

Severe acute cholangitis after endoscopic sphincterotomy induced by barium examination: A case report

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Abstract

Endoscopic sphincterotomy (EST) is considered as a possible etiological factor for severe cholangitis. We herein report a case of severe cholangitis after endoscopic sphincterotomy induced by barium examination. An adult male patient presented with epigastric pain was diagnosed as having choledocholithiasis by ultrasonography. EST was performed and the stone was completely cleaned. Barium examination was done 3 d after EST and severe cholangitis appeared 4 h later. The patient was recovered after treated with tienam for 4 d. Barium examination may induce severe cholangitis in patients after EST, although rare, barium examination should be chosen cautiously. Cautions should be also used when EST is performed in patients younger than 50 years to avoid the damage to the sphincter of Oddi.

INTRODUCTION

Endoscopic retrograde cholangiopancreatography (ERCP) is an important diagnostic technique for biliary and pancreatic diseases. Endoscopic sphincterotomy has become a well established modality for common bile duct (CBD) stones^[1,2]. However, endoscopic sphincterotomy is considered as a possible etiological factor for recurrent ascending cholangitis^[3,4]. Here we report a case of severe cholangitis after endoscopic sphincterotomy induced by barium examination, and the patient was recovered after treatment with tienam.

CASE REPORT

A 40-year-old man presented with dull aching epigastric pain for 2 wk. He had a history of CBD stones for 2 years. The patient was averagely built and nourished. No jaundice was present. Biochemical parameters were all

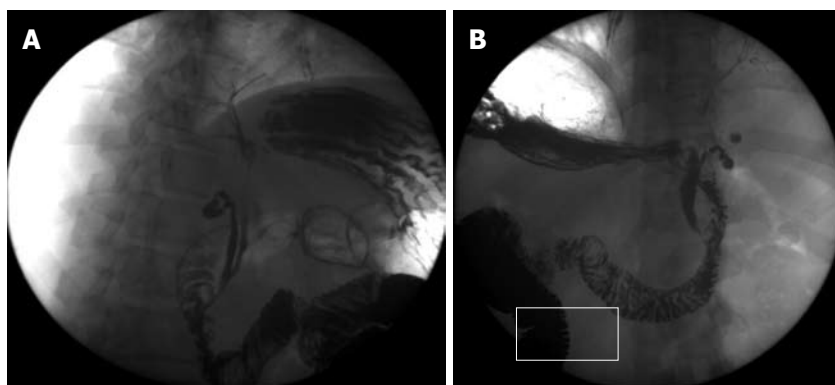


Figure 1 Barium refluxed into the biliary tree of the patient after endoscopic sphincterotomy.

within normal limits. Total white blood cell (WBC) count and hemoglobin measurement were normal. Liver function tests showed that serum bilirubin was 13.5 $\mu\text{mol/L}$, alkaline phosphatase 55 U/L, aspartate aminotransferase (AST) 40 U/L and alanine aminotransferase (ALT) 35 U/L. Ultrasonography revealed CBD stones in the ampulla of Vater and a dilated CBD of 12 mm in diameter. ERCP displayed a dilated CBD. Endoscopic sphincterotomy (EST) was performed in the Second Affiliated Hospital of China Medical University and stones were removed from the biliary tract. The general condition of the patient was good except for slight dull epigastric pain.

To rule out the disease of stomach, barium examination was made 3 d after EST. In the process of barium examination, barium could be seen refluxed into the biliary tree (Figure 1). Four hours later, the patient had a high fever and chills, and the body temperature was climaxed to 39.8 °C. On investigation, total WBC count was increased to $22.45 \times 10^9/\text{L}$, and hemoglobin was normal. Liver function tests showed serum bilirubin 33.5 $\mu\text{mol/L}$, alkaline phosphatase 155 U/L, AST 143 U/L and ALT 235 U/L, urine amylase 85 U/L and blood amylase 110 U/L. Ultrasonography showed a dilated CBD and no specific manifestation of the pancreas. Severe cholangitis after endoscopic sphincterotomy induced by barium examination was then diagnosed. The patient was recovered after treated with tienam for 4 d. He is still alive 5 years after the treatment, but suffered from 1-3 recurrent episodes of reflux cholangitis each year.

DISCUSSION

Endoscopic papillotomy with stone extraction continues to be a therapeutic choice and the reference standard in the treatment of symptomatic choledocholithiasis, especially for the solitary bile duct stones up to 12 mm in diameter. The overall success rate with EST was 95.7% in the present report. The most frequent complication encountered was bleeding, followed by acute pancreatitis, acute cholangitis, and perforation^[5,6]. It has been found recently that the incidence of acute biliary pancreatitis may be lowered by pancreatic duct stenting^[7].

After endoscopic sphincterotomy, the biliary sphincter is rendered permanently insufficient. The loss of this physiologic barrier between duodenum and biliary tract

results in duodenocholedochol reflux and bacterial colonization of the biliary tract. Our previous study showed that about 35.9% of the patients with a T-tube after cholecystectomy and choledochotomy had duodenal-biliary reflux. Most of them had hypomotility of the sphincter of Oddi^[8]. After EST, biliary reflux of duodenal chyme occurs in most patients, aerobilia is seen in about half, and bacterobilia in all the patients^[9,10]. Most patients with bacterobilia did not inevitably develop symptomatic recurrent cholangitis, but 20% patients had upper abdominal pain during the follow-up of about 36 mo^[11]. Another study showed that 65% patients after EST had duodenobiliary reflux, detected by barium studies, although no clinical symptoms were observed^[12]. The presence of bacteria in the biliary system, which is sterile under physiologic conditions, might lead to complications after EST. Misra *et al*^[13] studied the incidence of duodenobiliary reflux and acute cholangitis after placement of self-expanding metal stent across the main duodenal papilla, and found that severe reflux of barium was evident in all the patients. However, none of them developed acute cholangitis because of reflux.

To avoid the damage to the biliary sphincter, endoscopic papillary balloon dilation (EPBD) was introduced as a less traumatic alternative to EST in the management of biliary tract stones^[14]. However, a high incidence rate of procedure-induced pancreatitis was reported^[15]. But, more recently, May *et al*^[16] and Mathuna *et al*^[17] found that the complication rates of pancreatitis by EPBD were similar to those by EST. Toda *et al*^[18] studied the early results of EST and EPBD and found no difference in the early complications between EST and EPBD. The incidence rates of cholangitis by EST and EPBD were 4.0% and 4.2%, respectively. Yasuda *et al*^[19] showed that preservation of papillary function after EPBD was not complete, but remained somewhat reduced. Preservation was more successful with EPBD than with EST. The incidence of pneumobilia was significantly higher in post-EST than in post-EPBD patients. Yasuda *et al*^[20] also found that during long-term follow-up, patients who underwent endoscopic sphincterotomy (ES) had significantly more biliary complications than those who underwent EPBD. The biliary sphincter dysfunction after ES results in additional late complications.

Reflux of duodenal contents into the biliary tract af-

ter EST was the consequence of reduction or abolition of sphincter activity, as documented by manometry even 15 years following the sphincterotomy^[21]. One study found that sphincterotomy was associated with a 5-fold higher incidence of recurrent brown CBD stones compared with choledocholithotomy^[22]. One study reported the potentials of endoscopic papillary large balloon dilatation (EPLBD) with minor EST for the complete removal of CBD stones and found that the recurrence of CBD stones was especially low in cases of periampullary diverticulum treated with EPLBD by minor EST^[23].

In our patient after EST, severe cholangitis occurred 4 h after gastrointestinal barium X-ray examination was done. In the process of barium examination, barium refluxed to the CBD, gallbladder and intrabiliary bile duct. Barium examination may induce severe cholangitis in patients after EST. Although the incidence is low, we should avoid early barium examination in patients after EST. The patient was younger than 50 years, if choledochotomy was performed and the sphincter of Oddi was preserved, reflux cholangitis might not occur.

In conclusion, EST, as a standard treatment of choledocholithiasis, destroyed the integrity of sphincter of Oddi which may induce reflux cholangitis. As a motivation factor, barium examination may induce severe cholangitis in patients after EST, although rare, it should be performed cautiously. Cautions should also be used when EST was performed in patients younger than 50 years to avoid the damage to the sphincter of Oddi.

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