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CASE REPORT

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A rare case of pediatric pancreatic pseudocyst

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Abstract

We present a case report of a 2-year-old boy who presented to a local hospital to evaluate vague abdominal symptoms of one-month duration. The patient, therefore, had an open cystogastrostomy and drainage of the free abdominal fluid with minimal complications. He was monitored for several days after his surgery.

KEYWORDS

gut, pancreatic pseudocyst, pathology, surgery

1 | INTRODUCTION

Pancreatic pseudocyst is a fluid-filled sac formed in the abdomen containing pancreatic enzymes and necrotic tissue surrounded by a non-epithelialized wall of fibrous tissue.[1,2] Pseudocyst formation occurs from pancreatic ductal system disruption due to pancreatitis or any trauma resulting in fluid and enzyme accumulation. Overall, the prevalence of pancreatic pseudocyst ranges from 0.5 to 1 per 100,000 adults per year.[2] Clinical presentation of pancreatic pseudocyst includes nausea, vomiting, and abdominal pain.[3] Patients may present asymptomatic or in severe distress due to severe complications, including bleeding, infection, biliary obstruction, and thrombosis of the splenic and portal veins.[4] Imaging modalities are the cornerstone in diagnosis, and the gold standard is contrast-enhanced computed tomography (CT) of the abdomen. However, it has a limitation as it cannot distinguish pseudocyst from neoplastic cystic lesions.[5,6] Management of such cases is varied based on the presentation and anatomy of pseudocyst. Many studies concluded that the size and duration of the pseudocyst are poor predictors for pseudocyst resolution and increase the likelihood of the cyst becoming symptomatic or causing complications.[7]

2 | CASE PRESENTATION

We present a case report of a 2-year-old boy who presented to a local hospital of a low-to-middle income country to evaluate vague abdominal symptoms of one-month duration. The patient was born at 38 weeks of gestational age and was delivered normally. He met his developmental milestones. His mother was diagnosed with pica during the patient's developmental period, concerning his family

medical history. His father passed away at the age of 30 due to an unknown bleeding disorder.

One month before presentation, the patient started to experience "vague" symptoms of fever, decreased oral intake, as well as recurrent episodes of vomiting. His symptoms were initially managed with over-the-counter medications but worsened 15 days before presentation when the patient's vomiting episodes increased in frequency. His parents note that the patient became more dehydrated and "looked dry." The patient later developed increasing episodes of "watery diarrhea."

Upon presentation, his initial vitals were a weight of 10.5 kg, a pulse of 110 beats per minute, blood pressure of 115/85 mm Hg, respiratory rate of 40 breaths per minute, and a temperature of 100.0 degrees F. A physical examination revealed a mildly dehydrated young male in acute distress. A focused abdominal examination revealed abdominal distension with a palpable epigastric mass as the patient was in acute distress. Laboratory work revealed microcytic anemia, thrombocytopenia, and slightly elevated amylase, as shown in Table 1.

A bedside abdominal ultrasonography (USG) revealed the presence of a pancreatic pseudocyst with mild abdominal ascites. He was admitted for further management. After admission, conservative treatment was started with the patient being made NPO with intravenous fluids. After one week, intravenous ampicillin, intravenous dextrose saline, and oral calcium supplementation were started. A CT scan of the abdomen with and without contrast demonstrated the presence of a large cystic area in the lesser sac region behind the patient's stomach with both intra and extrahepatic cholestasis and a right inguinal hernia (Figure 1). General surgery was consulted, and the patient underwent surgical removal of his pancreatic pseudocyst following an immediate blood transfusion. Before the patient's surgery, a repeat abdominal USG demonstrated the presence of an 11.7 × 8.8 × 10.5 cm pancreatic pseudocyst containing 577 mL of free fluid inside a wall with a thickness of 6.4 mm (Figure 2). The patient, therefore, had an open cystogastrostomy and drainage of the free abdominal fluid with minimal complications. He was monitored for several days after his surgery. No acute events occurred, and he was discharged back home.

TABLE 1 Laboratory work during hospitalization

Laboratory test	Admission	Reference range
WBC	7.8	4.5–11 × 10^7/L
Hgb	6.5	12–15.5 g/dl
Hct	—	36%–1.44%–3%
MCV	62.8	80–100 fl
Plt	67	155–450 × 10^3/μl
Na	136	135–145 mEq/L
K	3.5	3.5–5.0 mEq/L
CO_2	—	23–29 mEq/L
Cl	100	96–106 mEq/L
Cr	0.26	0.59–1.04 mg/dl
BUN	—	2.5–7.1 mmol/L
Glucose	—	65–99 mg/dl
Mg	—	1.7–2.2 mg/dl
Ca	7.7	8.6–10.3 mg/dl
Amylase	135	30–110 μ/L
D-Dimer	>10,000	0–250 ng/ml

Abbreviations: BUN, blood urea nitrogen; Ca, calcium; Cl, chlorine; CO_2, carbon dioxide(serum); Cr, creatinine; Hct, hematocrit; Hgb, hemoglobin; K, potassium; MCV, mean corpuscular volume; Mg, magnesium; Na, sodium; Plt, platelet; WBC, white blood cell.

3 | DISCUSSION

This case report describes a 2-year-old boy who developed a pancreatic pseudocyst with no identifiable cause. Pediatric pancreatic pseudocysts are a rare entity that differ in presentation and etiological factors from adult pancreatic pseudocysts. The risk factors and development of the disease are not well described due to the rarity of reported case reports and difficult diagnoses.[8] The earliest reports indicate that pediatric pancreatic pseudocysts more commonly occur in male children with an average age of 7.5 years.[9]

The most common risk factor in such pediatric pancreatic pseudocyst is abdominal trauma, with motor vehicle accidents causing abdominal trauma being a common cause, unlike adult pseudocysts which are usually caused due to toxins.[9] Additionally, abdominal trauma due to child abuse could also predispose children to the development of pancreatic pseudocysts and other pancreatic injuries.[10] Thus, physicians diagnosing pancreatic problems should always be on high alert for child abuse and look for other clinical signs of abuse. Other risk factors include pancreatitis, anomalies of the pancreaticobiliary system, exposure to toxins, or infections.[8,9] However, in about 25% of described cases, no cause is identified.[9]

Patient presentation varies widely with nonspecific gastrointestinal signs and symptoms such as abdominal pain (most commonly), vomiting, a tender abdominal mass, and fever.[8,11] In this case, the patient presented with no identifiable cause for the pancreatic pseudocyst, vague gastrointestinal symptoms, and a palpable abdominal mass consistent with other findings of pancreatic pseudocysts reported in the literature.

The best diagnostic test for pediatric pancreatic injuries is an abdominal USG, as with a USG, exposure to ionizing

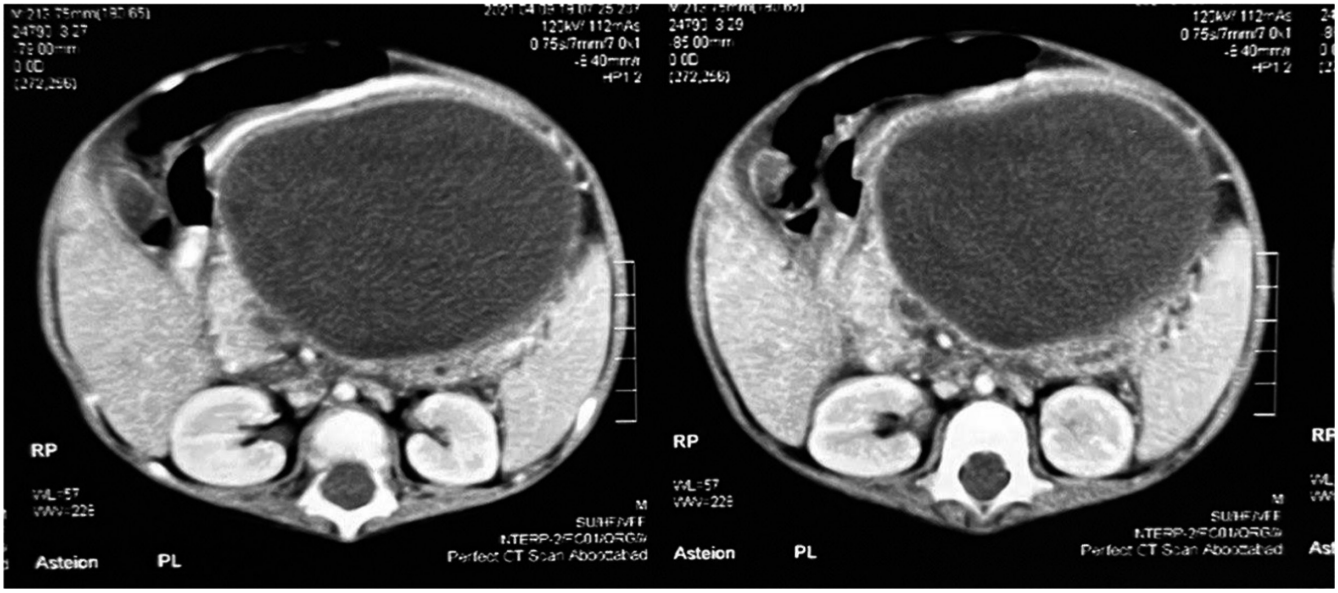

FIGURE 1 Axial CT scan of the abdomen showing giant sac circumscribed with collection of fluids and enzymes

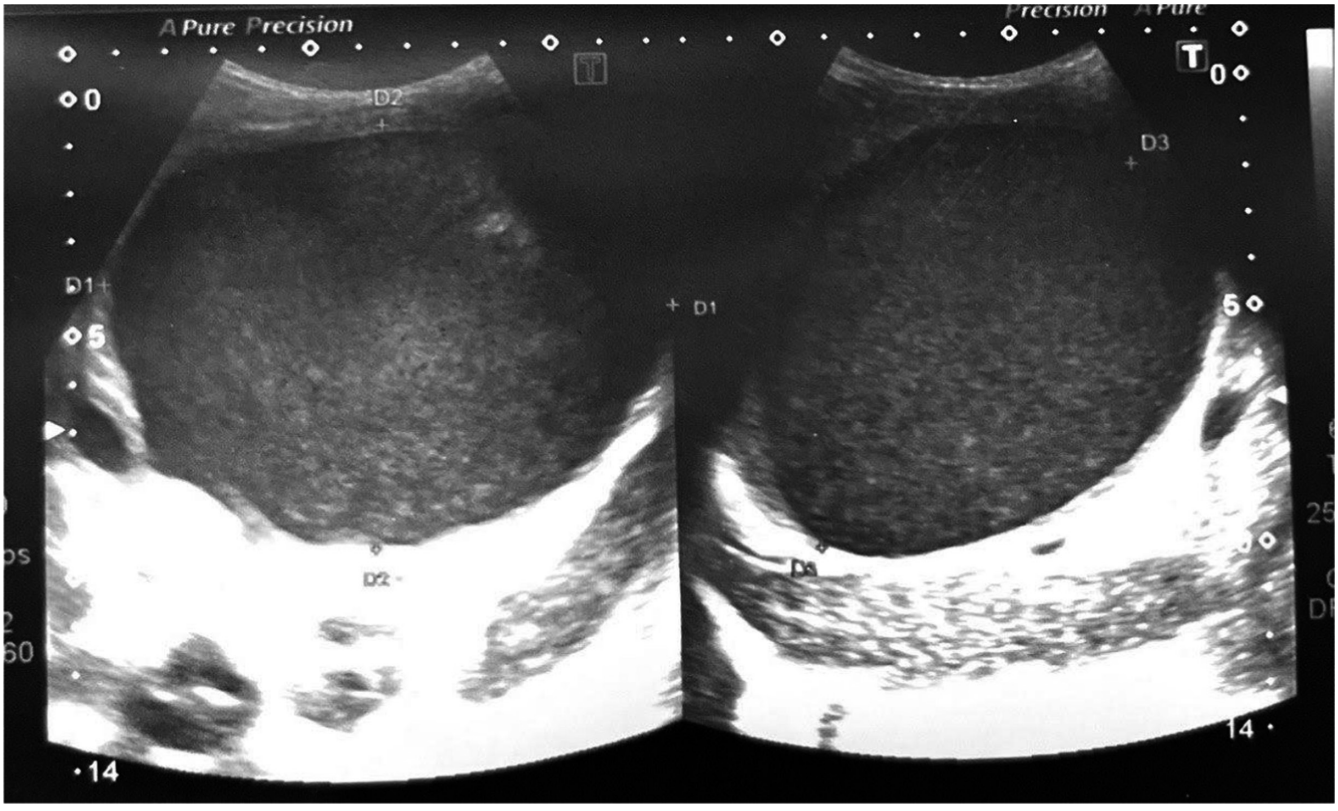

FIGURE 2 Abdominal ultrasonography demonstrated the presence of an 11.7 × 8.8 × 10.5 cm pancreatic pseudocyst containing free fluid inside a wall with a thickness of 6.4 mm

radiation is avoided, and sedation would not be required.[8] Other imaging diagnostics modalities such as Endoscopic retrograde cholangiopancreatography (ERCP) and Magnetic resonance cholangiopancreatography (MRCP) are also valuable tools in establishing the diagnosis and could aid in disease management; however, their availability could be limited, especially in lower-and-middle-income countries.[12] On the contrary, CT scans play a limited role in

the early diagnosis as they have low sensitivity for detecting acute pancreatic injuries but help assess injuries before surgical removal.[13] Other laboratory tests such as amylase are usually nonspecific, and an elevated amylase level is not required to diagnose a pseudocyst.[13] A minority of patients with pancreatic injuries and pseudocysts can present normal amylase levels on admission.[14] However, amylase testing can be used to monitor the response to treatment and the development of a pancreatic pseudocyst in children that present with other abnormalities.[13,15]

Management of pediatric pancreatic pseudocyst is controversial, with some authors preferring conservative management while others prefer surgical management. Conservative management is preferred for acute pediatric pancreatic pseudocysts that measure less than 5 cm as there is an increased chance of spontaneous resolution.[12] Conservative management consists of resting the pancreas with measures such as total parenteral nutrition and octreotide acetate, which usually results in full recovery in 6–8 weeks.[16] There are also certain minimally invasive techniques such as laparoscopic, percutaneous, and endoscopic drainage with very favorable results; however, these are usually difficult to perform in low-to-middle-income countries due to lack of experienced surgeons and equipment.[16,17]

Our patient presented with a large pancreatic pseudocyst (11.7 × 8.8 × 10.5 cm) that was not resolved with conservative management, necessitating cyst drainage using an open surgical technique. Previous literature shows excellent outcomes with surgical management of pancreatic pseudocysts and is usually curable.[12,18] The choice of a surgical method for drainage or removal depends on the anatomy of the pseudocyst.[12] In our case, the pseudocyst is located in the lesser sac of the abdomen posterior to the stomach, necessitating a cystogastrostomy for complete removal of the pseudocyst.

AUTHOR CONTRIBUTIONS

VJ, AI, JQ, and NB have written the manuscript. NBP, DM, and SN performed critical edits of the draft and prepared the final version of this manuscript, which was approved by all authors.

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CONFLICT OF INTEREST

The abstract of this case has been presented at "American College of Gastroenterology" conference, and simultaneously published in The American Journal of Gastroenterology supplement with 10.14309/01.ajg.0000779892.25236.bc.

DATA AVAILABILITY STATEMENT

Available apon resonable request from Corresponding author

ETHICAL APPROVAL

Not required.

CONSENT

Written informed consent was obtained from the patient to publish this report in accordance with the journal's patient consent policy.

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