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Abstract

Background

A number of reports on limy bile have been published but obstructive jaundice due to limy bile is quite rare. We report a case of obstructive jaundice due to limy bile and review 26 cases of limy bile diagnosed in our institution.

Case outline

A 39-year-old woman was admitted to our hospital with epigastric pain and jaundice. Abdominal ultrasonography and computed tomography revealed limy bile in the common bile duct and a gallbladder stone with biliary obstruction. Percutaneous transhepatic biliary drainage was performed. The limy bile drained out through the catheter over a few weeks. Cholecystectomy and choledochotomy with choledocholithotomy were subsequently performed.

Discussion

The strategy for managing patients with limy bile is individualized based on symptoms, the clinical conditions, and the location of the limy bile, and any associated biliary stones or lesions causing cystic duct obstruction.

Key Words: Limy bile; Obstructive jaundice

Introduction

Limy bile is a rare condition characterized by precipitation of calcium carbonate in the gallbladder and was first described by Churchmann in 1911[1]. A number of reports on this disorder have been published since then, but obstructive jaundice due to limy bile is quite rare[2]. We report a case of obstructive jaundice due to limy bile and review 26 cases of limy bile diagnosed in our institution.

Case Report

A 39-year-old woman was admitted to our hospital with epigastric pain and jaundice. On

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admission, there was no tenderness, palpable abdominal mass, organomegally. Laboratory workup was significant for the following: total bilirubin, 7.5 mg/dL; direct bilirubin, 4.8 mg/dL; aspartate aminotransferase, 95 IU/L; alanine aminotransferase, 231 IU/L; alkaline phosphatase, 202 IU/L (normal: 57 to 191 IU/L); and gamma-glutamyl transpeptidase, 108 IU/L (normal: 0 to 53 IU/L). The serum calcium concentration was within normal limits. Abdominal radiography showed a faint opacity of a portion of the common bile duct with a round lucent area at its duodenal end (Fig. 1). Abdominal ultrasonography and computed tomography (Fig. 2) revealed limy bile in the common bile duct and a gallbladder stone with biliary obstruction. Percutaneous transhepatic biliary drainage (PTBD) was performed and cholangiography showed a filling defect from the cystic duct to the duodenal end of the common bile duct with a distinct round filling defect in it (Fig. 3). A white, clay-like substance containing calcium carbonate drained from the catheter, and the diagnosis of limy bile was confirmed. Limy bile continued to drain out from the PTBD tube over the next few weeks. Cholecystectomy and choledochotomy with choledocholithotomy were subsequently performed. The wall of the gallbladder and the common bile duct was thickened. The stone in the gallbladder was 20 × 20 mm and the stone in the common bile duct was 10 × 6 mm, in diameter. The both stones were 80% cholesterol and 20% calcium carbonate. Histological examination of the gallbladder showed chronic cholecystitis. The patient was well at follow-up 3 years later.

Discussion

Limy bile is a rare disorder and an uncommon cause of biliary lithiasis. Limy bile is present in 1 to 3% of patients operated on for biliary lithiasis in Japan, versus 0.1 to 1.7% in Western

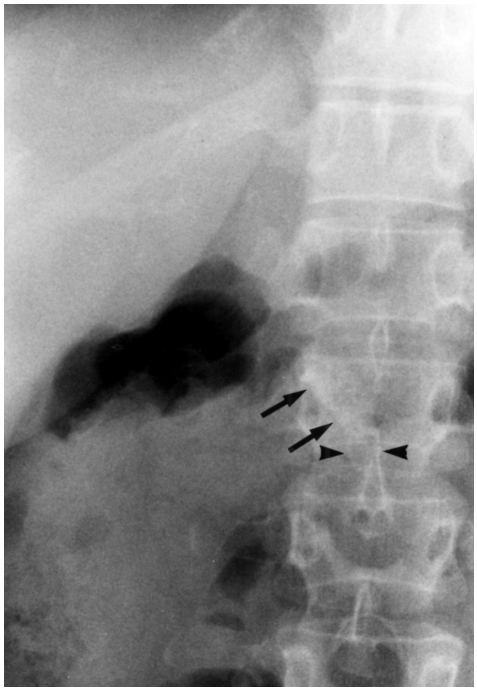

Figure 1. Plain abdominal radiograph shows a faint opacity of part of the common bile duct (arrows) with a round lucent area at its duodenal end (arrowheads).

Figure 2. Computed tomogram demonstrates a high density area in the common bile duct partly with a fluid-fluid level, a stone in the gallbladder fundus, and intrahepatic bile ductal dilatation.

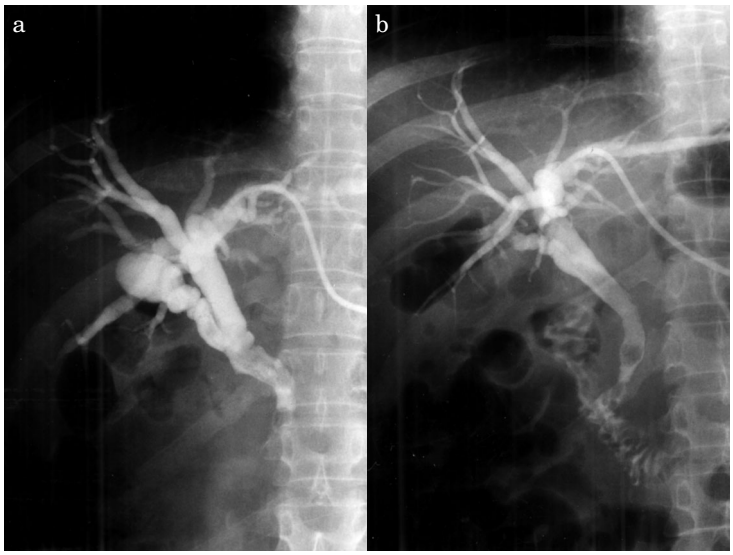

Figure 3. Cholangiography demonstrates a filling defect in the cystic duct that extends into the common bile duct, with a round filling defect at the end of the common bile duct. a) During percutaneous transhepatic biliary drainage (PTBD); contast medium did not pass through the papilla of Vater. b) Seven days after PTBD; the filling defect was smaller and contrast medium passed into the duodenum.

countries[3]. We treated 26 patients with limy bile over 25 years, representing an incidence of 2.1% among the 1254 patients who underwent surgery for biliary lithiasis during the same period. Patients with limy bile included 14 women and 12 men, with a mean age was 46 years (range, 23 to 61 years). Limy bile was present in the gallbladder in 25 cases and in the common bile duct in 1 case. Nineteen patients reported abdominal discomfort or mild pain. The patient with limy bile in the common bile duct presented with jaundice. Routine laboratory studies, including serum bilirubin concentration and liver function tests were within normal limits in 17 patients. Three cases were associated with chronic hepatitis and 1 was associated with hepatocellular carcinoma. Though a relationship with hypercalcemia has always been suspected[2], the serum calcium concentrations were within normal limits in all patients.

The diagnosis of limy bile can be made on a plain radiograph of the abdomen when the gallbladder or the common bile duct appears as a radiopaque shadow. Limy bile varies in consistency from fluid to a putty-like mass and may even be firm to solid. Its color is variable and can be white, gray, yellow to brown or even black depending upon the amount of bile pigment in the gallbladder. The pathogenesis of limy bile is not clear, although it is generally agreed upon that it is related to obstruction of the cystic duct or the neck of the gallbladder[4] and chronic inflammation of the gallbladder and consequent alkalinization[5]. The obstruction of the cystic duct is almost always due to gallbladder stone, and only rarely due to adenomyomatosis, gallbladder cancer, cystic duct cancer, or gallbladder polyp. In our series, 25 cases were due to gallstone and 1 was due to an adenomatous polyp of the gallbladder. Limy bile always forms in the gallbladder. Limy ductus choledochus develops when the cystic duct is recanalized and limy bile flows into the common bile duct[6]. In our case of limy ductus choledochus, limy bile exists from the cystic duct to the duodenal end of the common bile duct with a small stone in it, which suggests recanalization of the cystic duct. In Japan, 10 cases of limy ductus choledochus have

been reported. All patients presented with abdominal pain and 9 had jaundice, although the total bilirubin concentration was more than 4 mg/dL in only 3 cases. Limy ductus choledochus resolved spontaneously in 1 case and with the administration of olive oil in another case. Six cases of the spontaneous resolution of limy bile have been reported in English literature[6,7]. Two of these patients had neither colic nor jaundice. These examples suggest that spontaneous evacuation of limy bile may occur in asymptomatic patients[6] and may be a cause of acute pancreatitis of so-called unknown etiology[7]. The strategy for managing patients with limy bile is individualized based on symptoms, the clinical conditions, and the location of the limy bile, and any associated biliary stones or lesions causing cystic duct obstruction. Cholecystectomy is the treatment of choice in most cases of limy bile, but when in the common bile duct is obstructed, percutaneous transhepatic biliary drainage or endoscopic sphincterotomy is a therapeutic option.

References

1. Churchman JW. Acute cholecystitis with large amounts of calcium soup in the gallbladder. Bull Johns Hopkins Hosp 1911;22:223-4.
2. Green NA. A case of 'limy bile' causing obstructive jaundice. Brit J Surg 1959;47:222-5.
3. Moreaux J, Roux JM. Limy bile: a surgical experience in 16 patients. Gastroen Clin Biol 1994;18:550-5.
4. Berg J. Zur Diagnose der "Kalkgalle". Fortschr Geb Röntgenstr 1939;60:284-91.
5. Nolan B, Ross JA, Samuel E. Lime-water bile. Brit J Surg 1960;48:201-4.
6. Nomura F, Suzuki Y, Suzuki K, Yamamoto K, Ohshima H, Nakayama T, et al. Spontaneous disappearance of limy bile: report of a case with review of the literature. Am J Gastroenterol 1984;79:884-8.
7. Levy I, Lantsberg L, Khoda J. Spontaneous disappearance of limy bile: a cause of acute pancreatitis?. J Clin Gastroenterol 1994;18:220-1.