Case Report

Gallstone ileus and bowel perforation: a rare complication of therapeutic ERCP

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Abstract

Gallstone ileus is rare following an Endoscopic Retrograde Cholangio-Pancreaticography (ERCP). We present a case where gallstones caused ileus and perforation of small bowel after a therapeutic ERCP. There was no previous history of instrumentation of the papilla or a cholecystoenteric fistula. This case points out a serious morbidity of therapeutic ERCP for large common bile duct stones.

Introduction

Mechanical small bowel obstruction due to a gallstone, known as gallstone ileus, is a recognized clinical condition and carries a mortality rate of 15-20%.[1] Halter et al reported the first case of gallstone ileus following endoscopic retrograde cholangiopancreaticography (ERCP) in 1981.[2] It is a rare clinical entity and accounts for 1-3% of mechanical ileus of the small bowel, but for 25% of all small bowel obstructions in patients older than 65 years.[3] Usual presentation of the patient is of intestinal obstruction as the gallstone migrates to small intestine following a cholecystoduodenal fistula. However gallstone ileus and perforation of small bowel causing peritonitis is less likely due to passage of stones through common bile duct (CBD), either spontaneously or after therapeutic ERCP. After an exhaustive literature search we found only one similar case reported in 1992 where a patient underwent multiple therapeutic ERCPs and suffered from gallstone ileus and bowel perforation.[3]

ERCP is associated with a 3% incidence of morbidity and 0.2% mortality.[4] This case highlights the need for a raised index of suspicion of gallstone ileus in patients treated for large CBD stones with therapeutic ERCP who present with a clinical picture of bowel obstruction and bowel perforation.

Case Report

An 84 years old female patient was admitted through accident and emergency with a clinical diagnosis of acute abdomen and sepsis. Blood tests showed a raised white cell count, C-reactive protein, and deranged liver function tests. Plain abdominal radiograph showed aerobilia and stigmata of sma ll bowel obstruction. A CT scan was arranged that showed a distended gall bladder with a large gallstone and dilated intra hepatic billiary channels containing air. The small bowel was distended with abrupt change in caliber at the level of distal ileum possibly due to an isodense calculus causing the obstruction (Figure 1).

Prior to this admission, the patient had an ultrasound scan that showed a distended gall bladder containing a large stone measuring 3.1 x 2.2 x 2.1 cm. The CBD was dilated to 2.6 cm containing multiple stones; the largest being 13 mm in diameter. The patient then underwent a therapeutic ERCP and endoscopic sphincterotomy (ES) and two large pigment stones were removed from the CBD (Figure 2). Two weeks after this procedure, she presented to us with acute peritonitis. After considering all available data diagnosis of gallstone ileus following the ERCP was made.

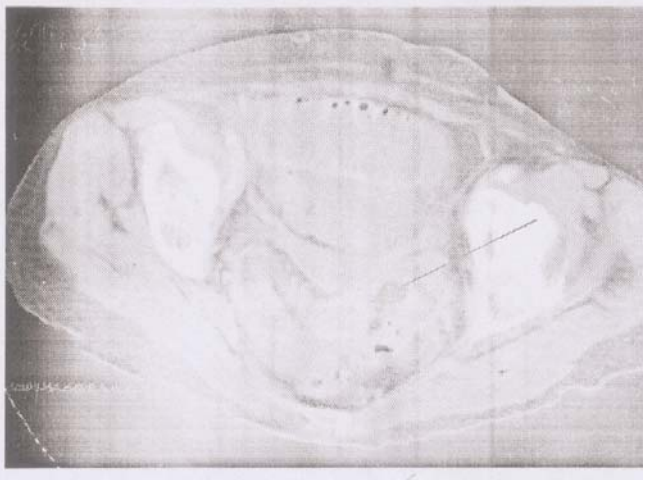

Figure 1. Dilated small bowel with an arrow pointing at the gallstones causing the obstruction and perforation.

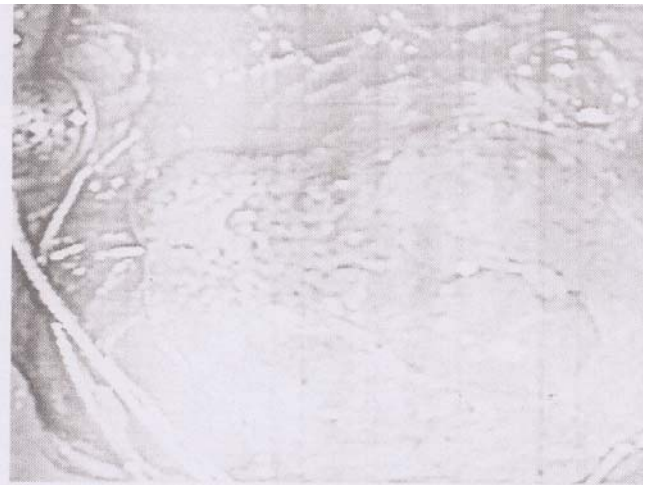

Figure 2: A large gallstone being extracted from the Common Bile Duct.

Exploratory laparotomy showed no evidence of a cholycystoenteric fistula. There was proximal small bowel distension with two perforations in the ileum two feet proximal to ileocaecal junction and interestingly, two large stones which had eroded the bowel wall were retrieved. Resection and primary anastomosis was performed with a linear stapler device followed by a cholecystectomy. The histology confirmed small bowel perforation and chronic cholecystitis.

Discussion

ERCP was first described in 1971.[3] It is has become a gold standard for therapeutic intervention in the management of choledocholithiasis in elderly and high risk patients.[5,6] It has a reported success rate of 80-90% with a 6.5-8.7% complication rate.[7] Complications of ERCP include haemorrhage, cholangitis, acute pancreatitis and perforation of hepatobilliary tree or duodenum. Gallstone ileus is a rare complication of ERCP and ES.[2] Usual presentation of gallstone ileus with perforation is early with usual site of perforation in either cystic duct or common bile duct mainly due to instrumentation and choledochoenteric fistula. It carries a mortality rate of 15-20%.[1] However gallstone ileus alone may not manifest itself even several days after the procedure.[8] Patients with large CBD stones may require extensive sphincterotomies to retrieve the stones as spontaneous passage would be unlikely. Stones of 1.5 cm have been observed to pass through without complications.[2,7] In this case the stones extracted from the terminal ileum at laparotomy were two in number, noted earlier at ERCP, which confirmed that they must have reached there after the ERCP. Review of earlier reported cases shows that common site of obstruction causing ileus was about 50 cm from ligament of Treitz or the obstruction was precipitated by intestinal narrowing either due to adhesions or radiation enteritis.[9] In this case we found two large gallstones eroding through the terminal ileum two feet proximal to the ileocaecal valve.

Timing of presentation of patient with obstruction is variable. Our patient presented 14 days following ERCP and ES. Usually these patients present early and other authors have reported the delay ranging from 24 hours to two month between ES and obstruction.[6]

This case reminds that a therapeutic ERCP for CBD stones can cause this rare clinical condition and if a patient presents with signs of intestinal obstruction or peritonitis, gallstone ileus should be considered in the differential diagnosis. An early intervention and management is

mandatory to prevent mortality[10] which unfortunately occurred in this case.

Conclusion

Gallstone ileus and perforation of the small bowel is a rare complication of therapeutic ERCP. Efforts should be made to retrieve or shatter the stones in the CBD or bowel during the procedure to prevent this potential fatal complication.

References

1. Way LW, Sleisenger MH. Cholelithiasis: chronic and acute cholecystitis. In Sleisenger MH, Fordtran JS. Eds. Gastrointestinal disease, ed 4. Philadelphia: W.B.Saunders, 1989: pp 1691-714.
2. Szanto I, Banai J, Szeleczky M, Bozalyi I. Gallstone ileus after endoscopic sphincterotomy. Orv Hetil. 1992; 133:363-5.
3. Despland M, Clavien PA, Mentha G, Rohner A. Gallstone ileus and bowel perforation after endoscopic sphincterotomy. Am J Gastroenterol 1992; 87:886-8.
4. Geene JE and Venu RP, "Endoscopic Retrograde Cholangiopancreatography", Bockus Gastroenterology, 4th ed, Chapter 44, Berk JE, ED, Philadelphia, PA: WB Saunders Co, 1985, pp 601-11.
5. Cotton PB, Vallon AG. British experience with duodenoscopic sphincterotomy for removal of bile duct stones. Br J Surg 1981; 68:373-5.
6. Classen M. Endoscopic papillotomy-- new indications, short- and long-term results. Clin Gastroenterol 1986;15:457-69.
7. Tondelli P, Gyr K. Biliary tract disorders. Postsurgical syndromes. Clin Gastroenterol 1983;12:231-54.
8. Williams IM, Hughes OD, Hicks E, Lewis MH. Gall stone ileus following multiple endoscopic retrograde cholangiopancreatographies.. J R Coll Surg Edinb. 1997;42:423.
9. Prackup GM, Babarjee B, Piorkowski RJ, Rosson RS. Gallstone ileus following endoscopic sphincterotomy. J Clin Gastroenterol. 1990;12:230-2.
10. Lancaster JF, Strong RW, McIntyre A, Kerlin P. Gallstone ileus complicating endoscopic sphincterotomy: Aust N Z J Surg. 1993;63:416-7.