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Non-traumatic perforation of common hepatic duct: Case report and review of literature HP



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ABSTRACT

INTRODUCTION: Non-traumatic biliary perforation other than the gallbladder is extremely rare and most commonly seen in children in association with congenital biliary anomalies. We present a rare case of choledocholithiasis that progressed to spontaneous perforation of the common hepatic duct probably from ischemic necrosis caused by impaction of large biliary stones.

CASEREPORT: A 62-year-old female presented with diarrhea and jaundice. She was found to have two 2.5 cm stones in the common hepatic duct. Stones could not be extracted by ERCP, and placement of biliary stent was done to restore patency. The patient was lost to follow up and returned after three months with a new onset of similar symptoms. At that time ERCP and a stent change were done without resolution of the symptoms. Patient then underwent an open exploration and was found to have a free perforation in the lateral aspect of the common hepatic duct just at the bifurcation of the right and left hepatic radicals. Through this perforation stones were both extracted and cholangiogram showed free flow with the distal biliary stent. The stent was nowhere near the site of perforation which appeared to be caused by pressure necrosis from the impacted stones.

CONCLUSION: Impacted stones in the biliary tree need to be extracted to avoid pressure necrosis and spontaneous perforation. ERCP and stent placement should be used only as temporizing measures to manage the acute obstructive phase. Definitive surgical intervention must follow initial biliary decompression to extract the impacted biliary stones and avoid complications.

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1. Introduction

Perforation of the biliary system is a serious condition that can lead to biliary peritonitis, septic shock and multi-organ failure. Non-traumatic biliary perforation other than the gallbladder is extremely rare and most commonly seen in children in association with congenital biliary anomalies [1]. In the adult population, this entity is even far more scarce, and often a complication of other biliary diseases. We present a rare case of choledocholithiasis that progressed to spontaneous perforation of the common hepatic duct probably from ischemic necrosis caused by impaction of large biliary stones. The patient was managed by a multidisciplinary team in an academic institution.

2. Case report

Our patient is a 62-year-old morbidly obese African American female with body mass index of 59.14 kg/m [2]. Her past medi-

cal history is significant for hypertension, atrial fibrillation, gout, gastro-esophageal reflux disease, and sleep obstructive apnea. The patient's list of medications included Flecainide, Apixaban, Paroxetine, Allopurinol, and she was on continuous positive air way pressure (CPAP) machine at home. Her family history is significant for obesity, hypertension and diabetes. The patient presented to the emergency room with diarrhea, clay-colored stools and jaundice, with no abdominal pain, fever or chills, and unremarkable physical exam. She was found to have two 2.5 cm stones in the common hepatic duct and CBD measured 25 mm. Since stones could not be extracted by endoscopy, placement of a 7 cm 7 French stent was done to restore the patency of the CBD. The patient was lost to follow up and then returned after three months with a new onset of similar symptoms. At that time two stones were found in her common hepatic duct, each estimated to be approximately 2–2.5 cm in size, with an 8 mm CBD. ERCP and a stent change were subsequently done by the GI service (Fig1). The symptoms didn't resolve, but the abdomen remained soft and non-tender, with no evidence of peritonitis. The patient was admitted after ERCP with following morning surgery planned. She underwent an open exploration through a right subcostal incision the following morning. Upon entry into the abdomen, 100–150cc of bile was noted in the right upper quadrant underneath the liver edge. Findings were

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Fig. 1. ERCP shows two large filling defects in the common hepatic duct represent stones.



Fig. 2. T-tube cholangiogram shows patent biliary tree, no retained stones, strictures or bile leak.

significant for chronic cholecystitis with distention of the gallbladder, gallstones, and a free perforation in the lateral aspect of the common hepatic duct just at the bifurcation of the right and left hepatic radicals. Through this perforation the common hepatic duct stones were both extracted and a cholangiogram through the perforation showed free distal flow with the distal biliary stent. The stent was nowhere near the site of perforation which appeared to be caused by pressure necrosis from the impacted stones. The perforation was closed with PDS sutures after the edges were debrided and a cholecystectomy was performed. Choledochoscopy was also performed and this again revealed what appeared to be a water-tight and non-strictured closure of the common hepatic duct in the area near the bifurcation. Through a separate ductotomy a T-tube was placed in the common bile duct and the stent removed. Completion cholangiogram showed no further intrahepatic or common duct stones and widely patent sphincterotomy. The patient tolerated the procedure well. She progressed as expected postoperatively, and was discharged after T-tube cholangiogram showed patency of CBD and CHD with no retained stones (Fig2). The T-tube was removed following another cholangiogram without stricture

or stones after two months, and the patient continued to do quite well.

3. Discussion

Non-traumatic or spontaneous perforation of the biliary system occurs most commonly in the gallbladder usually as a complication of acute cholecystitis. Perforations of other parts of the biliary tree are extremely rare with less than 70 cases reported in English literature, and are most commonly associated with congenital malformations and weaknesses of the biliary system in infants [1]. In the adult population, this entity is even far more scarce, and often a complication of other biliary diseases, such as gallstones. By reviewing 108 cases of spontaneous biliary perforation from the literature, McWilliams found that approximately 90% of perforations occurred in the gallbladder, followed by common bile duct in 4.4% of cases, while perforations in other parts of the biliary tree were even much less common.⁽²⁾ Calculi are thought to be a major factor in causing perforation as they were found in 74% of cases [2]. There are several proposed mechanisms of biliary ducts perforation due to calculi including perforation due to impaction of the calculi, erosion of the duct without impaction, ischemic necrosis, and increase in intraductal pressure [3]. efforts should always be made to extract any impacted biliary stones so ischemic necrosis doesn't occur. While a rare complication, perforation of the biliary tree should be suspected when a patient with known biliary disease or previous gallstones presents with peritonitis and acute abdomen or less commonly perihepatic abscess. Because of its rarity, biliary perforation requires high index of suspicion and the use of imaging modalities that can increase the chance of accurate diagnosis such as ultrasonography and computed tomography scan [4]. The prompt diagnosis and treatment for biliary perforation are very important as morbidity and mortality rates are very high when proper diagnosis and management are delayed.

The specific surgical management for biliary system perforations must be tailored according to each patient's condition. The surgical management aims to stop the continuous contamination by controlling the biliary leakage, draining the peritoneal cavity, and restoring the patency of the biliary tracts. It's also imperative to address the primary biliary pathology that led to the perforation as early as possible through either open, laparoscopic, or robotic techniques [4].

4. Conclusion

Impacted stones in the biliary tree need to be extracted to avoid pressure necrosis and spontaneous perforation. ERCP and stent placement should be used only as temporizing measures to manage the acute obstructive phase. Definitive surgical intervention must follow initial biliary decompression to extract the impacted biliary stones and avoid complications.

Conflicts of interest

None

Source of funding

None

Ethical approval

There was no ethical approval required for this case.

Consent

Written informed consent was obtained from the patient for publication. A copy of the written consents is available for review by the Editor-in-Chief of this journal on request.

Author contribution

Abdelaziz Atwez: Writing the paper, data collection and data analysis.

Mathew Augustine: Data collection.

James Nottingham: Study concept and design, proofreading.

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