Common Bile Duct Stricture Post Open Cholecystectomy

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ABSTRACT

Common bile duct stricture is a common complication following open cholecystectomy. Approximately 80% of benign strictures occur following injury during a cholecystectomy. We report a female aged 70 years old, with a history of open cholecystectomy due to gallbladder stones. She was admitted to Cipto Mangunkusumo Hospital with symptoms and signs of obstructive jaundice. Endoscopy retrograde cholangio-pancreaticography (ERCP) examination revealed proximal common bile duct (CBD) stricture. She underwent open laparotomy, during which, a narrowing of proximal CBD was seen due to a fibrosis involving part of the duodenum. The patient then underwent a hepatic-duodenostomy bypass surgery. The symptoms and signs of obstructive jaundice were relieved after surgery.

***Keywords**: CBD stricture, obstructive jaundice, open cholecystectomy, ERCP, hepatoduodenostomy bypass surgery*

ABSTRAK

Striktur duktus biliaris komunis merupakan komplikasi yang sering terjadi setelah operasi kolesistektomi terbuka. Sekitar 80% dari kasus striktur jinak disebabkan oleh cedera operasi kolesistektomi. Dilaporkan seorang perempuan 70 tahun, dengan riwayat paska kolesistektomi terbuka akibat batu kandung empedu. Pasien datang ke Rumah Sakit Cipto Mangunkusumo dengan gejala dan tanda ikterus obstruktif. Hasil pemeriksaan endoscopy retrograde cholangio pancreaticography (ERCP) menunjukkan adanya dugaan striktur pada duktus biliaris komunis proksimal. Telah dilakukan laparatomi terbuka terhadap pasien dan didapatkan adanya penyempitan duktus biliaris komunis proksimal akibat adanya fibrosis yang melibatkan sebagian dari duodenum. Kemudian dilakukan bedah pintas hepatikoduodenostomi terhadap pasien. Paska operasi hepatoduodenostomi, tanda dan gejala ikterus obstruksi membaik.

***Kata kunci:** striktur CBD, ikterus obstruktif, kolesistektomi terbuka, ERCP, bedah pintas hepatoduodenostomi*

INTRODUCTION

Common bile duct stricture often happens after open cholecystectomy. Approximately 80% of benign stricture is post cholecystectomy injury. Incidence rate of common bile duct stricture is 0.2-0.3% after laparoscopic cholecystectomy, while the incidence rate after open cholecystectomy is 0.4-0.6%. This common bile duct stricture is often unrecognized post cholecystectomy, particularly in benign stricture. Most post laparoscopic cholecystectomy strictures occur in the common hepatic duct, while post open cholecystectomy strictures occur mostly in common bile duct.[1,2,3]

Several etiologies of this stricture include lack of experience of the surgeon, weakness in identifying bile duct anatomy, presence of anatomy abnormality

of the bile duct, acute inflammation, incorrect clip placement, wide excision of the tissue, too much cauter around the bile duct which causes ischemia in bile duct. Clinical signs and symptoms may vary, from subclinical with mild elevation of liver function in laboratory examinations, until those with obstructive icterus, pruritus and cholangitis, also the development of biliary cirrhosis.[4]

Examinations needed to establish the diagnosis include complete blood count, liver function, and imaging studies from less sophisticated (e.g. ultrasound) until magnetic resonance cholangiopancreatography (MRCP), endoscopic ultrasound (EUS) and endoscopic retrograde cholangio-pancreaticography (ERCP). Management includes antibiotic administration in the presence of cholangitis, biliary system decompression by insertion of nasobiliary tube, stent placement in common bile duct (CBD) through ERCP, percutaneous transhepatic biliary drainage (PTBD), and even surgery if other procedures failed.[5,6]

Figure 1. Magnetic resonance cholangiopancreatography examination showed mild dilatation and stone in common bile duct

CASE ILLUSTRATION

A 70 year old female patient came to Emergency Unit Cipto Mangunkusumo Hospital with the chief complaint of eyes and body looked yellowish since one week prior to hospital admission. This complaint was accompanied by epigastric pain, nausea, and sometimes fever. Four months before Cipto Mangunkusumo Hospital admission, patient complained of upper right abdominal pain, which radiated to the back, fever, eyes not icteric, normal urination and defecation. To the patient, ultrasonography (USG) examination was performed; there was gallbladder stone, later gallbladder excision surgery was performed in a hospital in Manado. After surgery, patient had no complaint. Since two months after surgery, patient complained of sometimes her eyes looked yellowish, occassional fever, nausea, upper right abdominal pain, yellow colour urine, pale stools. Patient was examined in a hospital in Manado; it was obtained that her level of bilirubin was high and therefore, she was advised to go to Cipto Mangunkusumo Hospital to undergo ERCP examination.

From physical examination, it was obtained that the patient was compos mentis, looked moderately ill, blood pressure 114/81 mmHg, heart rate 88 times/minute, respiratory rate 16 times/minute, temperature 36^{o}C. He had icteric sclera, but heart and lung examinations were within normal limits. Liver and spleen were not palpable. From laboratory examination, it was obtained that hemoglobin (Hb) 12.2 g/dL, leukocyte 15,300/uL, trombocyte 513,000/uL, segment 82%, direct bilirubin 5.59 mg/dL, indirect bilirubin 0.34 mg/dL, AST 103 u/L, ALT 66 u/L, gamma GT 296, carbohydrate antigen (CA) 19-9 351.96 U/mL, prothrombin time (PT) 14.1 seconds (control 12.8 second), activated partial thromboplastin time (aPTT) 35.9 seconds (control 31.8 seconds). The result of MRCP in a hospital in Manado revealed the presence of multiple CBD stones, dilation of common bile duct, common hepatic duct, also left and intrahepatic bile duct.

To the patient, ERCP was performed in Cipto Mangunkusumo Hospital, along with canulisation; no abnormalities was found in papilla vaterii. Cholangiogram showed contrast filling up to distal CBD. Common hepatic duct (CHD), intrahepatic bile duct (IHBD) right and left and proximal CBD were unvisualized; it was concluded that there was complete obstruction, therefore it was not possible to perform endoscopic management. Patient was then referred for surgery.

After biliodigestive laparotomy, CBD exploration, and biliodigestive hepticoduodenostomy surgery were performed, there was part of duodenum attached to the proximal CBD and fibrotic tissue was formed. Further, proximal CBD and fibrotic tissue were released. After duodenum was released, hepaticoduodenostomy was performed. To the patient, cefoperazone antibiotic was administered 1 gram twice daily. Post surgery, patients condition improved, icteric sclera decreased. On the second day post surgery, it was obtained that direct bilirubin 1.2 mg/dL and indirect bilirubin 0.38 mg/dL. Further, patient was discharged.

DISCUSSION

In this case, the diagnosis of obstructive jaundice due to proximal CBD stricture was established based on the complaint of icteric eyes which worsened since two weeks before hospital admission. There was history of gallbladder surgery, increased value of gamma GT, direct bilirubin, and negative hepatitis virus marker. In ERCP examination, it was obtained that contrast only filled distal CBD, while proximal CBD, CHD, right and left IHBD were not visualized.

After open laparotomy was performed, it was known that there was attachment part of duodenum to proximal CBD which caused the formation of fibrotic tissue. Therefore the cause of obstruction was adhesion which caused fibrosis in proximal CBD. The formation of fibrosis in proximal CBD was probably caused by two things. First, the presence of cholangitis which further caused stricture or fibrotic tissue in CBD. MRCP examination prior to ERCP revealed the presence of multiple stones in CBD. The presence of stone in CBD was a risk factor of cholangitis. Cholangitis further would cause stricture of CBD. Other signs and symptoms showing the presence of cholangitis include abdominal pain and leucocytosis.[7,8] Second, open cholecystectomy procedure was a procedure frequently followed by complications, such as CBD stricture.

In this case, the administration of cefoperazone was meant as pharmacological management of cholangitis. Antibiotic which was advised empirically was antibiotic with high penetration to biliary system, one of which was cefoperazone. Additionally, the choice of antibiotic was based on microbiological pattern frequently found as the cause of cholangitis. Several bacteria causing cholangitis include *Escherichia coli (E. coli), Klebsiella, Enterococcus, Proteus, Bacteroides* and *Clostridium* sp.[9] Culture which was performed to the bile acid of acute cholangitis patients usually revealed many polimicrobes, with most bacteria found was *E. coli.* Nonetheless, in similar study, it was found that *E. coli* has high resistency to third generation of cephalosporin antibiotics.[10] Remission rate was reported low in cefoperazone administration, which was approximately 56%.[11] Nonetheless, Tokyo Guidelines still placed cefoperazone and other third generation cephalosporin as the first line treatment in grade II acute cholangitis cases.[12]

Minimally invasive procedure by using ERCP was an appropriate option in this case, in addition to diagnostic, ERCP in this case could also be used to remove the stone in CBD and stent placement in CBD.[8] However, in this case, contrast medium only filled distal CBD, therefore surgical treatment was the next option. Through surgery, it was known that there was fibrosis in proximal CBD involving part of duodenum and hepaticoduodenostomy by pass had been performed to ensure bile acid flow. Mortality rate in this postoperative biliodigestive was 0% in non-complex common bile duct stricture, while mortality rate in complex common bile duct stricture was 7.2%.[13]

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