

Acute Pancreatitis: Presentation, Diagnosis, and Management.

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I. Definition & Epidemiology

- Acute pancreatitis (AP): acute inflammation of the pancreas parenchyma.
- In the Western world, the incidence of AP has steadily increased over the past 20 years with a yearly increase estimated to be around 3.07% per year¹.
- In the US, the average hospitalization cost per person for AP is around \$30,000¹.

II. Etiologies

- Globally, the most common etiology is gallstone-induced AP (40-70%).²
- The second most common cause of AP is alcohol use. In the US, 25-35% of AP can be attributed to alcohol use.
- Other less common causes of AP include hypertriglyceridemia (particularly >1,000 mg/dl), hypercalcemia, autoimmune, post-ERCP, toxins, and medications (sitagliptin, exenatide, glucagon-like peptide-1(GLP-1), and statins).

III. Presentation and Physical Exam Findings

- Due to the anatomic positioning of the pancreas, patients will present with acute epigastric pain, often with radiation to the left upper quadrant and back, nausea, and vomiting.
- Patients may exhibit fevers, tachycardia, and tachypnea (e.g. SIRS).
- Classically, patients with AP often find improvement of symptoms with leaning forward. This posture helps contract the pancreas and may help improve bile flow. Pain is often exacerbated by lying flat (expansion of the pancreas).
- Physical exam findings include epigastric tenderness to palpation. Hemorrhage within or behind the peritoneum can cause Cullens sign (periumbilical ecchymosis) and Grey Turner's sign (flank ecchymosis).

IV. Diagnosis

- The diagnosis of AP is established if 2 out of the following 3 criteria are met:
 1. Epigastric pain with or without radiation into the back.
 2. Elevated serum lipase or amylase, 3 times the upper limit of normal.
 3. Abdominal imaging (CT/MRI) findings consistent with AP (i.e. diffuse parenchymal enlargement, peripancreatic edema, or fat stranding)
- Lipase is more sensitive and is preferred over amylase for diagnosing.
- Guidelines recommend reserving abdominal imaging for patients in which the diagnosis of AP is unclear or for patients without improvement in 48-72 hours, due to increased risk of complications.
- Right upper quadrant ultrasound can screen for gallstone induced pancreatitis. Evidence of gallstones would change management (i.e. cholecystectomy).

V. Management

- Pain control, IV fluid resuscitation, and early feeding as tolerated by the patient.
- Among these treatment modalities, fluid resuscitation alone has an effect on morbidity and mortality:
 1. Retrospective studies have shown a decrease in morbidity and mortality when IV fluid resuscitation is started within the first 24-48 hours^{3,4,5}.
 2. Patients who remain hemo-concentrated at 24 hours have a higher risk of developing necrotizing pancreatitis⁶.
 3. Based on the WATERFALL study 2022, which compared aggressive to conservative IVF resuscitation, current guidelines recommended IVF resuscitation at a rate of 1.5 cc/kg/hr for maintenance fluids⁷.
- It is recommended to start an oral low-fat diet within 24 hours and advanced as tolerated by the patient. If a patient cannot tolerate an oral diet, enteral feeds are preferred over total parenteral nutrition.
 1. Early enteral feeding (<48 hours after admission) has not been shown to exacerbate symptoms and may reduce length of stay⁸.

Clinical Pearls

- Consider using severity and mortality risk calculators, such as Ranson's criteria or the bedside index of severity in acute pancreatitis (BISAP), at the time of admission to help guide proper inpatient disposition (medical floors vs intensive care unit).
- Patients with higher Ranson's or BISAP scores and worsening clinical statuses may benefit from repeat imaging (CT scan of the abdomen) and early surgical consult for assessment of complications of AP (i.e., necrosis, acute necrotic collection, and wall-off necrosis).
- For patients diagnosed with idiopathic pancreatitis consider evaluation for microlithiasis (gallstones <2 mm in size) as the etiology of their AP as smaller stones can be missed by traditional imaging studies. Endoscopic ultrasound (EUS) is the gold standard for diagnosing microlithiasis.

Bedside Index of Severity in Acute Pancreatitis (BISAP)

BUN >25 mg/dL	Yes (1+)	No (0)
Impaired Mental Status	Yes (1+)	No (0)
> 2 SIRS Criteria	Yes (1+)	No (0)
Age > 60 years	Yes (1+)	No (0)
Pleural Effusion Present	Yes (1+)	No (0)
Total Points**:		

** Patients with a BISAP score >0 have increased risk of mortality, most significant with scores >3.

Ranson's Criteria for Pancreatitis Mortality

WBC > 16,000	Yes (1+)	No (0)
Age > 55 years	Yes (1+)	No (0)
Glucose > 200 mg/dL	Yes (1+)	No (0)
AST > 250	Yes (1+)	No (0)
LDH > 350	Yes (1+)	No (0)
Total Points**:		

** If >2 points on admission labs consider higher level of care as this equates to an increased risk for severe pancreatitis and mortality.

References

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