageal Cancer - Pathology

- Squamous cell carcinoma
- Adenocarcinoma
  - Increasing frequency (From ¼ in past up to ½ now)
- Longitudinal and interconnecting lymphatics allow for early spread

Esophageal Cancers – Anatomic Distribution

<table>
<thead>
<tr>
<th>Location</th>
<th>Percentages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper</td>
<td>11.6% (36/314)</td>
</tr>
<tr>
<td>Middle</td>
<td>61.7% (217/354)</td>
</tr>
<tr>
<td>Lower</td>
<td>27.7% (96/354)</td>
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Changing Patterns of Esophageal Cancer Histopathology

Esophageal Cancer - Treatment

- Goals
  - Relieve dysphagia
  - Maximize survival
  - Minimize morbidity of treatment

Transhiatal Esophagectomy
Transthoracic Esophagectomy

Palliation

Leak in Neck

Final Result

Esophageal Cancer - Treatment

- Surgery alone
- Surgery followed by adjuvant radiation and/or chemotherapy
  - This has not been shown to increase survival
Esophageal Cancer - Treatment

- Radiation alone
  - Usually palliative
- Radiation + chemotherapy
  - As sole treatment – 25-50% may have no residual cancer
  - Do these patients need surgery??
  - As pre-operative treatment

- Chemotherapy alone
  - For metastatic disease?
- Combined with radiation
  - As sole treatment
  - Pre-operative

Esophageal Cancer – Multimodality Treatment

- Recent strong trend toward primary chemo + RT, especially for locally advanced (> T3 or node-positive)
  - Recent meta-analysis suggests improved survival compared to surgery alone (by 34% at 3 years)
- If no metastases on re-staging after treatment, surgical resection
  - But some have questioned need for surgery

- Resection possible in 50 – 60%
- Overall 5-year survival: 15 – 35%
- Results depend on stage
  - Pre-op chemo/RT may improve outcomes and also allow better selection of patients for surgery
  - Beware of “Will Rogers Effect”

Algorithm
For Treatment

Gastric Cancer
Gastric Neoplasms - Symptoms

- Epigastric discomfort – often vague
- Indigestion – 70 - 80%
- Ulcer-like symptoms – 10%
- Dysphagia
- Nausea
- Vomiting
- Anemia and / or weight loss
- Occult or acute GI bleeding
- Weight loss
- Perforation

Gastric Cancer – Risk Factors

- Pernicious anemia (atrophic gastritis) – 2 – 3-fold
- Prior partial gastrectomy for peptic ulcer – 1.5 – 3-fold
- Helicobacter pylori – 3 – 6-fold
- Peptic ulcer – No increased risk

Gastric Neoplasms – Case Presentation

62 year old man
- Vague epigastric discomfort for 6 months, relieved by antacids
- PE – Negative except for Heme + stools
- What is differential diagnosis?

Gastric Neoplasms: Physical Findings

- Neck or supraclavicular nodes – Virchow’s node
- Abdominal mass
- Hepatomegaly
- Ascites
- Pelvic (ovarian) mass
- Rectal shelf – peritoneal “drop” metastases
- Heme + stools

Gastric Neoplasms: Diagnosis and Staging

- Upper GI radiology
- Upper endoscopy – NOTE – In contrast to DU, all gastric ulcers must be biopsied and must be re-examined and shown to heal completely to rule on malignancy
Gastric Neoplasms
Diagnosis and Staging

- Abdominal CT scans
- Endoscopic US - ???
- Laparoscopy – may avoid unnecessary and unhelpful laparotomy

Gastric Neoplasms - Pathology

- Adenocarcinoma – Most common
- Other neoplasms
  - Lymphoma
  - MALT (mucosa associated lymphoid tumors)
  - GI stromal tumors

Gastric Lymphoma

Gastric GIST Tumor
Gastric Cancer – Lymph Node Dissection

- Isolated splenectomy of no value
- Japanese advocate extended lymph node dissections (R2 or R3)
- No proven benefit of more extensive node dissection and possible increased morbidity
Periampullary Tumors

- 85% originate as adenocarcinoma of pancreatic acinar cell
- 10% ampullary carcinomas
- 10% duodenal carcinomas
- 5% carcinoma of bile duct

Periampullary Tumors

- Presentation similar due to anatomical location
  - Jaundice
  - Weight loss
  - Abdominal pain
- Prognosis quite different based on the origin of the tumor
  - 60% 5 yr survival for resectable neoplasms from duodenum, distal bile duct, & ampulla of Vater
  - 5-25% 5 yr survival for resectable adenoc of pancreatic origin

Epidemiology

- Eighth most common malignancy
- Fifth leading cause of adult cancer death
- Five Year survival of all patients diagnosed with pancreatic adenocarcinoma 1-4%

Leading Sites of New Cancer Deaths (2004 Estimates)

- Male
  - Lung (22,990%)
  - Colon (11,340%)
  - Prostate (10,200%)
  - Liver (8,200%)
  - Melanoma (7,050%)
- Female
  - Lung (13,000%)
  - Breast (10,700%)
  - Colon (9,300%)
  - Prostate (9,100%)
  - Melanoma (7,550%)

Note: Percentages may not add to 100% due to rounding.
Cancer Death Rates for Men
US, 1930-2000

Rate Per 100,000

Epidemiology

- Over past decade incidence has decreased slightly
- Most cases ages 65-80 at time of diagnosis
- Male to female ratio 3:2

Etiology

- Cigarette smoking the most consistently observed risk factor
- High dietary fat consumption increases risk
- Role of coffee and alcohol
- Chronic Pancreatitis

Pathology

- Exocrine Pancreas:
  - Acinar cells-digestive enzymes
  - Ductal cells- secretion of electrolytes and delivery of pancreatic juice to the duodenum
  - Ductal epithelial cells make up < 5% of ductal cell mass but account for >90% of cancers

Histology

- Malignant
  - Ductal Adenocarcinoma
  - Mucinous cystadenocarcinoma
  - Acinar cell carcinoma
  - Small cell carcinoma
  - Pancreaticoblastoma

- Uncertain Malignant Potential
  - Mucinous cystadenoma
  - Papillary cystic neoplasm

- Benign
  - Serous cystadenoma

De Vita et al. Cancer Principles and Practice of Oncology
Site of Adenocarcinoma

- Head – 60-70%
- Body – 15%
- Tail – 10%
- Diffuse – 5-15%

Symptoms

- Jaundice
- Pruritis
- Abdominal pain
- Back pain
- Nausea/vomiting
- Weight loss

Signs

- Jaundice
- Hepatomegaly
- Palpable Gall Bladder
  - Courvoisier’s Sign

Palpable Gall Bladder

CT Scan – Dilated Gallbladder

Figure 5–1. Computed tomography scan of a patient with adenocarcinoma of the pancreatic head. Note the massively enlarged, easily palpable gallbladder (Courvoisier’s gallbladder).
Differential Diagnosis of Jaundice

- Hemolysis
- Biliary obstruction
  - Stone
  - Cancer
  - Inflammation
- Intrahepatic
  - Hepatocellular
  - Cholestasis

CA19-9

- Mucin-associated carbohydrate antigen
- Can be detected in pancreatic juice, serum and pancreatic tissue
- Elevated in 75% of patients with pancreatic ca.
- Can be elevated in 10% of patients with benign disease
- Not sensitive or specific enough to use as a screening
- Used in tandem with imaging studies

Imaging

- Ultrasound good first test in evaluation of jaundice
- Dilated common bile duct-extrahepatic biliary obstruction
- Look for choledocholithiasis
- CT generally most useful test

Figure 5-4. Computed tomography scan of a resectable adenocarcinoma of the head of the pancreas. Note the normal fat plane surrounding the superior mesenteric artery and a patent superior mesenteric vein.

Figure 5-6. Large hypodense liver metastases in stage IV pancreatic adenocarcinoma.
CT Scan

Other Modalities

- ERCP
- EUS

ERCP

Endoscopic Ultrasound

Figure 5-8. Comparison of endoscopic retrograde cholangiopancreatography (ERCP) (left) and magnetic resonance cholangiopancreatography (MRCP) (right).

Figure 5-9. Endoscopic retrograde cholangiogram (ERC) can demonstrate the level of biliary obstruction.
**Endoscopic Ultrasound**

Figure 5-16. Endoscopic ultrasound of the pancreas. CBD = common bile duct; GB = gallbladder; P = pancreas; PV = portal vein.

**Endoscopic Ultrasound**

Figure 5-20. Endoscopic ultrasound-guided fine-needle aspiration of a pancreatic mass.

**Tumor**

Figure 5-17. Tumor in the pancreas.

**Tumor**

Figure 5-18. Tumor in the pancreas.

**Treatment**

- **Surgery:**
  - 10-20% of patients are resectable for cure
  - Most resectable lesions are in the head
  - Whipple describe the first removal of the head of pancreas and duodenum in 1935

**Allen Oldfather Whipple**

1881-1963
Pancreas

Resection

End-to-side pancreaticojejunostomy

Treatment - Palliative

- Biliary Obstruction
  - Biliary bypass
  - Endoscopic Stents
  - Percutaneous Stents

- Gastric Outlet Obstruction
  - Only 10-15% of pts. will require operative intervention
  - Gastrojejunostomy
Placement of metal stent

Prognostic Factors
- Size
- Presence of nodes
- Location

Adjuvant Therapy
- After apparently curative resection of pancreatic adenocarcinoma, therapy with 5-FU and radiotherapy has been shown to be beneficial in controlled trials

American Joint Committee on Cancer TNM Staging System for Ductal Adenocarcinoma of the Pancreas

Survival Curves

Unusual Neoplasms of the Pancreas
- Endocrine Lesions
  - Insulinoma
  - Gastrinoma
  - Glucagonoma
  - VIPoma
- Cystic Lesions
  - Cystadenoma
  - Cystadenocarcinoma