Case Report

Spontaneous Perforation of Common Bile Duct: A Rare Presentation of Gall Stones Disease

Duminda Subasinghe, Edippuli Arachchige Don Udayakumara, Upul Somathilaka, and Milinda Huruggamuwa

Department of General Surgery, General Hospital, 60000 Kurunegala, Sri Lanka

Correspondence should be addressed to Duminda Subasinghe; dumindas1982@yahoo.com

Received 15 April 2016; Accepted 6 June 2016

Academic Editor: Engin Altintas

Copyright © 2016 Duminda Subasinghe et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Background. Spontaneous perforation of the extrahepatic biliary system is a rare presentation of gall stones. Very few cases of bile duct perforation have been reported in adults. It is rarely suspected or correctly diagnosed preoperatively. Case Presentation. A 66-year-old female presented at the surgical emergency with 3 days’ history of severe upper abdominal pain with distension and repeated episodes of vomiting, as she had evidence of generalized peritonitis and underwent an exploratory laparotomy. A single 0.5 cm × 0.5 cm free perforation was present on the anterolateral surface of the common bile duct at the junction of cystic duct. A cholecystectomy and the CBD exploration were performed. Conclusion. Spontaneous perforation of the extrahepatic bile duct is a rare but important presentation of gall stones in adults. Therefore, awareness of the clinical presentation, expert ultrasound examination, and surgery are important aspects in the management.

1. Introduction

Spontaneous perforation of the wall of the extrahepatic or intrahepatic bile duct with biliary peritonitis is a rare event in infants and an extremely rare event in adults. It was first described in 1882 by Freeland [1]. Generalized biliary peritonitis following perforation of the biliary tract is commonly a sequel of rupture of an inflamed gangrenous gall bladder [2]. Bile duct perforation is relatively common in infants [3, 4] and is related to congenital biliary system anomalies. The aetiology of biliary tract perforation in the adults is commonly attributable to intramural infection, necrosis of the wall of the bile duct secondary to thrombosis, increased intraductal pressure secondary to obstruction, cirrhosis, and direct erosion by calculi.

The presentation of biliary peritonitis varies and because of its rarity the correct preoperative diagnosis is often difficult and delayed. This along with the associated comorbidity of mostly the elderly, patients in whom it is seen, results in a mortality rate of 30–50% [4]. We report an interesting, rare case of spontaneous extrahepatic bile duct perforations with cholelithiasis, in an adult female. Its clinical presentations, investigative findings, and management are discussed and relevant literatures are reviewed. The rarities of this case are the atypical site of CBD perforation and its occurrence at a relatively older age.

2. Case Presentation

A 66-year-old female presented at the surgical emergency with 3 days’ history of severe upper abdominal pain with distension and repeated episodes of vomiting. The abdominal pain increased in intensity and became continuous and more diffuse for the last two days. Her past medical, surgical, and family histories were unremarkable. General examination revealed that she was dehydrated, febrile (101°F), and having a pulse rate of 120/minute and blood pressure of 90/70 mm of Hg. She was not icteric and free of cervical lymphadenopathy. Her abdomen was distended with guarding and rebound tenderness mainly in the upper abdomen. There was no evidence of free fluid in the abdomen. Liver dullness was not obliterated. Bowel sounds were absent.

Hematological investigations revealed neutrophil leucocytosis [17700 cells/mm³ (84% neutrophil)] with normal
Figure 1: Perforation on the anterolateral surface of the common bile duct.

Figure 2: Postoperative T-tube cholangiogram showing biliary anatomy and contrast leak.

3. Discussion

Spontaneous perforation of common bile duct is a rare cause of biliary peritonitis. It is rarely suspected or diagnosed preoperatively. Perforation of the biliary system is a recognized complication of cholelithiasis; the diagnosis should be suspected if a perihepatic abscess or peritonitis is combined with biliary stone disease. Kang et al. [5] reviewed 70 cases of spontaneous bile duct perforations in adults. Among these, 42 patients had perforation in common bile duct, followed by hepatic duct in 28 cases. Although the pathogenesis of spontaneous biliary perforation is poorly understood, the commonest cause for perforation was a stone in adults. The recognized mechanisms include calculus perforation at the site of impaction and erosion. The other causes for spontaneous perforation of bile duct reported in literature were increased canalicular pressure due to obstruction by tumour, spasm of the sphincter of Oddi, intramural infection, mural vessel infarction leading to mural necrosis, or rupture of a biliary tract anomaly such as cyst or biliary diverticulum, a connective tissue defect, or ischemic compromise that results in perforation of the duct wall and previous biliary tract surgeries [6–9]. Sometimes it can be idiopathic. Talwar et al. [10] have reported a case of CBD perforation during pregnancy and the site of the perforation was supraduodenal portion of the CBD with stone impaction. Our patient’s ultrasound abdomen showed perihepatic fluid collection suggesting a diagnosis of perforated viscus but there gall stones were not visualized. It is important to mention that ultrasound scan of the abdomen is an operator dependent imaging modality. Therefore, our patient’s preoperative diagnosis was uncertain and therefore the definitive diagnosis was made intraoperatively.

Perforation of the common bile duct was most probably related to the abrupt increase in local intraluminal pressure causing erosion of the stones. This results in abrupt increase in intraluminal pressure and decreased blood flow in the vessels which run along the lateral border of the bile ducts, resulting in ischemia on the anterior surface of the bile duct.
4. Conclusion

In conclusion, spontaneous perforation of the extrahepatic bile duct is a rare but important presentation of gall stones. Conservative surgery is the mainstay of treatment in the acute presentation.

Abbreviations

CBD: Common bile duct
USS: Ultrasound scan
ERCP: Endoscopic retrograde cholangiopancreatography

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images.

Competing Interests

The authors declare no competing interests regarding the publication of this paper.

Authors’ Contributions

Duminda Subasinghe participated in the conception and design of the report and wrote the paper and Edippuli Arachchige Don Udayakumara analyzed the report. Edippuli Arachchige Don Udayakumara, Duminda Subasinghe, Upul Somathilaka, and Milinda Huruggamuwa have been involved in the diagnosis, surgical management, and follow-up of the patient. All four authors read and approved the final paper. All four authors were involved in planning, analysis of the case, and writing of the paper.

Acknowledgments

The authors would like to thank the ward staff of the hospital for providing support and helping in management of the patient.

References

[1] J. Freeland, “Rupture of the hepatic duct,” The Lancet, vol. 119, no. 3062, pp. 731–732, 1882.
[2] R. Lochan and B. V. Joypaul, “Bile peritonitis due to intrahepatic bile duct rupture,” World Journal of Gastroenterology, vol. 11, no. 42, pp. 6728–6729, 2005.
[3] C. Chardot, F. Iskandarani, O. De Dreuy et al., “Spontaneous perforation of the biliary tract in infancy: a series of 11 cases,” European Journal of Pediatric Surgery, vol. 6, no. 6, pp. 341–346, 1996.
[4] S. Marwah, J. Sen, A. Goyal, N. Marwah, and J. P. Sharma, “Spontaneous perforation of the common bile duct in an adult,” Annals of Saudi Medicine, vol. 25, no. 1, pp. 58–59, 2005.
[5] S.-B. Kang, H.-S. Han, S. K. Min, and H. K. Lee, “Nontraumatic perforation of the bile duct in adults,” Archives of Surgery, vol. 139, no. 10, pp. 1083–1087, 2004.
[6] K. Ando, T. Miyano, S. Kohno, S. Takamizawa, and G. Lane, “Spontaneous perforation of choledochal cyst: a study of 13 cases,” European Journal of Pediatric Surgery, vol. 8, no. 1, pp. 23–25, 1998.
[7] L. J. Gariepy, O. A. Capano, and L. W. Gardner, “Non-traumatic rupture of the common bile duct,” The American Journal of Surgery, vol. 81, no. 3, pp. 357–362, 1951.
[8] T. Hasegawa, Y. Udatsu, M. Kamiyama et al., “Does pancreaticobiliary maljunction play a role in spontaneous perforation of the bile duct in children?” Pediatric Surgery International, vol. 16, no. 8, pp. 550–553, 2000.
[9] N. G. Steinhoff and G. L. Tucker, “Nontraumatic perforation of the common duct,” The American Journal of Surgery, vol. 121, no. 3, pp. 334–337, 1971.
[10] N. Talwar, M. Andley, B. Ravi, and A. Kumar, “Spontaneous biliary tract perforations: an unusual cause of peritonitis in pregnancy. Report of two cases and review of literature,” World Journal of Emergency Surgery, vol. 1, no. 1, article 21, 2006.
[11] G. Stringel and S. Mercer, “Idiopathic perforation of the biliary tract in infancy,” Journal of Pediatric Surgery, vol. 18, no. 5, pp. 546–550, 1983.
[12] N. Spigland, R. Greco, and D. Rosenfeld, “Spontaneous biliary perforation: does external drainage constitute adequate therapy?” Journal of Pediatric Surgery, vol. 31, no. 6, pp. 782–784, 1996.
[13] B. Schumacher, T. Frieling, D. Haussinger, and C. Niederau, “Endoscopic treatment of symptomatic choledocholithiasis,” Hepato-Gastroenterology, vol. 45, no. 21, pp. 672–676, 1998.
[14] D. J. Martin, D. R. Vernon, and J. Toouli, “Surgical versus endoscopic treatment of bile duct stones,” Cochrane Database of Systematic Reviews, no. 2, Article ID CD003327, 2006.