PEDIATRIC SCIENCES JOURNAL
The Official Journal of the Pediatric Department, Faculty of Medicine, Cairo University, Egypt

Case Report

Painless Silent Chronic Fibrosing Pancreatitis Caused Complete Biliary Obstruction in a Toddler: A Case Report

Magd Ahmed Kotb[1], Mohamed Elbarbary[2], Sherif Kaddah[2], Martina Magdy[1], Rania Hamdy[3], Reham Osama Mahmoud[3], Nevian Nabil[1], Noha Adel Yassin[1], Ahmed Nabil[4], Ahmed El Hatw[5]*, Sayed Khedr [2]

[1] Department of Pediatrics, Faculty of Medicine, Cairo University, Egypt;
[2] Department of Pediatric Surgery, Faculty of Medicine, Cairo University, Egypt;
[3] Department *of* Radiodiagnosis, Faculty of Medicine, Cairo University, Egypt;
[4] Department of General Surgery, Faculty of Medicine, Cairo University, Egypt;
[5] Department of Pediatrics, Monmouth Medical Center, United States of America
***** Correspondence: ahmedelhatw@gmail.com
Received: 28/11/2024; Accepted: 29/12/2024; Published online: 1/1/2025

Abstract:

Chronic pancreatitis in toddlers presents typically by epigastric pain with radiation to the back, steatorrhea, or chronic weight loss despite adequate nutrition, nausea, vomiting, and/or diarrhea. Among adult almost 10% with chronic pancreatitis do not report pain. We report a 21-month-old boy who presented by jaundice, clay colored stool, elevated liver enzymes, and hepatomegaly. The mother reported that the child had no complaints otherwise. Hepatitis A virus IgM was positive. He was advised conservative treatment with no response. Two months later he presented by olive green jaundice, pruritus, clay stools, and no other complaints. The coronavirus disease-2019 (COVID-19) anti-spike IgM was positive. Abdominal ultrasound revealed dilatation of intrahepatic biliary radicals, right, left and common hepatic ducts with no abrupt dilation at common bile duct. MRCP and dynamic MRI of pancreas confirmed the findings and detected a bulky head of pancreas with atrophic body and tail compressing the common bile duct. He underwent percutaneous trans hepatic drainage (PTD) with T tube insertion for drainage of the biliary obstruction followed by Frey procedure with coring of pancreatic head to allow biliary drainage. The post-operative course was uneventful and within 3 weeks the jaundice cleared completely. The amylase and lipase dropped after 8 weeks. Chronic fibrosing pancreatitis might be associated with acute hepatitis or COVID-19 and might be painless and get masked by the obstructive jaundice. Chronic pancreatitis presenting by biliary obstruction might be mistaken for prolonged cholestatic hepatitis A infection. Chronic pancreatitis should be excluded in children with suspected prolonged cholestasis. Percutaneous trans hepatic drainage was a necessary step before Frey's procedure. Chronic pancreatitis in children is amenable to successful surgical intervention.

Keywords: chronic pancreatitis; COVID-19; Frey procedure; painless; toddler
Abbreviations: COVID-19: corona virus disease of 2019

Introduction

Symptoms of pancreatitis in children include abdominal pain, -which may be severe and persistent-, nausea, vomiting, fever, and a distended abdomen. Other possible symptoms include poor appetite, weight loss, jaundice, and diarrhea. In severe cases, children with pancreatitis may also experience dehydration, low blood pressure, and organ failure. It is crucial for children exhibiting these symptoms to seek medical attention promptly for proper evaluation and management of pancreatitis (*1*). In the young age pancreatitis is rare and etiology is poorly understood. Few reports describe hepatitis A virus induced pancreatitis. It occurs during the third week of infection (*2*). Others report that corona virus disease of 2019 (COVID-19) is an underestimated cause of pancreatitis as it might occur silently in almost 17% of cases with

COVID-19 pneumonia (*3*). Autoimmune pancreatitis is responsible for 2-6% of cases (*4*). Pancreatic fibrosis is the prevailing reversible pathology in early chronic pancreatitis (*5*). Pancreatic fibrosis was reported in scarce literature to cause obstructive jaundice in adults (*6*). We aim to describe our experience with a toddler who suffered from painless chronic fibrosing pancreatitis that caused complete biliary obstruction.

Case Presentation

A 21-month-old boy presented to New Children Hospital, Faculty of Medicine, Cairo University, Egypt by jaundice, dark urine and pale stool for 6 months. The parents reported 6 months earlier he developed jaundice that had a gradual onset and progressive course without abdominal pain, fever, vomiting, or diarrhea. There was no history of trauma or previous operations. There was no history of bleeding, rash, drug intake, gastrointestinal tract symptoms, renal symptoms or other system affection. Initially HAV IgM was positive so the patient was advised supportive home treatment in the form of a diet regimen and multi vitamins. He was diagnosed with prolonged cholestatic hepatitis A infection. There was no family history of similar condition in the family or previous hospital admission. He was born via cesarian section to non-consanguineous parents. The parents reported that there was no improvement over the past 6 months, with progression of the jaundice and the stools became clay. There was no history of drug intake before or during these 6 months. By examination, the child skin color was deep olive green, and his weight and height percentiles were at the 3rd percentile for his age (9 kg and 76cm respectively). Abdominal examination revealed hepatomegaly with no splenomegaly. Otherwise, examination was unremarkable.

His laboratory test results are presented in Table 1. He had marked elevation of total and direct bilirubin levels, and gamma glutamyl transferase (GGT), compared to 3-5-fold elevation of alanine aminotransferase (ALT), aspartate aminotransferase (AST). He had elevated serum amylase and lipase.

Table 1. Initial presenting lab findings of the toddler

	Value In toddler	Upper Level of Normal
Total bilirubin (mg%)	14.2	1
Direct bilirubin (mg%)	6.7	0.3
ALT (IU/L)	108	36
AST (IU/L)	142	36
GGT (IU/L)	837	60
Triglycerides (mg/dL)	185	175
Serum Cholesterol (mg/dL)	283	170
Low density lipoproteins (mg/dL)	203	100
High density lipoproteins (mg/dL)	15.9	15-25
Serum Amylase (U/L)	125	115
Serum lipase (U/L)	174	60
Serum calcium (mg/dL)	10	8.6-10.3
Antinuclear antibodies	Negative	Negative
Anti-liver microsomal antibodies (LKM)	Negative	Negative
Anti-tissue transglutaminase TTG IgA	Negative	Negative
Anti-tissue transglutaminase TTG IgG	Negative	Negative
Anti endomysial antibodies IgA	Negative	Negative
Anti endomysial antibodies IgG	Negative	Negative
Calprotectin in stools	50 µg/mg	200 µg/mg
Serum IgA level (mg/dL)	261.4	20-100
Serum IgG level (mg/dL)	1242	258-1393
COVID 19 anti-Spike antibodies (U/mL)	11.4 (Positive)	<10
COVID 19 IgM antibodies (U/mL)	10.39 (Positive)	<10
COVID 19 IgG antibodies (U/mL)	0.44 (Negative)	<10

ALT: alanine aminotransferase; AST: aspartate aminotransferase; GGT: gamma glutamyl transferase

We investigated the child for an underlying cause of this pancreatitis. His antinuclear antibodies (ANA), anti-liver microsomal antibodies (LKM), anti-tissue transglutaminase TTG IgA, anti-tissue transglutaminase TTG IgG, anti endomysial Ab (IgA- IgG), and calprotectin in stools were negative. His IgA level in serum was elevated and IgG level was within normal levels.

His COVID 19 anti-Spike antibodies were positive, COVID 19 IgM was positive and COVID 19 IgG was negative. The pelviabdominal ultrasound revealed dilated intrahepatic biliary radicals, right and left hepatic and common hepatic ducts with abrupt change at the common bile duct. No biliary stones were detected. Magnetic resonance cholangiopancreatography (MRCP) and dynamic magnetic resonance imaging (MRI) revealed non visualized distal part of common bile duct and adjoining part of pancreatic duct with associated dilatation of proximal part of pancreatic duct, proximal part of common bile duct, hepatic ducts and intrahepatic biliary radicals. Bulky head of pancreas with atrophic body and tail.

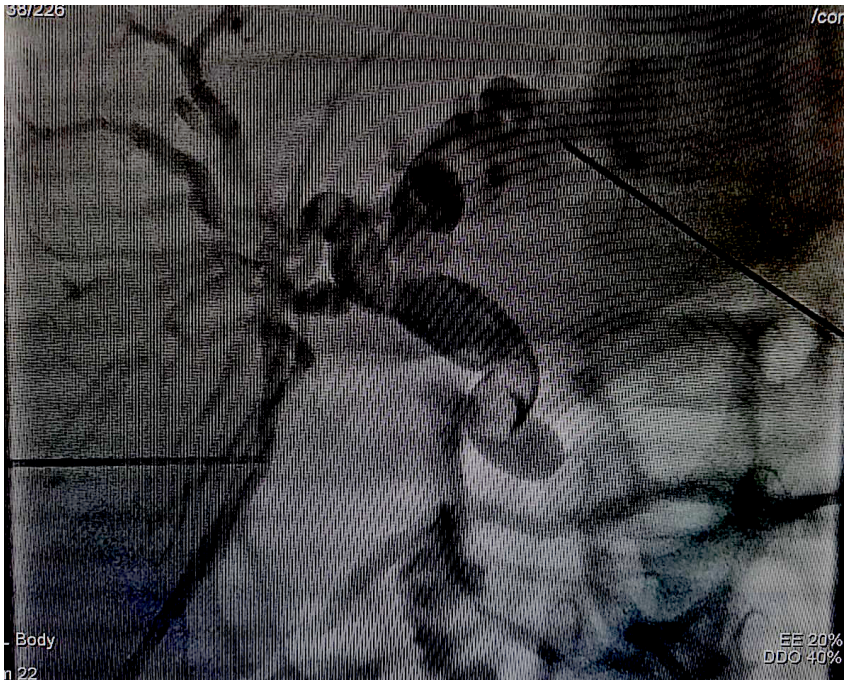

Figure 2. Percutaneous trans hepatic drainage with T tube insertion for drainage of the biliary obstruction of the studied case.

He underwent percutaneous trans hepatic drainage (PTD) with T tube insertion for drainage of the biliary obstruction. (Figure 1). Jaundice started dropping immediately after the PTD along with normalization of urine and stool color. Following the drop in bilirubin the child underwent Frey's operation of non-anatomical excision of the fibrotic pancreatic head with longitudinal pancreatico jejunostomy and hepatico jeujenostomy (Roux en y). (Figure 2). The biopsy of the excised tissue of head of pancreas showed preservation of lobular architecture with fibrous thickening of interlobular septae with mild chronic inflammatory cells. No lymphoplasmacytic sclerosing pancreatitis, no granuloma or evidence of neoplasia were detected. Excised gall bladder showed focal hyperplastic mucosa, mild transmural chronic inflammatory cellular infiltrate and fibrosis. The post-operative ultrasound revealed echogenic fat planes surrounding the pancreas likely due to inflammatory changes. Two weeks post-Frey procedure all lab tests normalized except for the lipase that returned to normal after 4 weeks. His blood sugar and glycated hemoglobin A1c were normal all through. (Table 2).

Table 2. Summary of lab results 2 weeks after Frey's procedure

	Result	Reference Range
Total Bilirubin (mg/dl)	0.29	Up to 1.0
Direct Bilirubin (mg/dl)	0.1	Up to 0.3
Alanine Aminotransferase (IU/L)	18	Up to 35
Aspartate aminotransferase (IU/L)	41	Up 36
Gamma glutamyl transferase (IU/L)	611	Up to 60
Amylase (U/L)	68	Less than 115
Lipase (IU/L) *	104	Less than 60

*Serum lipase dropped to normal 4 weeks after Frey's Procedure

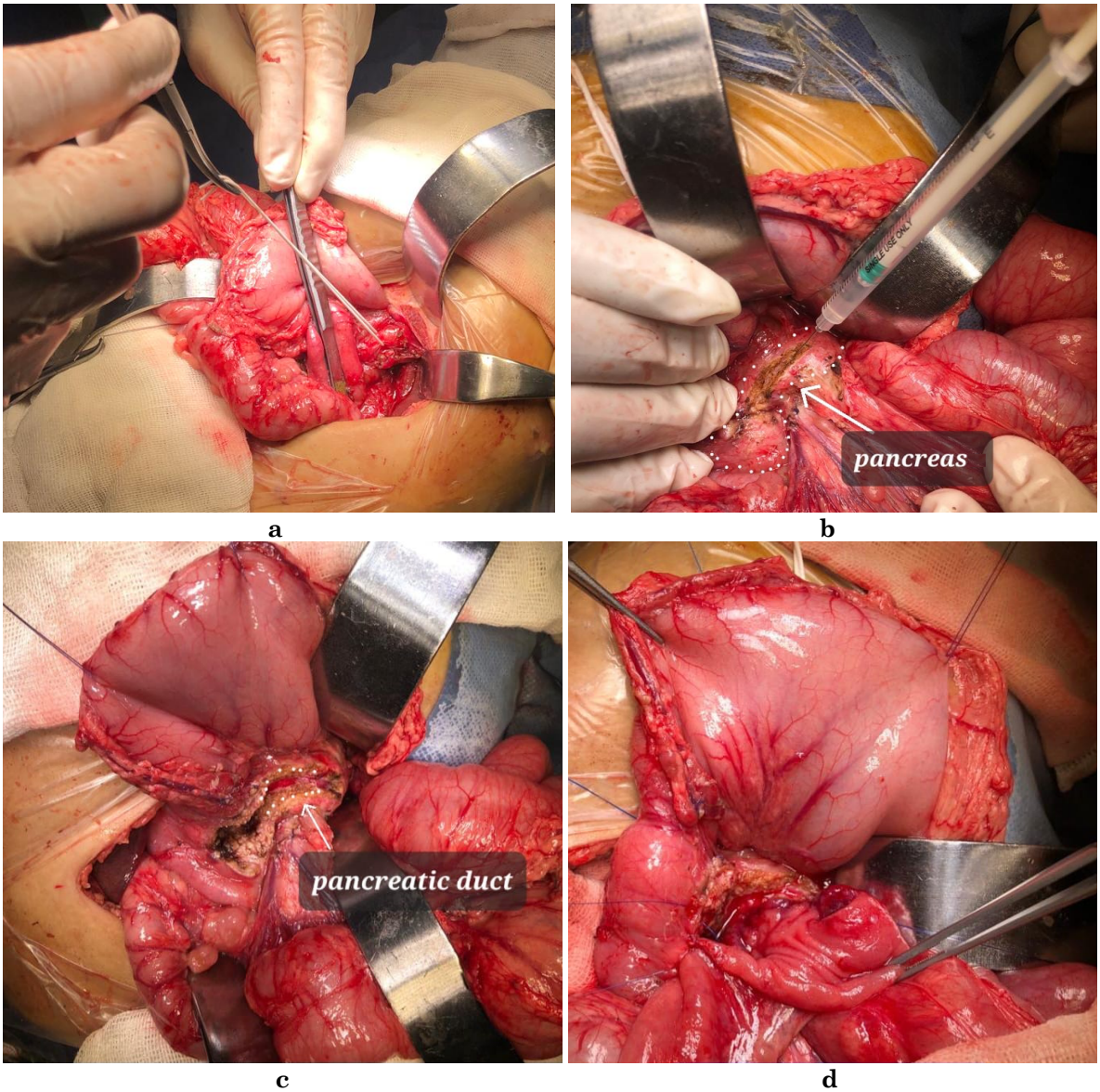

Figure 3. Non-anatomical excision of the fibrotic pancreatic head with longitudinal pancreatico-jejunostomy and hepatico-jejunostomy.
a) Opening of the lesser sac and full exposure of the pancreas. b) Longitudinal incision of the dilated pancreatic duct and aspiration of the retained secretion. c) Non- anatomical resection of pancreatic head and longitudinal incision of the main pancreatic duct. d) Pancreatico-jejunostomy.

Discussion

Common bile duct stenosis/stricture has long been known to complicate 3-46% of chronic advanced pancreatitis among adults (*7*), but not toddlers. Painless silent pancreatitis is being more recognized among children, reaching up to 13% (*8*). Our studied child sustained chronic fibrosing pancreatitis, complete biliary obstruction, and clay stools for almost 4 months, without any other symptoms. There was no abdominal pain, fever, poor activity, no diarrhea, no symptoms of inflammatory bowel syndrome.

The painless silent pancreatitis in our studied toddler was confused as prolonged cholestatic hepatitis A viral infection. Yet, there in hind sight there was very little room for the confusion. Chronic cholestatic hepatitis A viral infection is an uncommon debilitating condition with failure to thrive, malabsorption, pruritus, and not a clinically silent condition. Prolonged cholestatic hepatitis A viral infection is not a painless condition. Hence, it seems necessary that the primary physician should have revised the diagnosis of prolonged cholestatic hepatitis A viral infection in our reported case. Other diseases should be ruled out as well, as the hepatitis A IgM might falsely test positive among those with autoimmune disease, acute and chronic infections as typhoid fever that trigger polyclonal gammopathy (*9*). Among adults, pancreatitis was reported

to complicate hepatitis A viral infection due to edema of the ampulla of Vater with obstruction to the outflow of pancreatic secretions (*10*), but exceptionally rare among children (*11*), let alone toddlers. Yet, pancreatitis associated with hepatitis A infection is mostly self-limiting and not a chronic fibrosing pancreatitis.

Pancreatitis was reported to complicate cystic fibrosis, have a genetic background or be caused by dyslipidemia, hypercalcemia, traumatic injury, viral infections as mumps, measles, COVID-19, Coxsackie virus (and other enteroviruses), CMV, varicella zoster virus (VZV), HSV, acute HIV, hepatitis B, gall stones, (*12*) bacterial infections as *Mycoplasma* spp., *Legionella, Leptospira, Salmonella* spp., anatomic pancreatic divisum, alcohol and other drugs as sulfonamides, corticosteroids, metronidazole and others (*13*), cancer head of pancrease and celiac disease (*14*). Our child did not have associated inflammatory bowel disease, did not have gall stones, hypertriglyceridemia or history of trauma, did not have diarrhea, or malabsorption, did not suffer from repeated chest infections. Drug-induced pancreatitis constitutes almost 25% of pancreatitis, it was a remote possibility in our studied child owing to the lack of history of drug intake. Also, the very rare autoimmune pancreatitis and malignancy of head of pancreas were excluded by the biopsy histopathology findings. Yet, underlying anatomic pancreatic divisum cannot be excluded in our studied case due to the encountered fibrosis of the pancreas (*15*). Pancreatitis complicates almost 1% of cystic fibrosis patients. Yet, cystic fibrosis is very unlikely in our studied child, given the immediate catch up and lack of history incriminating cystic fibrosis (*16*). A genetic susceptibility cannot be ruled out as he did not undergo whole exome sequencing.

The recent subclinical infection by COVID 19 infection diagnosed by the positive COVID 19 anti-spike IgM antibodies might be an association or responsible for the painless silent pancreatitis in our studied child. It is not known if COVID 19 infection might cause a false-positive hepatitis A virus IgM, yet it causes false positive hepatitis E virus IgM (*17*). COVID 19 might be the inciting factor for the development of pancreatitis in our studied child. Yet, almost 95% of adults with COVID 19 induced chronic pancreatitis have a benign self -limiting course (*18*, *19*).

Idiopathic fibrosing pancreatitis might be another possible cause, as it presents by biliary obstruction and has excellent prognosis up to 25 years after intervention (*20*, *21*).

PTD proved to be an exceptionally valuable intervention in our studied case. It resulted in adequate draining of bile and was an essential step before the final Frey's procedure. It is intriguing however that the liver did not sustain injury by the 6 months of biliary obstruction, and once the obstruction was relieved the liver size, and functions were restored.

Conclusion

Chronic fibrosing pancreatitis associated with acute hepatitis or COVID-19 might be painless and get masked by the obstructive jaundice. Chronic pancreatitis presenting by biliary obstruction might be mistaken for prolonged cholestatic hepatitis A infection. Chronic pancreatitis should be excluded in children with suspected prolonged cholestatic hepatitis A infection. Percutaneous trans hepatic drainage might be a necessary step before Frey's procedure. Chronic pancreatitis in children is amenable to successful surgical intervention.

Author Contributions: All authors searched medical literature, databases, conceptualized, conducted the case review and reviewed the final manuscript. All authors have read and agreed to the published version of the manuscript.

FUNDING

Authors declare there was no extramural funding provided for this study.

CONFLICT OF INTEREST

The authors declare no conflict of interest in connection with the reported study. Authors declare veracity of information.

References

1. E. Perito, T. Gonska, M. D. Bellin, S. J. Schwarzenberg, Complications of chronic pancreatitis in children. *Curr. Opin. Gastroenterol.* **37**, 498–503 (2021).
2. S. Bhagat, M. Wadhawan, R. Sud, A. Arora, Hepatitis viruses causing pancreatitis and hepatitis: a case series and review of literature. *Pancreas* **36**, 424–427 (2008).

3. F. Wang, H. Wang, J. Fan, Y. Zhang, H. Wang, Q. Zhao, Pancreatic Injury Patterns in Patients With Coronavirus Disease 19 Pneumonia. *Gastroenterology* **159**, 367–370 (2020).
4. E. Kołodziejczyk, K. Wejnarska, G. Oracz, Autoimmune pancreatitis in the paediatric population - review of the literature and own experience. *Dev. Period Med.* **20**, 279–286 (2016).
5. C.-T. Huang, C.-K. Lin, T.-H. Lee, Y.-J. Liang, Pancreatic Fibrosis and Chronic Pancreatitis: Mini-Review of Non-Histologic Diagnosis for Clinical Applications. *Diagnostics* **10**, 87 (2020).
6. A. L. Warshaw, R. H. Schapiro, J. T. Ferrucci, J. J. Galdabini, Persistent obstructive jaundice, cholangitis, and biliary cirrhosis due to common bile duct stenosis in chronic pancreatitis. *Gastroenterology* **70**, 562–567 (1976).
7. A. A. Abdallah, J. E. J. Krige, P. C. Bornman, Biliary tract obstruction in chronic pancreatitis. *HPB* **9**, 421–428 (2007).
8. S. Kumar, C. Y. Ooi, S. Werlin, M. Abu-El-Haija, B. Barth, M. D. Bellin, P. R. Durie, D. S. Fishman, S. D. Freedman, C. Gariepy, M. J. Giefer, T. Gonska, M. B. Heyman, R. Himes, S. Z. Husain, T. K. Lin, M. E. Lowe, V. Morinville, J. J. Palermo, J. F. Pohl, S. J. Schwarzenberg, D. Troendle, M. Wilschanski, M. B. Zimmerman, A. Uc, Risk Factors Associated With Pediatric Acute Recurrent and Chronic Pancreatitis: Lessons From INSPPIRE. *JAMA Pediatr.* **170**, 562 (2016).
9. J. Yan, Y.-S. He, Y. Song, X.-Y. Chen, H.-B. Liu, C.-Y. Rao, False positive anti-hepatitis A virus immunoglobulin M in autoimmune hepatitis/primary biliary cholangitis overlap syndrome: A case report. *World J. Clin. Cases* **9**, 6464–6468 (2021).
10. P. Jain, Acute pancreatitis in acute viral hepatitis. *World J. Gastroenterol.* **13**, 5741 (2007).
11. R. El-Sayed, H. El-Karaksy, Acute pancreatitis complicating acute hepatitis A virus infection. *Arab J. Gastroenterol.* **13**, 184–185 (2012).
12. F. U. Weiss, F. Laemmerhirt, M. M. Lerch, Etiology and Risk Factors of Acute and Chronic Pancreatitis. *Visc. Med.* **35**, 73–81 (2019).
13. O. Alhaddad, M. Elsabaawy, M. Elfauomy, D. Elsabaawy, T. Mansour, Updates in drug-induced acute pancreatitis. *Egypt. Liver J.* **10**, 49 (2020).
14. R. S. Patel, F. C. Johlin, J. A. Murray, Celiac disease and recurrent pancreatitis. *Gastrointest. Endosc.* **50**, 823–827 (1999).
15. A. R. Kuzel, M. U. Lodhi, M. Rahim, Pancreatic Divisum: An Unusual Cause of Chronic Pancreatitis in a Young Patient. *Cureus*, doi: 10.7759/cureus.1856 (2017).
16. C. Baldwin, M. Zerofsky, M. Sathe, D. M. Troendle, E. R. Perito, Acute Recurrent and Chronic Pancreatitis as Initial Manifestations of Cystic Fibrosis and Cystic Fibrosis Transmembrane Conductance Regulator–Related Disorders. *Pancreas* **48**, 888–893 (2019).
17. J. Oh, G. H. Choi, Y. Chang, J. Kim, K. Park, H. Yeom, S. Seo, J. Gwack, S.-H. Jeong, A Silent Outbreak of Hepatitis E Virus (HEV) Infection or False-Positive Reaction of Anti-HEV IgM after COVID-19 Vaccination? Epidemiological Investigation of an Outbreak in a Korean Factory Complex in 2022. *Gut Liver*, doi: 10.5009/gnl230098 (2023).
18. J. Zhang, D. Luo, M. Kang, B. Li, S. Su, Clinical characteristics and short-term outcomes of acute pancreatitis among patients with COVID-19. *Eur. J. Med. Res.* **28**, 283 (2023).
19. Y. Hadi, S. M. Shah-Khan, A. H. Sohail, F. R. U. Jannat, A. Syed, C. E. Humphries, T. L. Daum, A. Malik, M. R. Krafft, M. Bilal, S. Thakkar, S. Singh, Su1270: CHRONIC PANCREATITIS AND COVID-19: INCIDENCE AND OUTCOMES. A MULTICENTER RESEARCH NETWORK ANALYSIS. *Gastroenterology* **162**, S-564-S-565 (2022).
20. J. L. Amerson, R. R. Ricketts, Idiopathic fibrosing pancreatitis: a rare cause of obstructive jaundice in children. *Am. Surg.* **62**, 295–299 (1996).
21. M. T. Cartmell, E. Cusick, M. Ashworth, A. Duncan, L. J. Huskisson, Idiopathic fibrosing pancreatitis and spontaneous resolution of pancreatic masses in children. *Pediatr. Surg. Int.* **23**, 897–901 (2007).