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Acute Pancreatitis in Children

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Background and Aim
Acute pancreatitis is usually a sterile inflammatory process caused by chemical autodigestion of pancreas and the pancreas becomes inflammed (swollen) over a short period of time. The etiology of acute pancreatitis in children is often drugs, infections, trauma, metabolic (Hyperlipoproteinemia (I, IV, V), hypercalcemia, α1 antitrypsin deficiency) or anatomic anomalies such as choledochal cysts, periampullary obstruction and abnormal union of the pancreatobiliary junction.

Methods
The etiology, manifestations, and course in children are often different, but therapeutic aspects are similar in both adults and children. MRCP should be performed before ERCP to detect any pancreatobiliary tract disease in children with initial onset of acute pancreatitis of unknown cause. When pancreatitis of unknown etiology occurs, testing for the mumps virus, ASO (antistreptolysin O) titer, COVID-19 is recommended. Hereditary pancreatitis, recently, variants in CPA1, which encodes carboxypeptidase A1, were implicated in early onset pancreatitis in children up to 10 years old and may involve misfolding-induced endoplasmic reticulum stress rather than elevated trypsin activity. leakage of activated enzymes from the pancreas causes secondary cytokine production. These cytokines trigger the systemic inflammatory response syndrome (SIRS), results in hyperactivation of macrophages and neutrophils throughout the body and the release of tissue injury mediators causing multiorgan failure, including shock, circulatory failure, and acute respiratory distress syndrome (ARDS).

Results
The onset of acute pancreatitis is sudden with epigastric abdominal pain, vomiting and collapse. Patients are restless and bringing their knees to their chest in an effort to alleviate the pain. Marked epigastric or diffuse tenderness on palpation and the abdomen is often distended and tympanic, with bowel sounds decreased or absent in severe disease. Low grade fever is often observed, especially with widespread pancreatic inflammation and necrosis. Jaundice is a common finding. Infants and toddlers cannot verbalize abdominal pain, but vomiting, irritability, and lethargy are common. In severe cases, children may initially present with shock, followed by symptoms of multiorgan failure, including dyspnea, oliguria, hemorrhage, and mental status changes [1].

Conclusion
The initial treatment for acute pancreatitis is to withhold oral intake of food or fluid to allow the pancreas to rest (i.e., prevent stimulation of pancreatic exocrine secretions) and IV fluids to prevent dehydration and pain medications. Early intravenous hydration during the first 12 to 24 hours with close monitoring is of paramount importance to maintain pancreatic and intestinal microcirculation to prevent intestinal ischemia and subsequent bacterial translocation to avoid severe complications such as pancreatic necrosis and to minimize SIRS (systemic inflammatory response syndrome) to reduce the rate of organ failure, morbidity and death. Movement of fluid into the intracellular space ("third spacing") occurs in acute pancreatitis and fluid resuscitation exacerbates it. The intraabdominal hypertension (sustained intraabdominal pressure > 12 mmHg) is associated with poor outcome. It should be monitored with transvescicular bladder measurements in those patients on mechanical ventilation and managed with ultrafiltration [2].

Enteral nutrition is recommended to prevent gut failure and infectious complications.Enteral feeding maintains the gut mucosal barrier and prevents its disruption and translocation of bacteria that seed pancreatic necrosis. Jejunal feeding is advocated if gastric feeding fails as a result of duodenal ileus or obstruction from inflammatory masses and there is some evidence of superiority of 'distal jejunal feeding' in acute pancreatitis. Total parenteral nutrition (TPN) should be considered only for patients who do not tolerate enteral feeding because of severe ileus since it is associated with infection and line-related complications.

In mild cases of acute pancreatitis, the incidence of infectious complications and mortality rates are low, and prophylactic antibiotics are usually not necessary. However, even in mild cases, antibiotics should be considered if severity increases or complications like cholangitis develop. In severe cases, antibiotics can reduce infectious pancreatitis complications and improve the prognosis. Drugs should be selected with good tissue distribution to the pancreas. Oral pancreatic enzyme supplements which inhibit pancreatic enzyme secretion may be beneficial for pain control, especially in idiopathic chronic pancreatitis. Omega-3 fatty-acid products show promise as adjunctive agents in refractory cases in patients with elevated triglyceride levels [3].

Anatomic anomalies such as abnormal union of the pancreatobiliary junction are an indication for surgery. In patients with outflow tract obstruction of pancreatic juices caused by ampulla of Vater anomalies or pancreatic divisum, endoscopic sphincterotomy is effective.

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