Complicated intra- and extrahepatic lithiasis treated by means of percutaneous transhepatic intervention procedures.

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Patient: 44 years, male

Clinical History:

44 years male patient with postcholecystectomy CBD stricture, intra- and extrahepatic lithiasis and recurrent cholangitis.

Imaging Findings:

A 44 years old male patient was operated three years ago because of acute cholecystitis. During open cholecystectomy multiple common bile duct (CBD) lithiasis was found. Some stones could be retrieved and a T-tube was placed. Postoperative cholangiography through the catheter, revealed retained lithiasis of the CBD and the intrahepatic bile ducts. The T-tube was left in place for 18 months and in this period the patient suffered from multiple episodes of cholangitis. Finally the T-tube was removed and a plastic stent was endoscopically inserted. At that time, endoscopy showed an eccentric stenosis at the level of the T-tube entrance. During the next 18 months the patient was not treated either by surgical or endoscopic means and his condition worsened due to recurrent cholangitis episodes. The patient presented to us with elevated liver blood tests and the request for percutaneous stone management. Ultrasonography of the liver showed dilated intrahepatic bile ducts with hyperechogenic walls and numerous stones in diverse ducts. Percutaneous transhepatic cholangiography revealed multiple lithiasis above a CBD stenosis, with the obstructed plastic stent under the stenosis level also obstructing the papilla of Vater and complicating the bile drainage to the duodenum (Fig.1). An 8 Fr biliary drainage catheter (Flexima, Boston Sc., MA, USA) was placed through a right lobe duct. Mild sedation was used with administration of 2 mg of midazolam and 0.02 mg fentanyl. During the next few hours the patient suffered from an acute cholangitis episode with septic fever and rigor, but recovered uneventfully and received antibiotics (third generation cephalosporine) intravenously for five days. During the next three months, more than 12 interventional procedures were needed for complete clearance of the multiple stones (Fig.2). We used every time the same antibiotic protection and sedation as in the initial phase. During the second procedure, the obstructed plastic endoprosthesis was catched and removed into the duodenum with help of a Nitinol Goose Neck Snare. A second drainage was placed through the 6th biliary segment, which was draining into the left main bile duct, in order to get access to a large impacted stone. Mechanical, as well as electrohydraulic lithotripsy (EHL) was performed (Fig.3) under cholangioscopic guidance. The lithotripsy wire was connected with the EHL-lithotriptor (Calcultript, Storz). Before all stones were removed, we performed balloon dilatations on the stenotic area, with help of angioplasty balloons of 2-4 cm length and 8-10 mm diameter, in order to provide free lumen for the stone fragments to be pushed or retrieved. Finally two catheters, one 12 Fr, coming from the right and one 10 Fr, coming through the left, were crossing on the dilated CBD for one month (Fig.4). The control
cholangiography showed a stone free biliary tree and a residual stenosis of the CBD which allowed free bile drainage. Subsequently, the left main duct catheter was retrieved and the right side one was replaced with an external drainage catheter which was closed and left for another month above the treated ducts, in order to check the bile drainage without obstructing foreign bodies into the biliary tree (Fig.5). The patient showed no cholangitis during this time, so that the external catheter was also retrieved. He is already 18 months without symptoms recurrence. During this time all elevated hepatic blood tests decreased to normal and also the hyperechogenic appearance of the bile duct walls disappeared. The patient did not show until now any clinical or histological signs of secondary biliary cirrhosis.

Discussion:

Choledocholithiasis combined with intrahepatic stones is a very difficult clinical situation. Endoscopic treatment is usually indicated for performing sphincterotomy and common bile duct (CBD) clearance or/and dilatation of benign strictures. Surgical treatment is also indicated if endoscopy fails. Biliary-digestive-anastomosis (BDA) creation with intrahepatic ducts exploration can be curative. Percutaneous transhepatic treatment is indicated when all other therapeutic options are impossible or inadequate. Problematic biliary calculi are stones which are lying in an inaccessible biliary tree, or are intrahepatic impacted or very large. They can also be above benign or malignant strictures, so that retrograde access is not easy. Percutaneous approach is possible either transhepatic, or through an already existing T-tube tract, or even through an enteric Roux-en Y loop which is fixed on the anterior abdominal wall. In special cases, access can be achieved through the cystic duct, after percutaneous cholecystostomy. Mechanical lithotripsy with help of Dormia baskets and stone removal balloons is usually adequate. If not, electrohydraulic or laser lithotripsy under cholangioscopic guidance is indicated. Combined percutaneous and endoscopic procedure is also an alternative in some cases. Our case was a rare one because of the previous mismanagement. Usually such a case should be operated by creating a BDA with enteric loop fixation in the anterior abdominal wall. So, if intrahepatic impacted stones are left after surgery, or if new lithiasis occurs, these could be retrieved with percutaneous techniques through the enteric loop. Nevertheless, if percutaneous treatment is immediately decided, surgery can follow if the benign stenosis recurs. Our patient is 18 months without new symptoms, so that reintervention with balloon dilatation would be perhaps justified if in the near future restenosis occurs.

Differential Diagnosis List: Postcholecystectomy retained and complicated intra- and extrahepatic lithiasis above an iatrogenic CBD-stenosis.

Final Diagnosis: Postcholecystectomy retained and complicated intra- and extrahepatic lithiasis above an iatrogenic CBD-stenosis.

References:


Figure 1

Description: Percutaneous transhepatic cholangiography reveals a benign stenosis of the common hepatic duct on the level where the t-tube was placed. Above this stenosis, dilatation of the biliary tree is seen with suspicion of intrahepatic lithiasis. Origin:
Description: Over a guidewire, a 12 Fr. Bannana Peel-away sheath is inserted. Opacification of the biliary tract shows multiple intrahepatic lithiasis and stenosis of the common hepatic duct. Origin:
Description: A second biliary drainage is placed through the 6th biliary segment. Through the first drainage, a Dormia basket is inserted for mechanical lithotripsy and stone retrieval. Origin:
Description: Two large bore catheters are left in place for one month after total stone retrieval. The catheters distend the common hepatic duct at the level of the stenosis. Origin:
Description: The second draining catheter is removed and the first one is replaced by a pigtail catheter which is left closed above the treated area for one month. The site of stenosis has a sufficient lumen and no rest lithiasis is seen. One month later, the patient was still symptom free, so that also this catheter could be removed. Origin: