Pleurobiliary Fistula Secondary to Choledocholithiasis—A Rare Entity

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Pleurobiliary fistula secondary to common bile duct obstruction due to stone is a very rare clinical entity. A 55-year-old female patient presented in the emergency department with features of septicaemia with left pleural effusion. Intercostal tube drainage drained 5 L of bile on the first day and around 500–600 mL of bile each day subsequently. Magnetic resonance cholangiopancreaticography showed choledocholithiasis with pleurobiliary fistula. The patient underwent bilioenteric bypass and ligation of the fistulous tract with complete cure. [Asian J Surg 2008;31(1):29–31]

Key Words: choledocholithiasis, common bile duct obstruction, pleurobiliary fistula

Introduction

Pleurobiliary fistula secondary to common bile duct obstruction due to stone is a very rare clinical entity. We report one such case of a 55-year-old female patient who presented with septicaemia and left pleural effusion. She was successfully managed by intercostal tube drainage and bilioenteric bypass with complete healing of the fistula. To the best of our knowledge, this is the second reported case of pleurobiliary fistula secondary to choledocholithiasis.

Case report

A 55-year-old female patient was admitted to the emergency department with a 15-day history of high-grade continuous fever associated with chills, rigours, vomiting, shortness of breath and cough without expectoration. On physical examination, she was febrile (temperature, 38.9°C), had tachycardia (pulse, 110/min), tachypnoea (respiratory rate, 30/min), and icterus. There was decreased air entry with dullness on the left side of the chest. Blood investigations showed leucocytosis (TLC, 20,000/mm³; neutrophils, 88%). Liver function tests showed conjugated hyperbilirubinaemia with markedly raised alkaline phosphatase 5’ nucleotidase and normal liver enzymes. The rest of the blood investigations were within normal limits. Chest X-ray showed opaque left hemithorax suggestive of fluid collection.

As the patient had high-grade fever and dyspnoea, a diagnosis of empyema was made and intercostal tube drainage was performed on the left side in the fifth intercostal space in the midaxillary line. The intercostal tube drained 5 L of frank bile on the first day and continued to drain around 500–600 mL of bile per day. Bile culture revealed Escherichia coli. Antibiotics were started as per culture report.

The patient became afebrile within 7 days. Liver function tests returned to normal limits with 3 weeks of intercostal drainage. The intercostal drainage tube continued to drain bile. Ultrasonography of the abdomen at this stage revealed thickened gallbladder wall with multiple stones and a dilated common bile duct (20 mm) with a single stone in the common bile duct at its lower end.

Magnetic resonance cholangiopancreaticography (MRCP) revealed multiple gall stones, dilated common bile
duct, fistulous tract between the left lobe of the liver and left hemidiaphragm, and fluid collection in the left pleural cavity (Figure 1). Endoscopic retrograde cholangiopancreaticography (ERCP) was performed, but the stone could not be retrieved as the papilla could not be cannulated.

In view of continued bile drainage from the intercostal tube, failure of ERCP in stone extraction, and for biliary decompression, the patient was taken for surgery. On exploration, a large impacted stone was found at the lower end of the common bile duct and a definite fistulous tract was identified between the left lobe of the liver and the left hemidiaphragm (Figure 2) which was divided after ligation. Cholecystectomy and bilioenteric bypass in the form of choledochoduodenostomy was performed.

The postoperative period was uneventful. Drainage of bile from the intercostal tube stopped on postoperative day 7, the intercostal tube was removed on postoperative day 10, and the patient was discharged on postoperative day 12. All biochemical parameters were normal at the time of discharge. The patient was well at the 1-year follow-up in the surgical clinic.

Discussion

Pleurobiliary fistula is a very rare presentation of common bile duct obstruction. Thoracobilia has been reported as a complication of choledocholithiasis, secondary to perforated cholecystitis or as a sequel to malignant or benign bile duct stricture. Recently, a case of pleurobiliary fistula was reported after open cholecystectomy. A case of pleurobiliary fistula was reported after ruptured choledochal cyst.

Trauma has been reported as a common cause of pleurobiliary fistula in Western literature. Factors that contribute to the development of pleurobiliary fistula after trauma are missed hepatobiliary injury and initial conservative management.

A probable mechanism for the development of pleurobiliary fistula in long-standing common bile duct obstruction is the development of intrahepatic cholangitic abscess which ruptures and forms a subdiaphragmatic biliary collection. This collection finds its way into the thorax through one of the congenital openings or defects in the diaphragm.

These patients should be initially managed by intercostal tube drainage and supportive measures such as correction of metabolic abnormalities, sepsicaemia and dehydration. Once the patient is stabilized, MRCP should be performed to find the cause and site of biliary obstruction. Biliary obstruction must be relieved by endoscopic or operative means in order to facilitate the closure of the fistulous tract between the biliary tree and pleural cavity.

Pleurobiliary fistula secondary to choledocholithiasis is a rare but serious complication that could carry significant morbidity and even mortality. A high index of suspicion is required for early diagnosis and to ensure adequate treatment. Initial treatment is conservative in the form of intercostal drainage, rehydration and correction of metabolic abnormalities. MRCP remains the investigation of choice. Biliary decompression must be done to facilitate closure of the fistulous tract.
References


