ACG Clinical Guideline: Chronic Pancreatitis
By Amneet Hans

Definition
- A pathologic fibroinflammatory syndrome of the pancreas in individuals with genetic, environmental, and/or other risk factors who develop persistent pathologic responses to parenchymal injury or stress
- 60% of CP cases evolved from acute pancreatitis and recurrent acute pancreatitis (RAP), whereas about 10% of acute pancreatitis and 30% of RAP progress to CP

Etiology of CP
- Review all risk factors in patients with clinical evidence of CP and complete a thorough H&P
- **TIGAR-O system** helps categorize an etiology to explain CP
  - **T** (Toxic-Metabolic)
  - **I** (Idiopathic)
  - **G** (Genetic)
  - **A** (Autoimmune)
  - **R** (Recurrent acute or severe pancreatitis)
  - **O** (Obstructive)

Diagnosis
- **1st line**: CT or MRI
- **2nd line**: EUS only if diagnosis is in question after cross-sectional imaging
- **3rd line**: secretin-enhanced MRCP if diagnosis in question after cross-sectional imaging or EUS
- **4th line**: histologic diagnosis with EUS-guided FNA (low sensitivity)

Clinical Manifestations
- Abdominal pain
- Fat-soluble vitamin deficiency -> malnutrition/osteoporosis
  - Periodic monitoring of fat-soluble vitamins and zinc
- Risk of pancreatic malignancy
  - No screening recs
- Endocrine insufficiency manifesting as DM (T3cDM from islet cell loss)
  - ↑ with duration of disease
  - BMI and smoking status may increase risk

**Direct and Indirect Pancreatic Function Tests**

- **Fecal elastase**: Universally available; limited use in mild disease, limited specificity in diarrhea
- **Serum trypsinogen/trypsin**: Easily obtainable, can quantify to track function over time; elevated with pancreatic pain and does not measure digestive tract enzymes

**Hormonal**
- **CCK stimulation test**: Direct acinar cell function/subtle EPI; cumbersome and not widely available
- **Secretin stimulation test**: Direct ductal cell function and ductal secretory ability; not widely available and prone to measurement error

**Genetic Testing**

- **Help diagnose exocrine pancreatic insufficiency (EPI) but role in diagnosing CP is adjunctive**
- **Nonhormonal**
  - Fecal elastase: Universally available; limited use in mild disease, limited specificity in diarrhea
  - Serum trypsinogen/trypsin: Easily obtainable, can quantify to track function over time; elevated with pancreatic pain and does not measure digestive tract enzymes

- **Hormonal**
  - CCK stimulation test: Direct acinar cell function/subtle EPI; cumbersome and not widely available
  - Secretin stimulation test: Direct ductal cell function and ductal secretory ability; not widely available and prone to measurement error

**Management**

- **EtOH and tobacco cessation**
- **Use caution in interventional procedures if active EtOH use, unless urgent/emergent**
- **Surgical intervention over endoscopic therapy in patients with obstructive CP for pain relief if 1st line endoscopic approaches for drainage are unsuccessful**
- **Consider celiac plexus block for pain**
- **Consider antioxidant therapy for pain**
- **Do not use pancreatic enzyme supplementation for pain**
- **Opiates may be considered in patients in whom other therapeutic options have failed**
- **Surgical referral for refractory pain**

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**Table: Direct and Indirect Pancreatic Function Tests**

<table>
<thead>
<tr>
<th>Test</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCK stimulation test (acinar cell stimulation measuring trypsin and/or lipase)</td>
<td>Direct acinar cell function, detects subtle EPI</td>
<td>Cumbersome, Not widely available, Specialized laboratory testing required, Patient discomfort with feeding tube placement, 2-3 h test</td>
</tr>
<tr>
<td>Secretin stimulation test (ductal cell stimulation measuring bicarbonate)</td>
<td>Direct ductal cell function, performed endoscopically, Uses laboratory autoradiography, 60 min test</td>
<td>Not widely available, prone to measurement error, Risk and cost of procedure</td>
</tr>
</tbody>
</table>

**Table: Genetic Testing**

<table>
<thead>
<tr>
<th>Test</th>
<th>Known causes ruled out/unlikely</th>
<th>Expand differential diagnosis, initiate low-risk therapy (lifestyle, antioxidants), Consider referral, Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBD or evidence of IgG4 disease</td>
<td></td>
<td></td>
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<tr>
<td>Clinical response to fix? Pain</td>
<td></td>
<td></td>
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<tr>
<td>management with antioxidants</td>
<td></td>
<td></td>
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<tr>
<td>Improved digestion with PERT Steroid trial for AIP Type 2</td>
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</tbody>
</table>

**Table: Interdisciplinary Approach**

<table>
<thead>
<tr>
<th>Clinical Features</th>
<th>Imaging</th>
<th>Serum markers</th>
<th>BIOMARKERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pancreatitis-like pain</td>
<td>Alcohol / Smoking</td>
<td>High anlyase/lipase</td>
<td></td>
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<tr>
<td>Malnutrition</td>
<td>Hypertrophicyrdema</td>
<td>High triglycerides</td>
<td></td>
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<tr>
<td>Weight loss</td>
<td>Other metabolic / drugs</td>
<td>High IgG4</td>
<td></td>
</tr>
<tr>
<td>Glucose intolerance</td>
<td>AP / SAP</td>
<td>High glucose</td>
<td></td>
</tr>
<tr>
<td>Obstruction</td>
<td>benign anatomic change</td>
<td>Low vitamins (ADK B12)</td>
<td></td>
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<tr>
<td>Tumor</td>
<td>EUS (+/- FNA)</td>
<td>Tumor markers</td>
<td></td>
</tr>
</tbody>
</table>

**Table: Genetic Testing**

- **At minimum check**: PRSS1, SPINK1, CFTR, and CTRC; more extended panels available