

Management of cysto-biliary communication in hydatid cyst of liver

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Abstract

Introduction: Biliary communication of hepatic hydatosis is one of the important complications. It may be minor or major communication. Minor communication is usually diagnosed during operation by the presence of bile stained hydatid fluid on aspiration or bile leak during surgery. However, in major communication, patients present with obstructive jaundice, abdominal pain and cholangitis. Surgical management of major communication is difficult and is associated with high morbidity and mortality.

Methods: This is a retrospective study at Tribhuvan University Teaching Hospital, Kathmandu, Nepal over a period of two year (April 15th 2012 to April 15th 2014) and analyzed the medical records of 30 patients admitted and treated for hydatid cyst of liver in surgical ward during that period. Demography, clinical features, management and outcome were analyzed.

Results: Of 30 patients with hepatic hydatid cyst operated over a period of two years, thirteen patients had cystobiliary communication. Amongst them, five minor communications were diagnosed during operation and managed with suture plication and omentopexy. Out of the eight major communications, seven were diagnosed preoperatively and all had cholangitis, and one had hydatid cyst of gallbladder and was diagnosed intraoperatively. Among six cases of major communication, five cases required CBD exploration and bile duct reconstruction while partial cholecystectomy was done for hydatid cyst of gall bladder and one case was managed by ERCP sphincterotomy, evacuation of cyst content and stenting. one case was managed with pigtail drain as the patient had infected hydatid cyst and not fit for surgery.

Conclusion: Cystobiliary communication is a common complication of hydatid cyst of liver. Therapeutic options are related to size and location of the cyst and size of communication.

Keywords: Cystobiliary communication; Cholangitis; Hydatid cyst.

Introduction

Of the 16 species of Echinococcus described in the literature, only four species are clinically important. Echinococcus Granulosus is most common and liver involvement is seen in two third of the cases. It is one of the common health problems in Middle East. Biliary communication of the hydatid cyst is one of the most common and serious complication of the hydatid cyst of the liver. Communications either due to increased intracystic

pressure or subsequent rupture in the bile duct or due to compression, erosion and necrosis of the wall of the bile duct due to cyst.¹ Rarely hydatid cyst ruptures into the peritoneal cavity, pleural cavity and pericardial cavity.

Incidence of cystobiliary communication (CBC) varies from 2% to 42% in different series,¹ though an incidence of 64.75% has been reported from a multicentric study in Tunisia.²

As the intracystic pressure is (30-80mm H₂O) greater than that of the intrabiliary pressure (15-20 mm H₂O) there is flow of cystic content into the biliary system towards duodenum, present as CBC, whereas after surgery the pressure gradient is reversed and bile leak occurs.^{2,3}

There are several classification systems of CBC. The most accepted definition of communication divides CBC into minor and major communication, or silent/occult and frank communication.³ Minor communications are fistula less than 5 mm, mostly asymptomatic pre operatively & revealed intra operatively by the presence of a bile leak. Whereas in major communication fistula is more than 5mm in diameter and patients presented with anaphylaxis, obstructive jaundice and cholangitis.

Before the introduction of US or CT, preoperative diagnosis of CBC was based on clinical manifestations and results of laboratory studies. The clinical findings and radiological features are non-specific in minor CBC whereas in major CBC pre-operative ultrasound, CT scan and MRI may suggest the diagnosis of a frank intrabiliary rupture in most of the cases.⁴

If CBC remains undetected or unrepaired during operation, this leads to postoperative biliary fistula resulting in biliary peritonitis and biliary abscess leading to significant morbidity and mortality. Thus it is important to diagnose and treat CBC in the preoperative and intraoperative period.

There are several factors that can predict CBC. These are: alkaline phosphatase >250 u/l; total serum bilirubin >17 umol/l; alanine amino transferase (ALT) >33.5 u/l; aspartate aminotransferase (AST) >29.5u/l.⁵ Other factors include raised level of γ GT, cyst size more than 8.5 to 10 cm, cyst located at the center of the liver and near hilum, advance stage of the cyst, multivesicular cyst are also independent predictor of CBC.^{1,3,6}

Surgery is the mainstay of the treatment for the hepatic hydatid cyst but there is no uniform consensus regarding the management of hepatic hydatid cyst and CBC. Several options are given in the literature, but choice depends on the site of communication, size of communication, experience of the surgeon, general condition of the patient and status of remaining liver and bile ducts.

In this study we review the demography, clinical feature, management and outcome of patients with cystobiliary communication (CBC) in our institute.

Methods

This is a retrospective study was conducted at TUTH, Kathmandu over a period of 24 month (2069/6/1 to 2070/5/30). Data was collected from the hospital records and patients who were diagnosed and treated for hepatic hydatid cyst with CBC were included in this study.

Result

Total of 30 patients were diagnosed and treated for hepatic hydatid cyst. Thirteen patients were diagnosed as CBC. Among them ten patients were females and three patients were males and eight cases were major CBC and five cases were minor CBC.

Right upper quadrant pain was the most common presentation and it was present in all cases. Seven patients with major CBC presented with features of obstructive jaundice and cholangitis whereas one patient with hydatid cyst of gallbladder was presented with right upper quadrant lump with features of gastric outlet obstruction. Liver was palpable in ten patients. Liver Function Test was markedly deranged (raised level of bilirubin and liver enzymes) in patients with major CBC whereas only mild derangement of alkaline phosphatase in a patients with minor CBC.

Involvement of right lobe was seen in 6 cases, left lobe in 5 cases, both lobe in 1 case and gall bladder is involved in one case. Five cysts were more than 10 cm in size and infection was present in 3 cases.

All minor communications were treated with suture plication and omentopexy whereas major communication required complex surgery and need of repeated intervention. One patient was unfit for surgery due to cardiac co morbidities, so managed with pigtail drain. (Table 1)

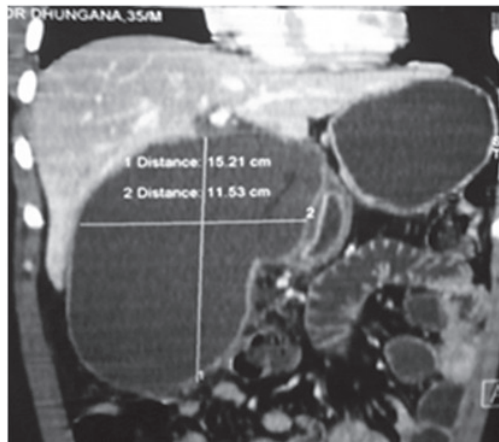
Table 1. Surgical procedure done for major CBC

Interventions done	No of patients
Partial pericystectomy + CBD exploration	2
Partial pericystectomy + CBD exploration + bile duct reconstruction	1
Partial pericystectomy + CBD exploration + ERCP + sphincterotomy + stenting	2
ERCP + sphincterotomy + stenting	1
Subtotal cholecystectomy	1
Pigtail drain	1

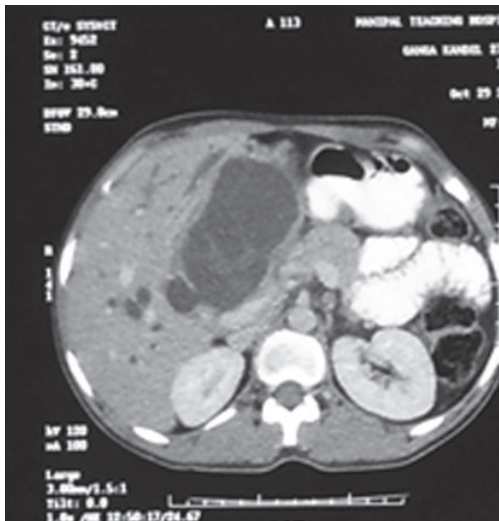
Surgical site infection (SSI) was the most common complication following surgery which is seen in 5 patients. Patients with biliary fistula were managed with ERCP sphincterotomy and stenting. (Table 2)

Table 2. Total no. of complications

Types of complications	No of patients
SSI	5
Biliary fistula	3
Chest infection	2
Post ERCP pancreatitis	1



CECT abdomen shows hydatid cyst of gall bladder



CECT hydatid cyst with CBC

Discussion

The criteria to diagnose cysto-biliary communication (CBC) are direct visualization of a cystobiliary opening during operation or demonstration of communication between cyst cavity and bile duct by ERCP or biliary leakage after hydatid cyst surgery.³ Mortality and morbidity are high in CBC after surgery.⁷

In this study 13 patients (43.33%) had cystobiliary communication among 30 patients of liver hydatosis, percentage same as other studies published in the other literature. Pre-operative diagnosis of minor CBC was difficult. Except minor derangement in alkaline phosphatase, rest was normal during clinical and radiological examination whereas in major CBC most of the patients presented with features of obstructive jaundice and cholangitis which was further supported by radiological examination and lab investigation. According to the literature, patients with hydatid cyst of liver with right sided hypochondrial pain with jaundice or manifestation of cholangitis should be suspected to have CBC.²

On analysis of the occurrence of biliary fistulas, there is no difference of occurrence of fistulas in the right and left lobe in our study, whereas in some literature shows involvement of right lobe is more common than that left lobe.⁸ But in contrast to other studies, incidence of major CBC is high as compared to minor CBC. The incidence of frank and occult cysto-biliary communication ranges 5% to 17% and 10% to 37% of cases, respectively.^{9,10} This is due to most of the cases were referred from the other center for further management.

Cyst size more than 10 cm is regarded as the independent clinical predictor of intrabiliary rupture, however in our study only 5 cases were found to be a size more than 10 cm.^{3,11}

Postoperative high biliary fistulas were the most difficult complication to be managed and it is seen in 3 patients.² They are classified according to the output. All of them needed ERCP sphincterotomy and stenting. In biliary fistula after surgery for hepatic hydatid cysts, sphincterotomy is considered the procedure of choice to decrease the rate of surgical reinterventions.⁸ In a study on endoscopic management of biliary fistulas conducted in 2006 on a group of 32 fistulas shows that ERCP reduces the bilioduodenal pressure difference promoting the flow of bile into the duodenum thus allowing the fistula to heal.¹² Fistula healing depends on a number of factors such as the volume of bile, fistula size, pressure, flow and residual hydatid material, and presence or absence of distal obstruction.

Conclusion

Cystobiliary communication is a common complication of hydatid cyst of liver. Therapeutic options are related to size and location of the cyst, size of communication and experience of surgeon. Detecting and suturing orifices in cystic wall are the best methods of treatment for minor communication whereas major communication required more complex procedures.

References

1. Ramia JM, Figueras J, De la Plaza R, Garcia-Parreno J. Cysto-biliary communication in liver hydatidosis. *Langenbeck's archives of surgery / Deutsche Gesellschaft für Chirurgie. Langenbecks Arch Surg.* 2012 Aug;397(6):881-7.
2. Erzurumlu K, Dervisoglu A, Polat C, Senyurek G, Yetim I, Hokelek M. Intrabiliary rupture: an algorithm in the treatment of controversial complication of hepatic hydatidosis. *World J Gastroenterol.* 2005 Apr 28;11(16):2472-6.
3. Demircan O, Baymus M, Seydaoglu G, Akinoglu A, Sakman G. Occult cystobiliary communication presenting as postoperative biliary leakage after hydatid liver surgery: are there significant preoperative clinical predictors? *Can J Surg.* 2006 Jun;49(3):177-84.
4. Avcu S, Unal O, Arslan H. Intrabiliary rupture of liver hydatid cyst: a case report and review of the literature. *Cases J.* 2009 Mar 10;2:6455.
5. Sawady NJ, Al-Faddagh Z. Study of bile leak after hepatic hydatid cyst surgery in Basrah. *Bas J Surg.* 2012 March: 40-50.
6. Kayaalp C, Bostanci B, Yol S, Akoglu M. Distribution of hydatid cysts into the liver with reference to cystobiliary communications and cavity-related complications. *Am J Surg.* 2003 Feb;185(2):175-9.
7. El Malki HO, El Mejdoubi Y, Souadka A, Mohsine R, Ifrine L, Abouqal R, et al. Predictive model of bilio-cystic communication in liver hydatid cysts using classification and regression tree analysis. *BMC Surg.* 2010 Apr 16;10:16.
8. Dolay K, Akbulut S. Role of endoscopic retrograde cholangiopancreatography in the management of hepatic hydatid disease. *World J Gastroenterol.* 2014 Nov 7;20(41):15253-61.
9. Zaouche A, Haouet K, Jouini M, El Hachaichi A, Dziri C. Management of liver hydatid cysts with a large bilio-cystic fistula: multicenter retrospective study. *Tunisian Surgical Association. World J Surg.* 2001 Jan;25(1):28-39.
10. Unalp HR, Baydar B, Kamer E, Yilmaz Y, Issever H, Tarcan E. Asymptomatic occult cysto-biliary communication without bile into cavity of the liver hydatid cyst: a pitfall in conservative surgery. *Int J Surg.* 2009 Aug;7(4):387-91.
11. Kilic M, Yoldas O, Koc M, Keskek M, Karakose N, Ertan T, et al. Can biliary-cyst communication be predicted before surgery for hepatic hydatid disease: does size matter? *Am J Surg.* 2008 Nov;196(5):732-5.
12. Pircovenau M VL, Enescu A, Manescu P, Ruxanda A. Biliary Fistula in Surgery of Hepatic Hydatid Cyst. Therapeutical and Diagnostic Consideration. *Curr Health Sci J.* 2011 Jul-Sep; 37(3):123-7.