
Acute pancreatitis - Revisiting the clinical basics

T Govener, M Brand

HPB Surgery, Steve Biko Academic Hospital, University of Pretoria, Pretoria, South Africa
Steve Biko Academic Hospital, Pretoria, South Africa

Definition

Acute pancreatitis refers to acute inflammation of the pancreas, usually accompanied by abdominal pain and elevations of serum pancreatic enzymes. This syndrome is usually a discrete episode which causes varying degrees of injury to the pancreas. Following recovery the pancreatic function usually returns to normal unlike chronic pancreatitis in which the resulting fibrosis and pancreatic dysfunction is irreversible and thus permanent.

The most common causes are gallstones or an alcohol binge. Less common causes are listed in Table 1.

Table 1: Further causes of acute pancreatitis

- Hypercalcaemia
- Auto-immune
- Drug induced (azathioprine, thiazide diuretics, valproic acid, sulphasalazine etc)
- Post traumatic
- Hypertriglyceridemia
- Pancreatic tumours
- Infections (mumps, coxsackie virus)
- Idiopathic

Diagnosis

Patients usually present with epigastric pain which typically radiates to the back, they may have accompanying nausea and vomiting. Serum amylase and lipase levels must be elevated at least 3 times above the laboratory's reference range to diagnose acute pancreatitis. The serum half-life of amylase is short, and elevations generally return to normal reference ranges within a few days.

Lipase has a slightly longer half-life, up to 12 days after an episode, hence its elevation is more valuable when a delay occurs between the pain episode and the time the patient seeks medical attention. Furthermore, elevated lipase levels are more specific to the pancreas than elevated amylase levels.

Serum amylase or lipase levels are purely diagnostic and do not indicate whether the disease is mild, moderate, or severe. Serial monitoring of levels during the course of hospitalization doesn't offer any clinical value and should not be done.

Once a working diagnosis of acute pancreatitis is reached laboratory tests are obtained to help determine the severity of the disease and its potential etiology.

Full blood count

This is done to confirm an inflammatory response, as well as assess the hematocrit, a marker of hemoconcentration. Haemoglobin and platelet count are also important.

Urea and electrolytes

This is done primarily to look for renal dysfunction which should be corrected.

Liver function tests

These are done to diagnose potential gall-stone etiology of pancreatitis as well as rule out acute cholangitis. Alanine aminotransferase levels higher than 150U/L suggests gallstone pancreatitis. Combined with ultra-sound demonstrated cholelithiasis confirms the diagnosis.

C-reactive protein (CRP)

A CRP value should be obtained 24-48 hours after presentation to provide prognostic information as higher levels have been shown to correlate with a propensity towards organ failure. It is also a good serial marker to assess for progression or receding inflammation.

Calcium-magnesium and phosphate level

Primarily for serum calcium, severe acute pancreatitis may cause saponification which consumes calcium and will require replacement.

Arterial blood gas

This is an important tool to look for acidosis and respiratory failure. It should be done in all moderate or severe acute pancreatitis patients and provides an important tool for resuscitation goal assessment.

Radiology

Abdominal x-rays have a limited role in acute pancreatitis and are not routinely indicated.

Abdominal ultrasound is the most useful initial test to determine the etiology of pancreatitis and is the technique of choice for detecting gallstones. However, in the setting of acute pancreatitis its sensitivity is reduced to 70%-80% and its ability to identify choledocholithiasis is limited. In the scenario where biliary pancreatitis is suspected a repeat abdominal ultrasound should be performed once the pancreatitis has settled clinically. If it is still equivocal an endoscopic ultrasound is indicated. Ultrasonography cannot measure the severity of disease.

Endoscopic ultrasound is a procedure which

Correspondence

M Brand
email: martin.brand@up.ac.za

allows a high-frequency ultrasound transducer to be inserted into the stomach and duodenum to visualize the pancreas and the biliary tract. Its principal role in the evaluation of acute pancreatitis is the detection of microlithiasis and periampullary lesions not easily demonstrated by other methods. It should be delayed until after the pancreatitis has resolved.

Abdominal CT scan (CT) is generally not indicated for patients with mild pancreatitis unless a pancreatic tumour is suspected (usually in elderly patients).

Scans are only indicated within the first seven days after symptom onset if there is diagnostic uncertainty or if the patient deteriorates despite best medical management. This is to exclude a complication that may be responsible for the worsening clinical picture such as bowel ischaemia. It is the imaging study of choice for assessing complications later in the disease. Abdominal CT scans may provide prognostic information based on a grading scale developed by Balthazar et al. which describes five grades of severity.

Magnetic Resonance Cholangiopancreatography (MRCP) is an emerging modality for the diagnosis of suspected biliary and pancreatic duct obstruction in the setting of acute pancreatitis. MRCP is not as sensitive as endoscopic retrograde cholangiopancreatography, but is safer and non-invasive with no complications.

Severity grading

Grading disease severity is essential to guide management as well as predict prognosis.

The Revised Atlanta Criteria are the most commonly used criteria and include three grades, mild, moderate and severe. Essentially mild refers to patients with acute pancreatitis and no evidence of organ dysfunction, severe includes patients that developed organ dysfunction as a result of the acute pancreatitis. Moderate are either patients who presented with signs of organ dysfunction and resolved after 48 hours of treatment or pancreatic necrosis without organ dysfunction. Organ dysfunction is classified according to the Modified Marshall criteria that include respiratory, renal and cardiovascular categories, increasing scores for worsening dysfunction of each.

Management

At presentation all patients must be assessed according to their hemodynamic, respiratory and renal status as management is initially directed by the severity grading of the pancreatitis.

Serum amylase or lipase levels are purely diagnostic and do not indicate whether the disease is mild, moderate, or severe. Serial monitoring of levels during the course of hospitalization doesn't offer any clinical value and should not be done.

Mild acute pancreatitis

These patients may be managed in a general ward with regular observation and abdominal examinations. There is no need for antibiotics and a normal full ward diet may be prescribed. Once the patient starts to recover they will develop an appetite and begin to eat, this usually occurs a few days after the onset of symptoms. They will require analgesia.

Severe acute pancreatitis

All of these patients must preferably be admitted to an intensive care unit or high care unit in a hospital that has specialists who look after these patients regularly.

Patients with acute pancreatitis require aggressive fluid resuscitation within the first 24-48 hours as they lose large volumes of fluids through third spacing into the retroperitoneum and intra-abdominal areas. There is no universal consensus definitively favouring one type of fluid over another type; in general Ringers Lactate is used. Normal saline should not be used as it worsens the metabolic acidosis.

Resuscitation should be sufficient to maintain hemodynamic stability. This usually involves administration of litres of fluid as a bolus, followed by continuous infusion at a rate of 250mL/h. Objective end points of resuscitation such as base excess, lactate, central venous saturation must be used to continually reassess fluid resuscitation requirements rather than imprecise markers such as urine output and heart rate.

Nutrition should be commenced as soon as possible, preferably via nasogastric feeds. However if an ileus is present total parenteral nutrition should be commenced until the ileus has resolved.

There is no indication for prophylactic anti-biotics. Antibiotics should also not be routinely given for fever, especially early in the disease course as this is almost universally secondary to the inflammatory response and doesn't reflect an infectious process. Antibiotics, usually drugs of the imipenem class, should be used in any case of pancreatitis complicated by infected pancreatic necrosis. These patients must be managed in a specialized hepatopancreaticobiliary unit and the further management of infected pancreatic necrosis is beyond the scope of this review.

The role of endoscopic retrograde cholangiopancreatography (ERCP)

ERCP is a procedure used to evaluate the biliary and pancreatic ductal systems. One of its complications is causing acute pancreatitis, or worsening existing pancreatitis. It is only indicated in patients with pancreatitis who have acute cholangitis with worsening obstructive jaundice and organ dysfunction despite maximal medical treatment.

Biliary pancreatitis

Patients discharged with gallstone pancreatitis without a cholecystectomy are at high risk for recurrent bouts of pancreatitis, hence, it is optimal for patients admitted with gallstone pancreatitis to undergo cholecystectomy before their discharge. If this cannot be done an ERCP with sphincterotomy must be considered as a bridging procedure to laparoscopic cholecystectomy.

Post discharge follow-up

Once the patient is stable enough to be discharged from the hospital routine clinical follow-up is needed to monitor for potential complications of pancreatitis, especially pseudocysts.

In general a reasonable time to see the patient is within 7-10 days after the date of hospital discharge to evaluate how they are doing and to check for signs or symptoms of complications.