GHAPP
Gastroenterology & Hepatology Advanced Practice Providers

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Pancreatic Cancer

Megan Morsi, MS, PA-C
Michigan Medicine
Ann Arbor, MI
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Disclosures

Megan Morsi, MS, PA-C

No financial relationships to disclose
Objectives

• Identify trends and understand epidemiology of pancreatic adenocarcinoma (PDAC)
• Learn risk factors for PDAC
  – Which patients require surveillance and what does surveillance for PDAC entail
• Be able to diagnose and stage PDAC
Epidemiology

- Pancreatic cancer (PC) is the fourth leading cause of cancer death in the US
- Pancreatic cancer accounts for 3% of all cancers
  - 7% of all cancer related deaths
- About 57,600 patients diagnosed in the US per year
- Lifetime risk of developing pancreatic cancer for an average risk individual is 1/64 (1.56%)
Epidemiology

- Racial disparities in Black and White patients exist in the US and vary based on age, geography and stage

Age-specific incidence (A) and mortality (B) rates of pancreatic cancer by 10-year age group and race, National Program of Cancer Registries. (A) Incidence and (B) mortality by race from 2001 to 2015.
Who Is at Risk

- Modifiable
  - Smoking
  - Obesity
  - Chronic pancreatitis*
  - Workplace exposures such as dry cleaning chemicals and metal working

- Non-modifiable
  - Age
  - Gender (M>F)
  - Race
  - Family History
  - Genetic syndromes
Who Is at Risk

- **Peutz-Jeghers syndrome**, caused by defects in the *STK11* gene. This syndrome is also linked with polyps in the digestive tract and several other cancers.

- **Hereditary breast and ovarian cancer syndrome**, caused by mutations in the *BRCA1* or *BRCA2* genes

- **Hereditary breast cancer**, caused by mutations in the *PALB2* gene

- **Familial atypical multiple mole melanoma (FAMMM) syndrome**, caused by mutations in the *p16/CDKN2A* gene and associated with skin and eye melanomas

- **Familial pancreatitis**, usually caused by mutations in the *PRSS1* gene

- **Lynch syndrome**, also known as hereditary non-polyposis colorectal cancer (HNPCC), most often caused by a defect in the *MLH1* or *MSH2* genes
International Cancer of Pancreas Surveillance Consortium (CAPS) Guidelines

Who?

- All patients with Peutz-Jeghers syndrome (carriers of a germline \textit{LKB1}/\textit{STK11} gene mutation)
- All carriers of a germline \textit{CDKN2A} mutation
- Carriers of a germline \textit{BRCA2}, \textit{BRCA1}, \textit{PALB2}, \textit{ATM}, \textit{MLH1}, \textit{MSH2}, or \textit{MSH6} gene mutation with \textbf{at least one affected first-degree blood relative}
- Individuals who have at least one first-degree relative with pancreatic cancer who in turn also has a first-degree relative with pancreatic cancer (familial pancreatic cancer kindred)
### International Cancer of Pancreas Surveillance Consortium (CAPS) Guidelines

#### When?

<table>
<thead>
<tr>
<th>Mutation carriers: For CDKN2A, Peutz-Jegher syndrome</th>
<th>Start at age 40</th>
</tr>
</thead>
<tbody>
<tr>
<td>BRCA2, ATM, PALB2, BRCA1, MLH1/MSH2</td>
<td>Start at age 45 or 50 or 10 years younger than youngest affected blood relative</td>
</tr>
<tr>
<td>Familial pancreatic cancer kindred (without a known germline mutation)</td>
<td>Start at age 50 or 55 or 10 years younger than the youngest affected blood relative</td>
</tr>
</tbody>
</table>

There is no consensus on the age to end surveillance
### International Cancer of Pancreas Surveillance Consortium (CAPS) Guidelines

#### How?

| At Baseline          | MRCP/MRI OR EUS*  
<table>
<thead>
<tr>
<th></th>
<th>Fasting glucose or HbA1C</th>
</tr>
</thead>
</table>
| During Follow-up     | Alternate MRI/MRCP and EUS (no consensus if and how to alternate)  
|                     | Fasting glucose or HbA1C |
| On indication        | Serum CA 19-9 → concerning features by imaging  
|                     | EUS with FNA → cystic lesions with worrisome features, solid lesions >5 mm, and asymptomatic MPD stricture  
|                     | CT → asymptomatic PD stricture of unknown etiology |
International Cancer of Pancreas Surveillance Consortium (CAPS) Guidelines

**Interval?**

<table>
<thead>
<tr>
<th>12 months</th>
<th>If imaging is normal</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 or 6 months</td>
<td>If concerning abnormalities for which surgery is not immediately indicated</td>
</tr>
<tr>
<td>Surgery</td>
<td>If imaging is highly suspicious for malignancy or (+) FNA on EUS</td>
</tr>
</tbody>
</table>
Clinical Presentation

• Painless jaundice
• Weight loss
• Anorexia
• Epigastric pain with or without radiation to the back
• Palpable abdominal mass
• Supraclavicular nodes
• Peritoneal nodules (Sister Mary Joseph node)
Work-Up

- EUS/FNA
  - +/- ERCP for biliary decompression
- CA 19-9, hepatic function panel
- CT chest/abdomen/pelvis
  - +/- MR
  - +/- PET
Differential Diagnoses

• **Benign**
  – Chronic pancreatitis
  – Autoimmune pancreatitis
  – Choledocholithiasis

• **Malignant**
  – Cholangiocarcinoma
  – Duodenal adenocarcinoma
  – Metastatic from breast, melanoma or renal cell
  – Pancreatic neuroendocrine tumors
<table>
<thead>
<tr>
<th>Stage</th>
<th>Primary tumor (T)</th>
<th>Regional lymph nodes (N)</th>
<th>Distant metastases (M)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Resectable</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stage IA</td>
<td>T1</td>
<td>N0</td>
<td>M0</td>
</tr>
<tr>
<td>Stage IB</td>
<td>T2</td>
<td>N0</td>
<td>M0</td>
</tr>
<tr>
<td><strong>Borderline Resectable</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stage IIA</td>
<td>T3</td>
<td>N0</td>
<td>M0</td>
</tr>
<tr>
<td><strong>Locally Advanced</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stage IIB</td>
<td>T1-T3</td>
<td>N1</td>
<td>M0</td>
</tr>
<tr>
<td>Stage III</td>
<td>Any T</td>
<td>N2</td>
<td>M0</td>
</tr>
<tr>
<td></td>
<td>T4</td>
<td>Any N</td>
<td>M0</td>
</tr>
<tr>
<td><strong>Metastatic</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stage IV</td>
<td>Any T</td>
<td>Any N</td>
<td>M1</td>
</tr>
<tr>
<td>Staging</td>
<td>Resectable</td>
<td>Borderline Resectable</td>
<td>Locally Advanced</td>
</tr>
<tr>
<td>----------------------</td>
<td>----------------------------------------------------------------------------</td>
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<tr>
<td></td>
<td>• No arterial involvement</td>
<td>• &lt;180 degree abutment of the superior mesenteric artery (SMA)</td>
<td>• &gt;180 degree abutment of the SMA</td>
</tr>
<tr>
<td></td>
<td>• &lt;180 degrees contact with SMV and portal vein</td>
<td>• Abutment to encasement of the hepatic artery</td>
<td>• SMV or portal vein obliteration</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Severe superior mesenteric vein (SMV) or portal vein infringement</td>
<td>• Involvement of the celiac axis</td>
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<td>• Short segment SMV occlusion</td>
<td>• Long segment SMV occlusion</td>
</tr>
</tbody>
</table>
Prognosis

- Resectable
  - Median survival 20 – 24 months
  - 5 year survival 15 – 20%
- Locally Advanced
  - Medial survival 8 – 14 months
Complications

- Pain
- Biliary Obstruction: \(65-75\%\) of patients
- Duodenal obstruction (Gastric outlet obstruction) \(10-25\%\) of patients
- Anxiety/Depression
- Cachexia
- Exocrine pancreatic insufficiency
- Thromboembolic disease
- GI bleeding: rare


