Case Report

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Website: www.afrjpaedsurg.org
DOI: 10.4103/0189-6725.93313
Quick Response Code:

Chylous ascites caused by resection of a choledochal cyst

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ABSTRACT

Chylous ascites is a rare complication of abdominal surgery in children. Particularly, reports of postoperative chylous ascites are rare. This report describes the very rare case of a 10-month-old girl complicated by chylous ascites after resection of a choledochal cyst with a Roux-en-Y hepaticojejunostomy, who was successfully treated medically. To date, we have found a few cases of postoperative chylous ascites in the paediatric literature. To the best of our knowledge, this is the first report of chylous ascites after the resection of a choledochal cyst in a child who was successfully treated solely by no fasting. No fasting might be a therapeutic option of paediatric postoperative chylous ascites after the resection of a choledochal cyst if the outflow volume of chylous ascites is small.

Key words: Children, choledochal cyst, postoperative chylous ascites

INTRODUCTION

Postoperative chylous ascites is a rare surgical complication caused by the obstruction or disruption of the abdominal or retroperitoneal lymphatic tracts.[1] Once chylous ascites occurs, the constant loss of serum protein and peripheral lymphocytes leads to severe malnutrition and a poor immunological condition.[2]

Choledochal cysts are rare congenital anomalies of the biliary duct, which have the potential for malignant transformation. Therefore, it is mandatory to resect the entire cyst.[3]

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In the literature, postoperative chylous ascites after the resection of a choledochal cyst is very rare. We herein report the very rare case of chylous ascites caused by the resection of a choledochal cyst in a 10-month-old girl.

We also review the literature on this type of disorder, and discuss the characteristic associated problems in children with postoperative chylous ascites after the resection of a choledochal cyst, particularly concerning the medical treatment of postoperative chylous ascites.

CASE REPORT

A 24-day-old girl, weighing 3.310 g, was referred to our hospital for the further evaluation of a large right abdominal cyst. The lesion had been pointed out on foetal ultrasonography at 30 weeks of gestation. Magnetic resonance cholangiopancreatography, which was performed after birth, showed a cystic dilation of the extrahepatic biliary duct and pancreaticobiliary maljunction [Figure 1], which was suspected to be a choledochal cyst of type I A in Todani classification. The patient had been well without jaundice or acholic stools from birth. The results of laboratory tests showed aspartate



Figure 1: Magnetic resonance cholangiopancreatography showed a cystic dilation of the extrahepatic biliary duct

aminotransferase, 41 IU/l; alanine aminotransferase, 34 IU/l; total bilirubin, 0.2 mg/dl; direct bilirubin, 0.0 mg/dl and γ-glutamyl transpeptidase, 32 IU/l.

For the prevention of cholangitis, pancreatitis and malignant transformation, we performed an elective operation when she was 10 months old.

Through an upper abdominal incision, we found a cystic dilated common bile duct, 50 mm in diameter. After cholecystectomy and total excision of the choledochal cyst, we performed a Roux-en-Y hepaticojejunostomy. We paid careful attention to ligate lymphatic ducts at the hepatoduodenal ligament. The operation went smoothly, and a closed drain was placed under the hepaticojejunostomy.

At 5 days after the operation, breast milk formula was started, but a total of 16 ml of milky fluid per day was aspirated from the closed drain [Figure 2]. At 6 days after the operation, biochemical laboratory tests of the milky fluid revealed the characteristics of chyle [triglycerides, 304 mg/dl (normal: Less than 110 mg/dl)]. Because the volume of drainage was small, 16 ml per day, and abdominal distention was not recognised, we continued the milk without fasting. The colour of ascites from the closed drain changed to serous at 7 days after the operation. Oral intake was resumed at 8 days post-operation, and the chylous ascites did not recur. The closed drain was removed at 9 days after the operation. Subsequently, the patient showed a favourable course and abdominal distention was not recognised, and she was discharged at 15 days after the operation. Magnetic resonance imaging before discharge showed no recurrence of chylous ascites.



Figure 2: Milky fluid, which was aspirated from the closed drain, revealed the characteristics of chyle

DISCUSSION

Postoperative chylous ascites is rare in paediatrics. It occurs approximately one week after abdominal surgery.[4] The usual cause of postoperative chylous ascites has been proposed as the direct leakage of chyle through lymphoperitoneal fistulas, which are lymphatic disruptions resulting from surgery. We occasionally come across reports of chylous ascites after retroperitoneal operations such as nephrectomy and retroperitoneal lymph node dissection for nephroblastoma.[5] However, chylous ascites after the resection of a choledochal cyst has only been reported so far in one case.[6] On the basis of the previous case, we speculated that we damaged or did not ligate the lymphatic ducts at the hepatoduodenal ligament or hepatic hilum, even though we focused on ligating the lymphatic ducts very carefully.

The diagnosis of chylous ascites can be made based on the presence of a milky and creamy ascites fluid with a triglyceride level above 200 mg/dl. After the diagnosis of chylous ascites is established by the elevation of triglycerides in ascites, most patients are initially managed by fasting or placed on a low-fat diet with medium-chain triglycerides (MCT). The lymph flow in thoracic duct averages at 1 ml/kg/h, but might increase to 200 ml/kg/h after the ingestion of a fatty meal. An MCT diet makes up approximately one-third of the dietary fat. Therefore, it can decrease lymph flow in the major lymphatic tracts and facilitates the closure of chylous fistulas.[4] It has been reported that 36% would show improvement with this treatment within four to six weeks.[7]

More recently, the administration of octreotide, a synthetic analogue of somatostatin, in addition to dietary modification, has been advocated.[5,8,9] According to previous reports, the intravenous dose of octreotide was 1 to 3 μg/kg/h, and the volume of drainage of chylous ascites decreased markedly within one week without significant side effects on the administration of octreotide. Octreotide is known to reduce splanchnic, hepatic and portal blood flow and to inhibit intestinal motility, which may play a role in reducing lymph flow. Furthermore, octreotide might act directly on their vascular receptors to reduce lymph fluid excretion.

Surgical treatment, including the direct repair of leaking lymphatic tracts, should be reserved for patients in whom conservative management fails for more than a month. However, the site of chyle leakage in children may not be easily recognised. In such cases, fibrin glue,

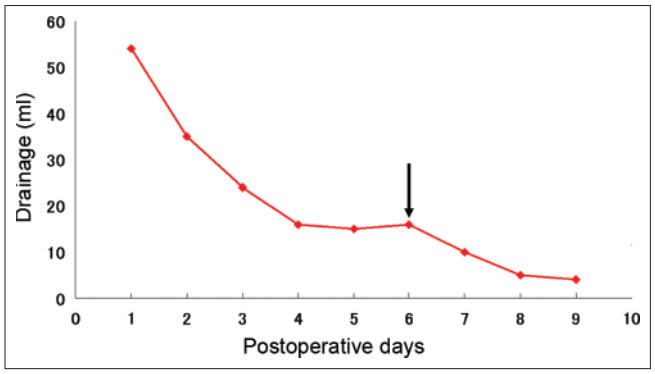


Figure 3: Time course of the outflow for postoperative drainage. The colour of ascites changed from chylous to serous (arrow) at 7 days after the operation

a widely employed approach to treat various kinds of fistula, has been reported to seal chyle leaks.[10]

In the initial report of chylous ascites after the resection of a choledochal cyst, a 2-year and 9-month-old boy who had a type I choledochal cyst underwent the operation. Chylous ascites appeared 7 days after surgery, and marked flow of 220 ml per day at 15 days after the operation. The patient was initially scheduled to undergo the resolution of chylous ascites by fasting. Because the attempt at fasting was not effective, octreotide was used. In the present case, because the volume of drainage of chylous ascites was small, 16 ml per day [Figure 3], we did not plan any additional treatments such as MCT or octreotide. Given that chylous ascites disappeared in this manner, we speculate that the lymphoperitoneal fistulas sealed spontaneously because lymphatic ducts might have been damaged in the peripheral lesion.

In summary, we encountered an episode of postoperative chylous ascites in a patient with a choledochal cyst. Our experience suggests that postoperative chylous ascites after the resection of a choledochal cyst might be cured without fasting if the volume of chylous ascites is small. Furthermore, we need to consider that chylous ascites can occur after surgery for choledochal cyst in children.

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Cite this article as: Mizukami T, Okada T, Honda S, Miyagi H, Minato M, Todo S. Chylous ascites caused by resection of a choledochal cyst. Afr J Paediatr Surg 2012;9:68-70.

Source of Support: Nil. **Conflict of Interest:** None declared.