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MANAGEMENT OF INFANTILE CHOLEDOCHOLITHIASIS AND CHOLECYSTITIS: A CASE REPORT

General Surgery

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ABSTRACT

This case report presents the clinical management of a 6-month-old male infant presenting with fever, vomiting, and incessant crying. After initial conservative management, the patient was diagnosed with choledocholithiasis and cholecystitis. Due to the infant's weight, ERCP with CBD stenting was deemed inappropriate, and thus, a hepaticojejunostomy procedure was performed. The postoperative period was uneventful, with resolution of symptoms and normalization of biliary parameters. This case underscores the challenges in diagnosing and treating gallstone-related conditions in infants, highlighting the importance of surgical intervention in certain cases.

KEYWORDS

Choledocholithiasis, Cholecystitis, Hepaticojejunostomy, Infant, Case Report

INTRODUCTION:

Gallbladder diseases, though historically recognized since antiquity, continue to pose diagnostic and therapeutic challenges, especially in pediatric populations[1]. While gallstones, or cholelithiasis, have been predominantly associated with adults, their occurrence in children, particularly infants, is relatively rare[2]. Recent advancements in diagnostic imaging, such as ultrasound, have facilitated earlier detection of gallbladder diseases in pediatric patients. Additionally, various predisposing factors, including prematurity, hemolytic disorders, and medical interventions like total parenteral nutrition (TPN), contribute to the rising incidence of cholelithiasis in infants[3].

This case report presents a 6-month-old male infant with choledocho-cholecystolithiasis, highlighting the diagnostic workup, therapeutic interventions, and postoperative outcomes. The case underscores the importance of prompt recognition and appropriate management of gallbladder diseases in pediatric patients. With the evolving landscape of pediatric healthcare, it is imperative for clinicians to remain abreast of the latest diagnostic modalities and treatment strategies to optimize outcomes for infants with gallstone-related conditions.

In this context, we discuss the risk factors, clinical presentation, diagnostic modalities, and therapeutic options pertinent to infantile choledocholithiasis and cholecystitis. The case also emphasizes the multidisciplinary approach required for comprehensive care, involving pediatricians, surgeons, and gastroenterologists. Through this case report, we aim to contribute to the existing literature on pediatric gallbladder diseases and underscore the importance of tailored management strategies in this vulnerable patient population.

Case Presentation:

A 6-month-old male infant was brought to the pediatric clinic with complaints of fever, vomiting, and incessant crying. Physical examination revealed icteric sclera and pale-colored stools. Laboratory investigations showed elevated liver enzymes and bilirubin levels. Ultrasonography (USG) revealed choledocho-cholecystolithiasis with biliary dilatation. Conservative management with antibiotics and ursodeoxycholic acid led to symptomatic improvement initially.

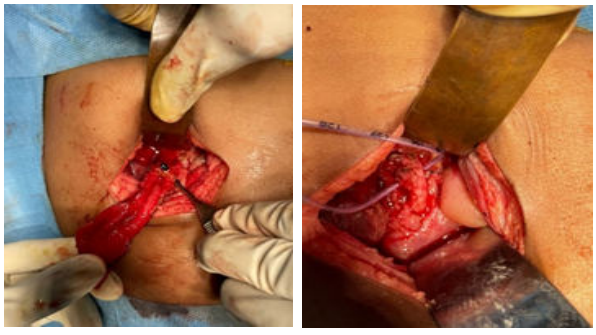
Preoperative Evaluation:

Four days later, the infant presented again with icteric eyes and pale stools. Blood investigations confirmed persistent biliary obstruction. USG indicated slow clearance from the liver, suggesting ongoing biliary obstruction. ERCP with CBD stenting was considered but deemed inappropriate due to the infant's weight being below the threshold for safe intervention. Therefore, a hepaticojejunostomy procedure was planned.

	24/04/23	27/04/23
Total bilirubin	3.8	2.5
Direct bilirubin	2.9	1,8
Total count	28,000	36,000
CRP	104	307
Alkaline phosphatase	198	225

Operative Procedure:

Under general anesthesia, a right subcostal incision was made. Intraoperatively, the gallbladder was found to be contracted and inflamed and was subsequently removed, with ligation of the cystic duct. A small incision was made over the common bile duct (CBD), revealing multiple pigmented stones. Saline irrigation was performed, and a DJ stent was inserted into the CBD to ensure drainage into the duodenum.



Postoperative Course:

Postoperative imaging showed mild central intrahepatic biliary dilatation and the CBD stent in situ. There were no postoperative complications, and the patient recovered well. Follow-up assessments revealed resolution of symptoms and normalization of liver function tests.

	05/05/23		02/11/23
Total bilirubin	1	Total bilirubin	0.7
Direct bilirubin	0.7	Direct bilirubin	0.2
Total count	10,000	Total count	8,000
CRP	28	CRP	5
Alkaline phosphatase	168	Alkaline phosphatase	156

DISCUSSION:

Throughout history, diseases of the gallbladder have been recognized, with gallstones even discovered in Egyptian mummies[4]. While gallstone formation, known as cholelithiasis, is more commonly associated with adults, its occurrence in children, particularly infants, is a relatively rare phenomenon[5]. The prevalence of cholelithiasis in pediatric populations has been reported to range from 0.13% to 0.22%[6]. Recent advancements in diagnostic imaging techniques, such as ultrasound, have contributed to the increased detection of gallbladder diseases in children[7]. Additionally, factors like total parenteral nutrition (TPN), obesity, and prematurity have been implicated in the rising incidence of cholelithiasis in pediatric patients. Given the potential implications of gallbladder disease in children, healthcare professionals must remain informed about the latest diagnostic and treatment modalities[2,8].

Risk Factors and Etiology:

Various factors contribute to the formation of gallstones in children,

including prematurity, hemolytic disorders, gastrointestinal conditions like intestinal resection and Crohn's disease, hepatobiliary issues, pulmonary conditions, and certain medications[8]. Approximately 70% of infants with cholelithiasis have identifiable risk factors, most commonly associated with heart surgery, TPN, and medication use[1]. However, in some cases, the cause of gallstones remains unknown. Congenital biliary abnormalities and hemolytic disorders, such as sickle cell anemia and hereditary spherocytosis, are significant predisposing factors for cholelithiasis in infants. Furthermore, factors such as prolonged TPN use, ileal resection, phototherapy, and infections have been implicated in gallstone development[2,9].

Clinical Presentation and Diagnosis:

Gallstones in infants are often asymptomatic but may occasionally manifest as cholestatic jaundice, transient alcoholic stools, sepsis, or abdominal pain. Notably, symptomatic infants are more likely to have common bile duct stones rather than gallbladder-only stones[3]. Ultrasonography is the primary diagnostic modality for detecting gallstones, with a sensitivity and specificity of approximately 95% for gallbladder cholelithiasis. However, its sensitivity for choledocholithiasis is lower, ranging from 50% to 75%. Gallstones in children may be radiopaque in 20–50% of cases[10].

Management and Treatment:

The management of gallstones in children depends on various factors, including the patient's age and clinical symptoms. Spontaneous resolution of cholelithiasis occurs in 35–60% of patients, with a low recurrence rate[11]. Conservative management is often recommended, especially for asymptomatic infants and toddlers. Surgical intervention, such as cholecystectomy, is typically reserved for symptomatic cases, persistent asymptomatic cholelithiasis, or radiopaque calculi[12,13]. Alternative medical therapies, such as ursodeoxycholic acid and cholesterol-lowering medications, have not been proven effective in dissolving existing stones and are not routinely recommended[14].

In our case, the decision to perform a hepaticojejunostomy was based on the infant's weight and the inappropriateness of ERCP. Hepaticojejunostomy is a surgical procedure commonly used to bypass biliary strictures or obstructions, providing an alternative route for bile drainage. Despite its effectiveness, the procedure carries inherent risks, particularly in pediatric patients, including anastomotic leaks, strictures, and bile reflux[15]. However, in our case, the postoperative course was uneventful, with successful resolution of symptoms and normalization of biliary parameters.

CONCLUSION:

Infantile choledocholithiasis and cholecystitis present unique challenges in diagnosis and management. While gallstones in children, particularly infants, remain relatively rare, advancements in diagnostic imaging have led to increased detection rates. Prompt recognition and appropriate intervention are crucial for optimizing outcomes in affected infants. While conservative measures may suffice in some cases, surgical intervention such as hepaticojejunostomy may be necessary in others, particularly when endoscopic options are not feasible. This case highlights the importance of a multidisciplinary approach involving pediatricians, surgeons, and gastroenterologists in the comprehensive care of infants with gallstone-related conditions.

Conflict of Interest:

The authors declare no conflict of interest.

Funding:

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Ethical Approval:

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Informed Consent:

Informed consent was obtained from the patient's parents for publication of this case report.

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REFERENCES

1. Stinton LM, Shaffer EA. Epidemiology of Gallbladder Disease: Cholelithiasis and Cancer. Gut and Liver. 2012 Apr;6(2):172.
2. Zdanowicz K, Daniluk J, Lebensztejn DM, Daniluk U. The Etiology of Cholelithiasis in Children and Adolescents—A Literature Review. Int J Mol Sci. 2022 Nov 2;23(21):13376.
3. St-Vil D, Yazbeck S, Luks FI, Hancock BJ, Filiatrault D, Youssef S. Cholelithiasis in newborns and infants. J Pediatr Surg. 1992 Oct;27(10):1305–7.
4. Tiderington E, Lee SP, Ko CW. Gallstones: new insights into an old story. F1000Res. 2016 Jul 26;5:F1000 Faculty Rev-1817.
5. Holcomb GW Jr, Holcomb GW III. Cholelithiasis in Infants, Children, and Adolescents. Pediatrics In Review. 1990 Mar 1;11(9):268–74.
6. Frybova B, Drabek J, Lochmannova J, Douda L, Hlava S, Zemkova D, et al. Cholelithiasis and choledocholithiasis in children; risk factors for development. PLoS One. 2018 May 15;13(5):e0196475.
7. Obaid AM, Turki A, Bellaaj H, Ksantini M, AlTaee A, Alaerjan A. Detection of Gallbladder Disease Types Using Deep Learning: An Informative Medical Method. Diagnostics (Basel). 2023 May 15;13(10):1744.
8. Marathum Palli N. An Uncommon Case in a Healthy Infant: A Case of Infantile Cholelithiasis. Dubai Medical Journal. 2023 Jun 16;6(3):229–34.
9. Risk Factors for Cholelithiasis - PMC [Internet]. [cited 2024 May 6]. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8802735/
10. Gallstone (Cholelithiasis) Imaging: Practice Essentials, Radiography, Computed Tomography. 2023 Nov 1 [cited 2024 May 6]; Available from: https://emedicine.medscape.com/article/366246-overview?form=fpf
11. Management of choledocholithiasis in an infant - ScienceDirect [Internet]. [cited 2024 May 6]. Available from: https://www.sciencedirect.com/science/ article/pii/ S2213576617302294
12. Asymptomatic Cholelithiasis in Children: Management Dilemma - PMC [Internet]. [cited 2024 May 6]. Available from: https://www.ncbi.nlm.nih.gov/pmc/ articles/PMC8323576/
13. Cholecystectomy for asymptomatic gallstones: Markov decision tree analysis - PMC [Internet]. [cited 2024 May 6]. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9602237/
14. Ursodeoxycholic acid therapy in gallbladder disease, a story not yet completed - PMC [Internet]. [cited 2024 May 6]. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3746374/
15. Gani J, Lewis K. Hepaticocholecystoenterostomy as an alternative to hepaticojejunostomy for biliary bypass. Annals of The Royal College of Surgeons of England. 2012 Oct;94(7):472.