Unusual presentation of more common disease/injury

Pancreatic pseudocyst formation due to non-traumatic pancreatitis in a 3-year-old child

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Summary

A pancreatic pseudocyst is a localised collection of pancreatic secretions that lacks a true epithelial lining and is walled off by granulation tissue. A rare case of pancreatic pseudocyst formation due to non-traumatic pancreatitis in a 3-year-old boy is described. The child was presented with fever, abdominal pain and vomiting for a period of 5 days. Ultrasonography and CT scan examinations were performed and biochemical and haematological investigations were undertaken. A pancreatic pseudocyst was identified and operatively managed by cystogastrostomy.

BACKGROUND

Pancreatitis and pancreatic pseudocysts are uncommon in infancy and childhood. Their rarity is considered to be owing to a limited case reporting and underdiagnosis by physicians, meaning the frequency and true incidences of pancreatitis among children is unknown.^{1 2} A large proportion of childhood pancreatitis arises because of blunt abdominal injury. However, this case describes a young boy in whom a pancreatic pseudocyst developed shortly after an attack of acute pancreatitis of non-traumatic aetiology (figure 1). This is an extremely rare occurrence, and there are only a small number of such early childhood pancreatic pseudocysts described in the literature.² This case report focuses upon the importance of idiopathic pancreatitis in the genesis of pancreatic pseudocyst.

CASE PRESENTATION

A 3-year-old boy was admitted with fever, abdominal pain and vomiting for 5 days. There was no recent or an earlier history of trauma. The child did not complain of constipation, haematemesis or melaena. Upon examination, he was found to be mildly dehydrated and had a pulse rate of 116/min and a temperature of 37.5°C. An abdominal examination revealed guarding and rigidity predominantly in the epigastrium and left hypochondrium, and marked tenderness in the left hypochondrium and left lumbar region.

Laboratory investigations

Blood investigations revealed raised levels of leucocytes (9000 cells/mm³) and a raised serum amylase level (480 IU/l) while the remainder of the haematological and biochemical investigations were within normal limits.

Radiological investigations

A plain abdominal radiography was found to be normal; however, an ultrasound of the abdomen revealed a 7.4×6.7 cm sized well-defined, thick-walled (0.4 cm) cystic lesion with dense internal echoes located in the

epigastrium, and the left hypochondrium displacing the left kidney inferiorly (figure 2). The pancreas could not be visualised separately from the lesion and a small number of enlarged lymphnodes were noted in peripancreatic and paraumbilical regions. The remainders of visualised intra-abdominal organs were normal and no free fluid was identified in the abdomen or pelvis. The child was further investigated by CT which confirmed a 9.2×7.2×7.2 cm well-defined lesion with a peripherally enhancing wall related to the body and tail of the pancreas. There was no evidence of calcification or fat density within the lesion; the head and proximal part of the body of pancreas appeared normal and the lesion abutted and displaced the stomach, spleen, left kidney and transverse colon.

The investigations were consistent with a pancreatic pseudocyst, with the possibility of secondary infection.

TREATMENT

The patient was rehydrated with intravenous fluids and treated with systemic antibiotics (ceftriaxone 75 mg/kg/day, gentamicin 5 mg/kg three times a day). After 48 h, the patient was well hydrated and had become afebrile. The white blood cell count had fallen to 6000 cells/mm³, and a definitive surgery to drain for pancreatic pseudocyst was planned. Five days after admission, laparotomy and transgastric cystogastrostomy was undertaken through a midline incision (figure 3). Surgical drains were laid within the lesser sac and in pelvis.

OUTCOME AND FOLLOW-UP

The surgery was uncomplicated and the postoperative recovery period was unremarkable. The child was treated with ceftriaxone (50 mg/kg/day), gentamicin (5 mg/kg three times a day for 10 days) and assessed clinically on a daily basis. He made an uneventful recovery and was discharged home on the 12th postoperative day. The child was followed up in the OPD after the 15th day and he had remained well.

Figure 1 Ultrasonography image showing well-defined, thick-walled pancreatic pseudocyst with echoes within it and few enlarged lymphnodes. Left kidney displaced inferiorly by pseudocyst.

DISCUSSION

A pancreatic pseudocyst is a fluid-filled sac in relation to the pancreas, which is not epithelially lined and contains pancreatic enzymes, blood and necrotic tissue (figure 4). Pseudocysts are uncommon lesions in infancy and childhood. In the mid-1970s, Cooney *et al*¹ reviewed the literature and identified worldwide only 60 well-documented paediatric cases.

The predominant causes include abdominal trauma (23%), anomalies of the pancreatico-biliary system (15%), multisystem disease (14%), drugs and toxins (12%), viral infections (10%), hereditary disorders (2%) and metabolic disorders (2%). In up to 25% of cases the aetiology of childhood pancreatitis is unknown. In the USA, trauma is responsible for about 15–37% of cases.²

The prognosis of most children with acute pancreatitis is excellent, although pseudocysts have been reported to complicate 10–23% of acute episodes.² Pseudocyst formation appears to be more common after abdominal trauma and the rate of pseudocyst formation is described in up to 50% cases.² In all approximately 60% of pancreatic pseudocysts that are caused by blunt trauma require a surgical intervention.²

Children with pancreatic pseudocysts may present with localised abdominal pain and a palpable tender epigastric mass or abdominal fullness. Additional symptoms include jaundice, chest pain, nausea, vomiting, anorexia, weight loss, fever, ascites and, rarely, gastrointestinal haemorrhage.

If pancreatitis is suspected, amylase and lipase levels should be measured, as they may support a clinical diagnosis. However, these laboratory test findings alone are not reliable or cost effective as a screening tool, and the magnitude of enzyme elevation does not correlate with the severity of pancreatic injury.³

Ultrasonography and CT scan are useful for confirmatory diagnosis of pancreatic pseudocyst.

Medical management of acute pancreatitis aims to achieve adequate rehydration, analgesia and pancreatic rest, and to restore normal metabolic homeostasis.

Acute pancreatic pseudocysts smaller than 5 cm in diameter are managed with observation for 4–6 weeks, because most of them get resolved spontaneously. Pancreatic pseudocysts larger than 5 cm in diameter may require surgical interventions such as ultrasonography-guided or CT-guided percutaneous drainage endoscopic

Figure 2 Postcontrast CT scan images, axial and coronal sections showing well-defined cystic-fluid-density lesion with peripheral enhancing wall in the left hypochondrium.

Figure 3 Intraoperative image showing a transgastric approach for pancreatic pseudocyst. Surgical drain noted in situ.

drainage or internal drainage via cyst-gastrostomy or cyst-enterostomy.⁴

However, prior to an intervention, a period of a conservative therapy of approximately 4–6 weeks to allow the cyst wall to mature is appropriate. Results from a study by Ford *et al*⁵ indicate that pancreatic pseudocysts larger than 10 cm in diameter in children are associated with an increased risk for spontaneous rupture and, thus, require aggressive monitoring.

Figure 4 Histopathological image: fibrous wall showing scattered lymphocytic cells and vascular congestion. Since no epithelial lining is seen, the diagnosis of pancreatic pseudocyst is confirmed.

A surgical management of pancreatic pseudocyst is highly successful and it is indicated in symptomatic pseudocysts. Recurrence and mortality rates are low and internal drainage is associated with lower recurrence rates compared to percutaneous or endoscopic drainage.⁴

Learning points

- ▶ Pancreatitis and pancreatic pseudocyst are uncommon in the paediatric population; clinicians evaluating paediatric patients with symptoms of abdominal pain should have a high index of suspicion for pancreatitis.
- ▶ The common aetiology in the paediatric population is trauma; however, non-traumatic pancreatitis can also lead to pancreatic pseudocyst formation as demonstrated in this case.
- ▶ Ultrasonography is the preferred investigation tool for evaluation of paediatric pancreas, as it avoids exposure to ionising radiation and can often be performed without sedation.
- ▶ CT imaging may be helpful in the diagnosis of chronic pancreatitis, where the results of ultrasound are equivocal, and in the assessment of the complication of pancreatitis.

Competing interests None.

Patient consent Obtained.

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