Isolated cases and small series of acute pancreatitis complicating viral infections have been reported. However, data on the natural history of such patients are sparse. We report a series of five patients of acute pancreatitis complicating diverse viral infections. During follow-up ranging from 6 to 36 months, two of these five patients developed evidence of chronic pancreatitis.

Acute pancreatitis complicating viral infections has been described in the form of isolated case reports and small series. The commonly implicated viral infections have been coxsackie virus, hepatitis viruses, mumps, varicella, herpes simplex and cytomegalovirus. However, the etiopathogenesis of pancreatitis in viral infections remains unclear. Also, the natural history of such pancreatitis has not been adequately studied.

We report five patients with features of acute pancreatitis which developed during the course of viral infections in the absence of another apparent cause. The patients were followed up for periods ranging from 6 to 36 months.

Case reports (Table)

Case 1
A 52-year-old man presented with icteric, non-fulminant acute viral hepatitis. HBsAg and IgM anti-HBc were positive. During the illness, he developed severe epigastric pain. Ultrasonography (USG) showed bulky pancreas and serum amylase was elevated (118 u/L, normal range 28–100 u/L). Contrast-enhanced computed tomography (CECT) revealed Balthazar grade B acute pancreatitis, with no evidence of chronic pancreatitis. He did not smoke or consume alcohol, but had significant cassava intake. He was non-diabetic and had no co-morbidities. On follow-up, he had two episodes of acute uncomplicated pancreatitis unrelated to any infection, after 9- and 36-months from the first episode. Imaging after the third episode (3 years later) showed a few specks of pancreatic calcification.

Case 2
A 33-year-old man presented with abdominal pain during the course of a varicella infection. He had been receiving nifedipine and metoprolol for nearly 3 years for systemic hypertension with chronic renal failure. He gave a history of social drinking of alcohol (<40 g/day, once a week) and smoking (20 cigarettes per day) till nearly one-and-a-half years ago and consumed cassava occasionally. His maternal grandfather had diabetes. USG showed enlarged pancreas suggestive of acute pancreatitis and elevated serum amylase (4688 u/L). He had an uncomplicated course with no sequelae till 6 months on follow-up.

Case 3
A 16-year-old girl presented with pancreatic type of pain 3 weeks after an attack of dengue fever. CECT abdomen showed an enlarged pancreas with peripancreatic collection. Serum amylase was 439 u/L. IgM antibodies for dengue virus were detected. She consumed cassava only occasionally and did not smoke or consume alcohol. Her father had chronic pancreatitis with diabetes. She had an uncomplicated course with no sequelae till 2 years of follow-up.

Case 4
A 20-year-old man presented with acute viral hepatitis A

<table>
<thead>
<tr>
<th>No.</th>
<th>Age (years)</th>
<th>Infection</th>
<th>S. amylase*</th>
<th>CT severity index</th>
<th>Other findings</th>
<th>Alcohol intake</th>
<th>Smoking</th>
<th>Cassava</th>
<th>Family history</th>
<th>Diabetes</th>
<th>Pancreatitis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1*</td>
<td>51</td>
<td>Hepatitis B</td>
<td>118</td>
<td>B</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Significant</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>2</td>
<td>33</td>
<td>Varicella</td>
<td>4688</td>
<td>-</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Occasional</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>3</td>
<td>16</td>
<td>Dengue</td>
<td>439</td>
<td>B</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Occasional</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>4</td>
<td>20</td>
<td>Hepatitis A</td>
<td>109</td>
<td>B</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>5*</td>
<td>47</td>
<td>Mumps</td>
<td>781</td>
<td>C</td>
<td>Renal failure</td>
<td>Yes</td>
<td>No</td>
<td>Significant</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

*Normal range 28–100 units/L
* Patients who developed chronic pancreatitis on follow up
(positive IgM anti-HAV). He developed severe upper abdominal pain, with elevated serum amylase level, and findings of bulky pancreas suggestive of acute pancreatitis on imaging. He did not consume alcohol, tobacco or cassava. He had no co-morbid illness. He developed mild renal failure, and improved on conservative management; he has no sequelae on follow-up till 1 year.

**Case 5**

A 47-year-old man was admitted with acute pancreatitis 2 weeks after developing mumps. He had positive IgM antibodies for mumps. His serum amylase was 781 u/L. CT abdomen with contrast showed Balthazar grade C acute pancreatitis. Subsequently, he also developed orchitis. No other cause for pancreatitis was apparent. He gave a history of beer ingestion, but no binge drinking, significant cassava intake and no smoking. He was non-diabetic. His brother had diabetes. There was no family history of pancreatitis. He had two more attacks of mild-to-moderate pancreatitis after 6 and 18-months, which were not related to any viral infection. CECT abdomen done after the third episode (one-and-a-half years after the first episode) showed changes of chronic pancreatitis in the form of pancreatic calculi.

**Discussion**

There have been only isolated case reports of acute pancreatitis following viral infections, most commonly following coxsackie and mumps virus infections; and in these cases, the disease severity has been mild to moderate. However, acute hemorrhagic pancreatitis complicating mumps infection has been reported. Though acute pancreatitis is common in fulminant hepatic failure, it is rarely reported with acute non-fulminant viral hepatitis. There are two small case series from India on acute pancreatitis complicating acute viral hepatitis. Most of these patients had mild-to-moderate pancreatitis with a relatively benign course and uneventful recovery.

Detection of biliary sludge in acute pancreatitis following hepatitis A infection has been described. The significance of this finding in the etiopathogenesis of acute pancreatitis in this setting is unclear. There are also isolated case reports of acute pancreatitis associated with interferon-alpha therapy for chronic hepatitis C infection. The role of viral infections in the etiopathogenesis of pancreatitis has been examined in both animal and human studies. The occurrence of acute pancreatitis in only 10%–20% of persons who abuse alcohol has led to the search for various co-factors in the etiopathogenesis of alcoholic pancreatitis, including smoking, dietary factors and genetic mutations. Studies in animal models by Jerrels et al seem to suggest a role for viral infections as a co-factor.

Balakrishnan et al found that patients with tropical pancreatitis more often had antibodies to the mumps virus and cytomegalovirus and less often had antibodies to rubella than healthy controls. In another study, 66% of patients with tropical pancreatitis were found to have anticoxackie antibodies, compared with none of the controls. Rapid evolution to chronic pancreatitis in humans on follow-up has been reported. It is likely that rapid evolution of changes of chronic pancreatitis may reflect the effect of co-factors. However, this has not been as well characterized as in alcoholic liver disease where hepatitis B and C have been shown as definite co-factors which can accelerate the progression of the disease. The TIGAR-O classification, the SAPE hypothesis and the 3-domain model for chronic pancreatitis by Whitcomb et al are now increasingly accepted to represent a paradigm shift in the understanding of etiopathogenesis of pancreatitis.

This case series highlights the fact that the occurrence of acute pancreatitis complicating viral infections is not infrequent and could occur following several viral infections. A high index of suspicion and appropriate diagnostic studies are required to detect this complication early. Two patients in this series went on to have multiple attacks of pancreatitis unrelated to viral infections and developed features of chronic pancreatitis. To our knowledge, this is the first report of chronic pancreatitis developing over a short period following an attack of acute pancreatitis associated with a viral infection.

It would still be a matter of speculation whether viral infection-induced acute pancreatitis could progress to recurrent acute pancreatitis, and then to chronic pancreatitis, even after apparent resolution of the viral infection. In patients who are predisposed to chronic pancreatitis, the triggering event could be an episode of acute pancreatitis following a viral infection. An altered immune response so generated could possibly result in progression to chronic pancreatitis. Both these patients had no symptoms to suggest the possibility of tropical pancreatitis, viz. childhood pain, cassava intake, malnutrition, family history; nor did they have the typical clinical profile as they were in the fourth decade of life at the time of presentation, non-diabetic and gave no history of persistent pain; thus making the diagnosis of tropical pancreatitis unlikely. However, a possibility cannot be ruled out that first attacks might not have been caused by viral infection, but could be first attacks of idiopathic pancreatitis occurring during acute viral infections. The role of viral infections as co-factors in various forms of pancreatitis remains inconclusive.
Acute pancreatitis in viral infections

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References


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Image

Intestinal cystic pneumatosis in Crohn’s disease

A 28-year-old man with Crohn’s disease, treated clinically with corticosteroids (40 mg/day) and mesalazine (2.4 g/day) over a four-year period, was admitted to the emergency service. He complained of abdominal distension and fullness, diarrhea, vomiting, chill, and fever. He was febrile and slightly dehydrated. Laboratory tests were inconclusive, with leucocytosis (12,400/mm3), hypokalemia and elevated creatinine. X-ray of the abdomen showed the presence of a massive bilateral pneumoperitoneum, together with jejuno-ileal distension. Exploratory laparotomy showed a distal ileum stricture approximately 10 cm in length. This was associated with numerous gaseous cystic lesions dispersed in the jejunum and ileum (Figure).

Intestinal cystic pneumatosis (ICP) is a rare disease, characterized by the presence of multiple gaseous cysts in the intestinal wall, involving the sub-serous and sub-mucosal layers. It is present in the small bowel in 42% of cases and large bowel in 36%, with diffuse involvement in 22% and upon rupturing results in pneumoperitoneum.1

Clinically, it can appear in the isolated form in 25% of cases, when it is termed primary ICP. If associated with another disease, it is considered secondary.2 The development of ICP may be associated with Crohn disease, gastrointestinal and pulmonary pathology, collagenesis, AIDS, transplantations, immunosuppressive agents,3 and with endoscopic procedures that injure the mucosa, such as polypectomy or biopsy of the intestinal mucosa.2

Initially, treatment is conservative and includes hemodynamic and fluid / electrolyte support and antibiotics; hyperbaric oxygen therapy has also been found to be

Figure: Extensive cystic pneumatosis in intestinal wall

References


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