Pancreatic Cytopathology
Cystic Lesions

Cystic Lesions Of The Pancreas

[Practical Issues]

- Morphologic Interpretation
- Radiologic Imaging Findings
- Cyst Fluid analysis
  - CEA, Amylase, CA 19-9, kras
- Terminology

Cystic Lesions of the Pancreas

- Non-neoplastic
  - Pseudocyst
  - Lymphoepithelial Cyst
- Neoplastic
  - Serous Cystic Neoplasm
  - Mucinous Cystic Neoplasm (MCN)
  - Intraductal Papillary Mucinous Neoplasm (IPMN)
  - Solid-pseudopapillary Neoplasm
**Pseudocyst**

- Most common cyst, more often extra-pancreatic
- "Pseudo" – not a true cyst, so NO epithelial cells
- Localized collection of secretions following pancreatitis or obstruction
- 85% solitary and unilocular
- Thick walled, hemorrhagic contents
- May show ductal communication
- Cyst fluid has high amylase
- DD – Cystic neoplasms
- Treatment – Drainage (head) or excisions (body/tail)

- CEA – low
- Amylase – very high


Lymphoepithelial Cyst

- Extremely rare (0.5% of all pancreatic cysts)
- Non-neoplastic "true" cyst
- Mean size 5cm (1-17cm)
- No association with HIV status of the patient (like the cervical LE cysts)
- Anywhere in the pancreas
- Mean age 56y (35-82), Male-80%
- ~50% are asymptomatic
- Histologically resemble neck Branchial Cleft Cyst
- High CA19-9 and often an elevated CEA
- DD – Cystic Neoplasms, Dermoid & Epidermoid cyst
- Treatment – Limited resection

- CEA – can be high
- Amylase – low
Cystic Neoplasms Of The Pancreas

- Serous Cystadenoma
- Mucinous Cystic Neoplasm
- Intraductal Papillary Mucinous Neoplasm (IPMN)
- Solid-pseudopapillary Neoplasm

<table>
<thead>
<tr>
<th>Gender (F:M)</th>
<th>Serous Cystadenoma</th>
<th>Mucinous Cystic Neoplasm</th>
<th>Intraductal Papillary Mucinous Neoplasm</th>
<th>Solid-pseudopapillary Neoplasm</th>
<th>Cyst Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>20:1</td>
<td>10:1</td>
<td>1:1.5</td>
<td>Tail</td>
<td>Head</td>
<td>Mucinous</td>
</tr>
<tr>
<td>1:1.5</td>
<td>10:1</td>
<td>1:1.5</td>
<td>Head</td>
<td>Tail=Head</td>
<td>Mucinous</td>
</tr>
<tr>
<td>10:1</td>
<td>10:1</td>
<td>1:1.5</td>
<td>Tail=Head</td>
<td>Tail=Head</td>
<td>Necrotic/Hemorrhagic</td>
</tr>
<tr>
<td>7:3</td>
<td>10:1</td>
<td>1:1.5</td>
<td>Tail=Head</td>
<td>Tail=Head</td>
<td>Serous</td>
</tr>
</tbody>
</table>

Serous Cystadenoma

- aka – Microcystic adenoma, Glycogen-rich cystadenoma
- 70% in females, Mean age 66
- Associated with VHL syndrome
- Typically large (mean 11cm), Multiloculated
- Often central stellate scar, Spongy appearance
- Usually body or tail, rarely multicentric
- DD – Other cysts
- Treatment – Excision is curative

- CEA – very low
- Amylase – very low
- No KRAS or GNAS, VHL+
Serous Cystadenoma

? Nondiagnostic FNA
Neoplastic Mucinous Cysts

- Intraductal Papillary Mucinous Neoplasm (IPMN)
- Mucinous Cystic Neoplasm (MCN)

IPMN

- Mucinous epithelial neoplasm, a precursor lesion to PDAC
- Arises from the main duct (head-2/3rd), branch duct (head or uncinate, multiple-1/3rd), Grossly visible (>1cm)
- Various cell and architectural types
  - Gastric foveolar (branch duct)
  - Intestinal (main duct)
  - Pancreaticobiliary
  - (IOPN is now classified separately)
- Classified
  - Low-grade
  - High-grade (CIS)
  - With invasive CA (1/3rd)
- >90% 5-yr survival
  - CEA – high
  - Amylase – Usually high
  - KRAS and GNAS
- Cyst Fluid CEA of >192ng/ml
- Ductal Communication

Low-grade
FNA Reporting Terminology

- “Neoplastic Mucinous Cyst” (consistent with IPMN, in the right, ...)
- Negative (or positive) for high-grade atypia (dysplasia) or invasive carcinoma
IOPN

- Often classified as oncocytic variant of IPMN
- Mean age 62, No gender preference
- LMP but 20% have invasive component
- Treatment – Surgery is often curative
- Compared to IPMN
  - Less often invasive
  - No kras mutation

Solid-Pseudopapillary Neoplasm

- aka- Hamoudi or Frantz (1959) tumor
- 1-2% of all pancreatic tumors
- LMP epithelial tumor of uncertain cellular differentiation
- Young females (mean age 35, M/F-10/1)
- Men-older age, more aggressive behavior
- 10-15% have metastases
- More common in body/tail
- Low cyst fluid CEA and amylase
- Treatment-Surgery is curative in 95% of cases

- CEA – low
- Amylase – low
- No KRAS or GNAS, CTNNB1+