ECRONICON OPEN ACCESS

EC CLINICAL AND MEDICAL CASE REPORTS

Case Report

Superinfected and Fistulized Pancreatic Pseudocyst in the Lung: Case Report and Literature Review

Sanae Azitoune[2]*, A Radi[1], C Aoussar[2], Ouchen Mounaim[3], Bouljrouf Jaouad[3], Kisra Mounir[3] and R Abilkassem[1]

[1]*Department of Pediatrics, Military Hospital Mohamed V of Rabat, Morocco*

[2]*Department of Pediatrics, Children's Hospital of Rabat, Morocco*

[3]*Pediatric Surgery Department, Children's Hospital of Rabat, Morocco*

***Corresponding Author:** Sanae Azitoune, Department of Pediatrics, Children's Hospital of Rabat, Morocco.

Received: November 01, 2024; **Published:** November 25, 2024

Abstract

Pancreatic pseudocysts (PPC) are rare in children. The most common causes are traumatic or medical pancreatitis. Conservative management should be the first-line treatment, involving clinical, biological, and radiological monitoring. Drainage is only indicated in the presence of complications, including infection, fistula formation, gastric or bile duct obstruction, obstructive jaundice, spontaneous rupture, or massive hemorrhage. Our aim is to emphasize the importance of early and adequate diagnosis and management to prevent the development of potentially life-threatening complications, based on our experience in the general pediatrics department of the Children's Hospital in Rabat, as well as a review of the literature.

We report the case of an 11-year-old girl with a pancreatic pseudocyst located above and below the diaphragm, which was superinfected and fistulized into the lung.

Keywords: Pancreatic Pseudocyst; Pancreatitis; Complications; Drainage

Case Report

An 11-year-old girl, born from a non-consanguineous marriage, was admitted with acute pancreatitis and respiratory distress, progressing in a context of unquantified weight loss. Her medical history includes intermittent episodes of epigastric pain since the age of 5, which were treated symptomatically but never investigated, with no history of abdominal trauma.

Clinical examination revealed a conscious, cachectic child in the "dog sitting" position, without signs of dehydration, but with digital clubbing. Abdominal examination showed epigastric tenderness, without hepatosplenomegaly, and pleuropulmonary examination revealed thoracic protrusion with signs of respiratory distress.

Laboratory tests indicated lipase levels greater than 3 times the normal value, an elevated inflammatory profile, normal liver function tests, normal tuberculosis screening, and normal AFP and β-HCG levels.

Imaging studies (thoracoabdominal CT scan and MRI) revealed a pancreatic pseudocyst located at the right lower mediastinum, extending into the inframediastinal space, with moderate bilateral pleural effusion.

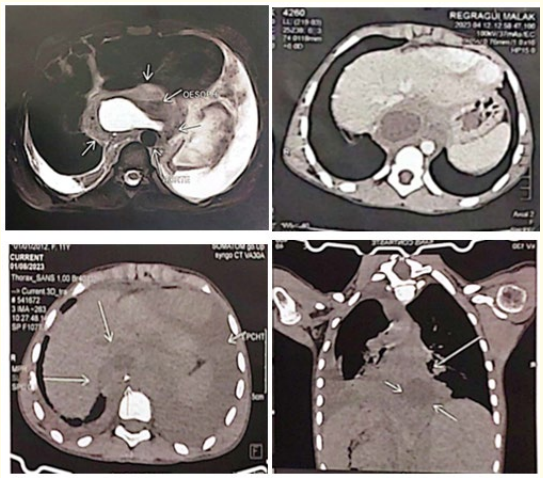

Figure 1: *MRI showing a cystic mass in the retro-mediastinum and another in the retroperitoneum extending to the pancreas.*

External surgical drainage was performed (drain kept in place for 10 days), accompanied by broad-spectrum antibiotic therapy due to superinfection of the cyst. Fluid analysis revealed high amylase levels. One month later, due to the persistence of symptoms, a pancreatico-digestive bypass was performed, resulting in good clinical improvement.

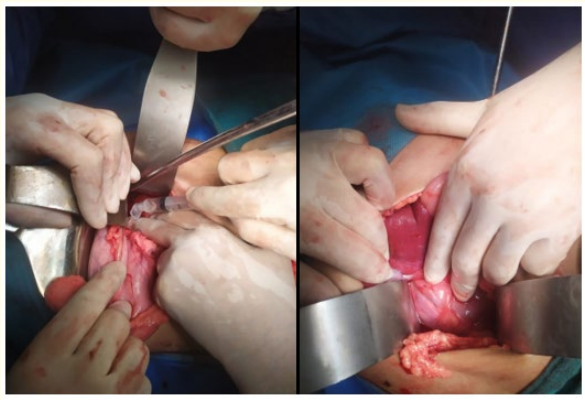

Figure 2: *Pseudocyst of the posterior mediastinal pancreas, puncture bringing back purulent fluid.*

Discussion

Pancreatic pseudocysts (PPCs) are fluid collections limited by granulation tissue resulting from inflammation of the serosal surfaces of adjacent organs. They typically develop 4 to 8 weeks after rupture of the main pancreatic duct, secondary to pancreatitis or trauma,

leading to the accumulation of pancreatic secretions in the retroperitoneum or surrounding tissues [1-3]. The incidence of PPC formation following trauma varies from zero to 69%, depending on the series [6-8]. In a series of 24 children with PPC, Teh. *et al*. reported 11 (45%) cases of traumatic origin [7]. In addition to trauma, pseudocysts are categorized as occurring in chronic pancreatitis (20 - 40% of cases) or following an episode of acute pancreatitis (16 - 50% of cases) [7].

The most common causes of pancreatitis in children include trauma, infections, genetic mutations (PRSS1, SPINK1), autoimmune disorders, or anatomical abnormalities. In our patient, the cause remains undetermined, but the absence of trauma suggests other etiologies of pancreatitis [15,16].

The most frequent local complications of pancreatitis are, in order of frequency, pseudocyst formation, pancreatic necrosis, duodenal obstruction, splenomesenteric thrombosis, and gastrointestinal hemorrhage. These complications can occur remotely from the acute episode, especially in cases of necrotizing pancreatitis [5]. Pseudocysts typically appear between 5 days and 6 weeks post-insult, sometimes later, necessitating regular clinical and ultrasound monitoring until the patient's clinical and biological status returns to normal.

Pancreatic pseudocysts can be asymptomatic or present with symptoms such as abdominal pain, fullness, nausea, vomiting, and upper gastrointestinal bleeding.

Spontaneous resolution of pancreatic pseudocysts is more frequently observed in children than in adults, especially in acute lesions that persist for less than 6 weeks. The mechanism of spontaneous resolution is unclear, but it may occur through spontaneous drainage into the pancreatic duct or adjacent intestines [9]. Many researchers recommend therapeutic intervention for pseudocysts persisting beyond 6 weeks, as spontaneous resolution is less likely, and the walls of the pseudocyst become mature enough for internal drainage [4]. In a series of 24 cases of PPC of traumatic and non-traumatic origin, Teh., *et al*. reported a 29% rate of spontaneous resolution [7].

PPCs can become superinfected, evolve into pancreatic abscesses, or bleed (intracystic hemorrhage or wirsungorrhagia if the pseudocyst communicates with the pancreatic duct), or rupture into the digestive tract or other organs. Compression of the splenoportal axis can lead to segmental portal hypertension, while compression of the biliary tract can cause cholestasis or jaundice. Duodenal compression results in high bowel obstruction, presenting with vomiting. Pancreaticopleural fistula, although rare, is a potential complication of PPC. It is therefore essential to test any aspirated fluid for lipase and amylase levels; the rate of spontaneous complications ranges from 26 to 41% [6,7]. In our patient, the pseudocyst was superinfected and had ruptured into the lung.

The discovery of a PPC necessitates daily clinical monitoring and weekly biological and ultrasound follow-ups to detect complications early.

Conservative management is recommended as first-line treatment, with regular clinical, biological, and radiological monitoring. Drainage of the PPC is indicated in cases of:

- Recurrent abdominal pain despite analgesics or digestive intolerance [6],
- Pseudocysts larger than 6 cm in diameter or persisting for more than 6 weeks after the initial episode [4],
- Large symptomatic pseudocysts or those causing complications such as bleeding, infection, or compression of adjacent structures,
- Recurrent or multiple PPCs.

Therapeutic interventions depend on the cyst's nature and location, the presence of complications, and the surgeon's experience. These interventions include percutaneous drainage, endoscopic drainage, and surgical drainage via laparotomy or, more recently, laparoscopy. Repeated percutaneous cyst punctures are distressing for patients and have a recurrence rate exceeding 70%.

Possible surgical interventions include cystic-enteric diversion, external drainage, and pancreatic resection [1]. External drainage is a simple technique with low mortality but can cause external pancreatic fistulas, which is why it is rarely used [14], although it remains indicated in cases of infected, ruptured, or hemorrhagic PPC. Cystic-enteric diversions are the surgical technique of choice, offering the lowest immediate complication rates and the best long-term outcomes [18]. The most commonly performed procedures are cystogastrostomy, cystoduodenostomy, and cystojejunostomy.

The largest pediatric series was reported by Sharma., *et al*. in 9 children: drainage was performed by endoscopic cystogastrostomy in all cases, with excellent results after an average follow-up of 5 years [14,17].

A study conducted at the Children's Hospital in Rabat [12] reported on five children with pancreatic pseudocysts treated between 1986 and 1998, 4 of which were of traumatic origin. All children underwent ultrasound-guided drainage, with drainage durations ranging from 1 to 10 days, resulting in positive outcomes in 3 cases. Internal drainage through cystogastrostomy was performed in two cases: one patient developed a cystogastric fistula on the fifth day of external drainage, while the other required two unsuccessful drainage attempts. No pseudocyst recurrence was observed, and the children who underwent surgery were able to return home 7 to 10 days [12].

A retrospective study in Tunisia reviewed seven cases of acute pancreatitis in children between 2004 and 2013. The study noted a male predominance (3 girls and 4 boys) and a clinical presentation dominated by constant, often atypical abdominal pain. Four cases were managed symptomatically, one surgically, and two patients underwent radiological drainage of a pancreatic pseudocyst. All patients had favorable outcomes [13].

Conclusion

Pancreatitis is a rare condition in children, presenting with a wide range of clinical manifestations. Early diagnosis, along with appropriate treatment, is essential to prevent both short- and long-term complications.

Bibliography

1. Ramos-Gonzalez GJ., *et al*. "Transduodenal cystoduodenostomy for pancreatic pseudocyst in two young children". *Journal of Pediatric Surgery Case Reports* 34 (2018): 20-22.

2. Cannon JW., *et al*. "Diagnosis and management of pancreatic pseudocysts: what is the evidence?" *Journal of the American College of Surgeons* 209.3 (2009): 385-393.

3. Dembélé SB., *et al*. "Pancreatic pseudocyst in a child: a case report from the district hospital of commune IV of Bamako". *SAS Journal of Surgery* 10.6 (2024): 656-661.

4. Moaied A Hassan. "Open cystogastrostomy in the management of a large pancreatic pseudocyst in a child". *Case Reports from the Journal of Pediatric Surgery* 59 (2020): 101504.

5. Sarles J. "Acute and chronic pancreatitis". In: Navarro J, Schmitz J, editors. Pediatric gastroenterology. Paris: Flammarion (2000): 582-588.

6. Nouira F., *et al*. "Pancreatic pseudocyst in children: what is the best therapeutic approach?" *Archives of Pediatrics* 18.11 (2011): 1176-1180.

7. Teh SH., *et al*. "Pancreatic pseudocyst in children: the impact of management strategies on outcomes". *Journal of Pediatric Surgery* 41.11 (2006): 1889-1893.

8. Benifla M and Weizman Z. "Acute pancreatitis in childhood: a review of the literature". *Journal of Clinical Gastroenterology* 37.2 (2003): 169-172.

9. Falchetti D., *et al*. "Endoscopic healing of pancreatic pseudocyst in a child". *Journal of Pediatric Gastroenterology and Nutrition* 27.4 (1998): 446-448.

10. Pan G., *et al*. "Classification and management of pancreatic pseudocysts". *Medicine* 94.24 (2015): e960.

11. Breckon V., *et al*. "Internal drainage of pancreatic pseudocysts in children using an endoscopically placed stent". *Pediatric Surgery International* 17.8 (2001): 621-623.

12. Kisra M., *et al*. "Pseudocysts of the pancreas in children in Morocco". *Journal of Pediatric Surgery* 34.9 (1999): 1327-1329.

13. Belhassen S., *et al*. "Acute pancreatitis in children: a report of seven cases". *Archives de Pediatrics* 21 (2014): 333-390.

14. Sharma SS and Maharshi S. "Endoscopic management of pancreatic pseudocyst in children and long-term follow-up". *Journal of Pediatric Surgery* 43.9 (2008): 1636-1639.

15. Appelros S and Borgstrom A. "Incidence, etiology and mortality rate of acute pancreatitis over 10 years in a defined urban population in Sweden". *British Journal of Surgery* 86.4 (1999): 465-470.

16. Whitcomb D., *et al*. "Third international symposium on inherited diseases of the pancreas". *Pancreatology* 1.5 (2001): 423-431.

17. Boudet MJ., *et al*. "Surgical treatment of pancreatic pseudocysts beyond excision". In: EMC-Surgical Techniques of the Digestive System. Créteil, France: Edition Tsunami (2009): 1913-1994.

18. Aldaz Apolo PA., *et al*. "Surgical treatment of pancreatic pseudocyst in a pediatric patient. Case report". *Scholars Journal of Medical Case Reports* 12.6 (2024): 1178-1181.

Volume 7 Issue 12 December 2024