Management of Limy Bile Syndrome: No Therapy, Laparotomy or Endoscopic Treatment?

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Limb bile syndrome (LBS) is a relatively rare condition in which a radiopaque gallbladder and/or bile ducts are noted on plain roentgenograms (1). LBS is caused by calcium carbonate precipitation containing 33.7–91.6% (average: 77.8%) calcium carbonate in the bile and is usually associated with distal biliary tract obstruction (2, 3). Since Churchman’s description of this syndrome in 1911, more than 300 cases have been reported in the literature, including approximately 7% cases of the total with limy bile located in both the gallbladder and common bile duct, and the male/female ratio is 1/3 (4). The etiology of LBS is unclear; however, it may be a long-term complication of total parenteral nutrition. Hereditary spherocytosis, primary biliary cirrhosis or primary hyperparathyroidism that are lesions outside the bile ducts do occur simultaneously, but rarely.

The main symptoms of LBS are epigastralgia and right hypochondralgia, and the frequency of occurrence of jaundice and fever is low. LBS progresses asymptptomatically and may incidentally be found on a plain roentgenogram of the abdominal region or on a roentgenographical examination of the stomach performed at a medical checkup. Definitive diagnosis of LBS is made when the characteristic finding of LBS is obtained on plain roentgenogram of the abdomen. In a typical case, the gallbladder and/or the common bile duct are visualized as if contrast medium is used. On plain roentgenogram of the abdominal region in the standing position, calcification accompanied by a hemi-oval niveau formation overlapping the gallbladder can be seen on occasion. For precise examination including the cause of LBS, ultrasonography and computed tomography are indispensable (5, 6).

Obstruction in the neck of gallbladder, in the cystic duct or in the end of common bile duct is necessary to cause LBS. Regarding the causative diseases of LBS, the number of cases of cholecystolithiasis and/or choledocholithiasis is overwhelmingly large. Moreaux and Roux reported 11 cases in which limy bile was found in the gallbladder only and 5 cases in which limy bile was found in both the gallbladder and common bile duct, for a total of 16 cases (7); lithiasis in the neck of the gallbladder was found in 5 cases, that in the cystic duct was found in 6 cases and that in the common bile duct was found in 5 cases. Complication by cholecystic cancer, cholangiocarcinoma, cholecytis adenomyomatosis or cholecytitis adenoma was found in a few cases. In some cases, no organic disease was found; only functional obstruction was detected (8). In the clinical course of LBS, spontaneous flow of limy bile from the gallbladder to the common bile duct and from the common bile duct to the duodenum was found in some cases (9–11). Cases in which obstructive jaundice or pancreatitis was induced by limy bile in the common bile duct have also been reported (11).

How has LBS been treated? In a few cases, cure of LBS was found during observation of the course without giving any treatment. The most frequently used treatment method to date is laparotomy (4, 7, 12). That is, cholecystectomy has been performed for limy bile in the gallbladder, and cholecystectomy and insertion of T-tube into the common bile duct after removal of limy bile have been performed for limy bile in the gallbladder and the common bile duct. Recently, laparoscopic cholecystectomy for focal limy bile in the gallbladder was reported (13). For the treatment of occurrence of limy bile in both the gallbladder and common bile duct, combined application of endoscopic sphincterotomy (EST) and laparoscopic cholecystectomy was reported (14).

How should LBS be treated? Is observation of the course without giving any treatment sufficient (9–11)? LBS can frequently be accompanied by lithiasis in the neck of the gallbladder, in the cystic duct and/or in the common bile duct. Complications by obstructive jaundice, critical pancreatitis, cholecystic cancer or cholangiocarcinoma are also found although the frequency is low. Since cholelithiasis and bile duct cancer can easily be hidden by limy bile, making diagnosis of these diseases is very difficult compared with those in the absence of limy bile. Owing to these reasons, observation of the course without treatment should not be chosen. What about laparotomy? Laparotomy is similar to the surgical method for cholecystolithiasis and/or choledocholithiasis, and is an established method with a long history and high level of safety. However, the disadvantages are the severe invasiveness and the necessity for long-term hospitalization.

Laparoscopic cholecystectomy is less low invasive and its safety has been established (13). EST is typically used for
choledocholithiasis and also shows low invasiveness. Since endoscopic treatment does not require general anesthesia and is less invasive and requires only a short period of hospitalization, it can be applied to patients with a liver or kidney disorder, or to elderly patients. Is it possible to apply endoscopic papillary balloon dilatation (EPBD) for the treatment of limy bile in the common bile duct? In the use of EPBD, attention should be paid to postoperative pancreatitis, but EPBD is rarely accompanied by hemorrhage or perforation different from EST. Collectively, EPBD is safer than EST. Therefore, EPBD seems to be the best method for the treatment of limy bile in the common bile duct. As mentioned above, endoscopic therapy is an excellent method for the treatment of LBS in many respects, and will likely become popular in the future.

References