Pancreatitis

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Pancreatitis is characterized by inflammation of the pancreas. It is classified as acute, chronic, necrotic, or hemorrhagic. Acute pancreatitis results from ectopic activation of pancreatic enzymes. Chronic pancreatitis is defined as a continuing inflammatory process of the pancreas, characterized by irreversible morphologic changes (e.g. calcifications, fibrosis, ductal stricture, dilatation), which may lead to exocrine and endocrine insufficiency.

1. Epidemiology:

   (a) Pancreatitis is an uncommon disease in pediatric population and the etiology tends to be more diverse compared to Adults. Males and females are equally affected. Most cases of acute and chronic pancreatitis are idiopathic. The most common identifiable etiologies of acute pancreatitis are listed below:

      (i) Abdominal trauma.
      (ii) Anomalies of pancreaticobiliary system: Pancreas divisum, Annular pancreas, Choledochal cyst.
      (iii) Biliary disease: Gallstone pancreatitis.
      (iv) Multisystem disease.
      (v) Drugs and toxins: L-asparginase, Valproic acid, Azathioprine, Mercaptopurine, Mesalamine.
      (vi) Viral infection.
      (vii) Hereditary disorders: Cystic fibrosis transmembrane conductance regulator (CFTR) mutation, Hereditary pancreatitis.
      (viii) Autoimmune pancreatitis.
      (ix) Metabolic disorders

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2. Clinical features: Classically, pancreatitis presents as an acute onset of epigastric pain with radiation to the back. It may be accompanied with nausea, vomiting, abdominal distention, ileus, anorexia, jaundice (with gallstones or obstruction), fever, tachycardia, and hypotension.
   (a) Upon physical examination, one may find signs of abdominal trauma, tenderness, distention, or peritoneal signs. In a case of hemorrhagic pancreatitis, Grey Turner's sign (bluish discoloration of flanks) and/or Cullen's sign (bluish discoloration in the peri-umbilical region) may be present.
   (b) Chronic pancreatitis may mimic acute pancreatitis. It usually presents as chronic abdominal pain that is difficult to treat. It may be accompanied with steatorrhea, growth failure, and pancreatic exocrine and endocrine insufficiency.
3. Diagnosis:
   (a) If pancreatitis is suspected based on history and physical examination, amylase and lipase should be measured. Serum amylase and lipase (more specific) tend to be at least three times greater than the upper limit of the normal. Other laboratory findings include leukocytosis, hyperglycemia, glycosuria, hypocalcaemia, hypertriglyceridemia, acidosis, hypoalbuminemia, hyperbilirubinemia, and elevated LFT's.
   (b) Imaging studies provide evidence of structural changes in the glands or ducts. Trans-abdominal ultrasonography, CT, MRCP, ERCP, and EUS may be utilized and provide evidence of acute vs. chronic changes.
   (c) US is a primary screening tool and its findings may reveal a diffusely enlarged or edematous pancreas with dilated pancreatic ducts, peri-pancreatic fluid collection, an abscess or a pseudocyst.
   (d) CT scan may be utilized for evaluation of abnormalities on US, chronic pancreatitis, pancreatic necrosis, complications, pancreatic trauma, or neoplastic disease process. CT scan findings include an enlarged gland with ill-defined margins, peripancreatic fluid, areas of decreased or enhanced density, or pseudocysts.
   (e) Magnetic resonance cholangiopancreatography (MRCP) is a non-invasive imaging study of biliary tree and surrounding structures that helps delineate an anatomical lesion. It is more sensitive than CT scan.
   (f) Endoscopic retrograde cholangiopancreatography (ERCP) can help diagnose various pancreatic and biliary anomalies, ductal abnormalities or obstructions and also serve as a therapeutic intervention, i.e. sphincterotomy or stent placement.
4. Treatment:
   (a) The management of acute pancreatitis usually consists of supportive medical therapy with IVF hydration, pain control, and bowel rest. The initial management is directed at stabilizing the patient and aggressive hydration to help decrease the risk of multi-organ failure. It is important to optimize

nutritional status with early institution of nutrition. Oral feeding can be started within 24–48 h after admission. In cases of severe pancreatitis, enteral feeding or TPN can be employed. Jejunal feeds are preferred over TPN due to lower complication rates and lower cost. In case of chronic pancreatitis, low-fat meals, pancreatic enzyme supplements may help restore exocrine enzyme deficiencies.

(b) Surgical management is rarely required and it is reserved for chronic, relapsing pancreatitis, unsuccessful conservative medical therapy, intractable pain, impaired nutrition, and narcotic addiction. Surgical options include distal pancreatectomy with Roux-en-Y pancreaticojejunostomy (i.e., Duval procedure), lateral pancreaticojejunostomy (i.e., Puestow procedure), or ERCP sphincteroplasty.

5. Complications: Pancreatitis is associated with a variety of complications. The most common are pseudocyst formation and mechanical obstruction of the duodenum and common bile duct. Less frequent complications include pancreatic ascites, pleural effusion, splenic vein thrombosis with portal hypertension, and splenic artery pseudoaneurysms.