CASE REPORT

Unexpected Noninvasive Procedure in the Treatment of Bronchobiliary Fistula (BBF): Case Report

Wadhah Mahdi Saleem Albadir, Department of Anesthesia, College of Medical Technology, Alkitab University, Kirkuk, Iraq.
Email: walbadir@yahoo.com, Mobile: +9647517697680
ORCID: http://orcid.org/0000-0001-7595-5352
Received: 21/6/2019 Accepted 30/7/2019 Published: 1st August, 2019

Introduction

Bronchobiliary fistula is an abnormal connection between the bronchial tree and biliary tract and it is one of the rare diseases [1], but with high morbidity and mortality [2]. BBF is either congenital [3] or acquired [4]. Acquired BBF may be a consequence of local infections (amoebic liver abscess, complicated liver hydatid disease or pyogenic hepatic abscess), neoplasm, biliary tract obstruction, and trauma [5-62]. In a systematic review of 68 cases, Liao et al [4], 2011, reported that BBF cause was tumors (32.3%; 19.1% primary tumors; 13.2% metastatic tumors), followed by biliary stenosis (18%), cholangiolithiasis (13%), hepatic hydatidosis (12%), trauma (10%), multiple primary or single primary disease (6% for each) and chronic pancreatitis (3%). In 2012 Cao et al [1], reported a case in 48 years old male with hepatocellular carcinoma. In 2015, Dai et al [63] reported a case of BBF in a 65-year-old male with a hepatic abscess. In 70- year- old male, 2016, Hay et al [64] reported that BBF was developed following hepatectomy of a recurrent hepatocellular carcinoma. Other cases of BBF was reported [65], 2016, in 77 year old female with hepatocellular carcinoma; in 2017, in 55 year old female with hydatid cyst [66]; In 2018, a 70-year-old male after pacreaticoduodenectomy [67], a 61-year-old male after radiofrequency ablation for HCC [68] and in 53-year-old female with breast cancer that was metastasized to liver [69]. While in 2015, BBF case reported in 3.5-year-old child after liver abscess rupture [70]. In Iraq, one review [71], in 2014, 14 cases of BBF were reported for the period from 2004 to 2010, four of them are with previous surgery to liver or right pulmonary hydatid cyst and 10 cases were with lower thoracic or penetrating abdominal injuries. Although the first case of BBF was reported by Peacock in 1850 [55], however, the incidence of BBF still a rare clinical condition.

Case report

In January, 2000 as a general surgeon on call, I was consulted at night to see a patient with clinical features of acute abdomen. The patient was sixteen year old thin female admitted to the medical ward a day before complaining of shortness of breath and right upper abdominal pain. At admission, patient was afebrile, not jaundiced, nor pale, nor cyanosed but anxious with mild dyspnea. Chest examination revealed basal right chest dullness and diminished air entry with mild abdominal distension .PA chest x-ray showed elevated right dome of the diaphragm. She is single, last menstrual period ended few days before admission with normal cycle menarche at age of thirteen.

On examination the patient was feverish (38.7 ^{0}C), pulse rate was 104 bpm, and Respiratory rate was 20/min, Blood Pressure was 115/80, anxious distressed by abdominal pain, not pale, nor jaundiced, nor cyanosed. Abdomen distended tender and

rigid with negative bowel sound. Digging back in her medical history she was diagnosed few days ago to have right pleural effusion by somebody and trial for pleural aspiration was done, but no urticarial manifestations noted. Laboratory investigation showed leukocytosis and normal liver function test (LFT). Ultrasound of the abdomen showed free fluid in Douglas pouch and subhepatic space the pelvis with the unilocular sub diaphragmatic right lobe hepatic cyst of 20x20 cm size, no dilatation of intrahepatic nor extrahepatic ducts (IHD&EHD), mildly distended intestinal loops with normal other viscera

According to the clinical features, laboratory findings, X ray and ultrasound, the case diagnosed as acute abdomen possibly due to infected hepatic hydatid cyst and a decision for urgent laparotomy was made. After rapid and short course of resuscitation and preparation urgent exploratory laparotomy through upper right paramedian incision was performed. More than 1.5 liters of turbid, non-bile stained, peritoneal fluid was aspirated, turbid non bile stained cystic fluid aspirated and 10% betadine solution injected intracystic as scolicidal agent, endocyatectommy done as usual cavity washed with saline, left as such without obliterating suturing, no evident biliary communication could be identified, cyst closed with intracystic drain, common bile duct was not dilated, consistent with ultrasound finding. Peritoneal lavage with warm saline done and abdomen closed with the subhepatic drain.

Postoperative period was smooth subhepatic drain removed on third postoperative day, but the intracystic drain was draining between 750-1000 ml of bile stained fluid daily, the patient was discharged after stich removal with the intracystic drain and advised to record daily drain output and to be seen weekly. After two weeks the drainage is nearly the same bile stained otherwise she looked well. Live function tests were normal, so she was referred for ERCP and sphincterotomy (S-ERCP) which was done and patient sent back after a week but without the intracystic drain which was incidentally dislodged during her transport. After 5 days she presented with fever, jaundice and cough, and was readmitted for management and soon she got biliptysis and the daily sputum collected was 650 – 1000 ml. Thus diagnosed as Bronchobiliary fistula (BBF). Chest examination and chest x ray showed signs of right basal consolidation, abdominal US revealed residual hepatic cystic cavity with no dilatation of IHD nor of EHD. Supportive therapy started to prepare her for operation and Roux-en Y cysto-jejunostomy, clubbing of fingers started to develop during this preoperative week period.

For the second operation, while the patient on the operative table induction done and endotracheal tube inserted (ETT) and checked to be inside trachea as usual, once connected to the ventilator, abdomen started to distend rapidly with cyanosis and bradycardia. ETT checked again while a small supraumblical incision done appeared useless, and nasogastric tube was inserted urgently. Once in the stomach there was gush of air and distension decreased and the cyanosis reduced and the pulse return to normal. Operation deferred and patient admitted to the intensive care unit after recovery.

Next morning patient was well, fever subsided and the daily collected sputum was less than 625 ml. On follow up days sputum decreased markedly, became less bile stained with time till it became clear and less than 100 ml/day. Patient afebrile not jaundiced, with good appetite, chest clinically and radiological improved. The patient was discharged after 17 days, cough was occasional and no expectoration, BBF assumed closed. Follow up was weekly for one month, then monthly for three months, and then every three months, till 2002 patient was well but with clubbing of fingers.

Discussion

Diversity of BBF causes influences their management and outcomes. In literature, only 14 cases of BBF were reported [71]. Since 1983 till now I was involved in management of two cases of BBF, first case in 1983 a 25-year- old male, shrapnel war injury, with the chest, diaphragmatic and extensive liver injury, complicated by pleural empyema and biliptysis treated operatively. The present case was the second patient in 2000 due to infected hydatid cyst following inadvertent aspiration. Retrospectively, with the subdiaphragmatic position of the cyst, it was not easy to explore the whole cystic cavity for cyst-biliary tree communication but gastric and bowel "insuffulation" that occurred immediately following connection to ventilator raise the possibility of such problem, with distal intrahepatic biliary obstruction by debris or sludge. Professor Khalid Naji, an Iraqi general surgeon, he always repeats his famous statement regarding pathogenesis of gastrointestinal fistulae " *with fistula, think about distal obstruction, when I close the door you will get out through the window, the window is the fistula*"[72].

The diagnostic technique such as HIDA and contrast enhanced MRCP were not available at that time, January, 2000 and S-ERCP was the diagnostic and possibly the best therapeutic choice. It may be possible to visualize the site and cause of obstruction by contrast study through the intracystic drain but the incidental dislodgement of intra cystic drain without releaving the obstruction by S-ERCP, gave no choice other than invasive operative procedure for internal drainage of the cyst with adhesolysis of diaphragmatic adhesions.

Hydatid disease is endemic in Iraq [73,74] and involve the liver in 80% of cases [75], one of the common complication of liver hydatid cyst (LHC) is rupture into biliary tree which occur in 5-10% of cases and gives clinical manifestation similar to choledocholithiasis [76,77]. Intraperitonial rupture may occur spontaneously or traumatic leading to acute abdomen with or witout urticaria [78]. In prospective study for66 case of complicated LHC done in Basrah Iraq from 1990-2000 intrabiliary communication was the commonest operative finding (48/66), 26 with jaundice and 22 without. Intraperitoneal rupture in 10/66 which seemed high. Operative treatment were according to whether patient jaundiced or not and operative findings, closure of communication by suturing with external drainage with or without decompression of biliary tree by T-tube or choledochoduodenostomy or transduodenal sphincterotomy. External drainage in non jaundiced done in eight, five of them remain with low output external biliary fistula for 7-9 months before closed spontaneously, internal drainage done in three cases. When S-ERCP being available we think it is a good minimally invasive technique to solve the problem of external fistulae and BBF as well, before shifting to more invasive option.

In conclusion, the endotracheal intubation and respiratory ventilator did bowel insuffulation through the fistulous tract and free normal bile drainage became possible, the door opened so the fistula closed.

References

1. Cao L, Song Z, Liu Q, Sheng J, Zhao P, Peng X. A case report of bronchobiliary fistula and literature review Infect Int (Electronic Edition) 2012;1(3):149-150.
2. Jamal Y, Tombazzi C, Waters B, Ismail MK. Bronchobiliary fistula in cirrhotic patient: a case report and review of literature. Am J Med Sci 2008;335:315-9.
3. Li TY, Zhang ZB. Congenital bronchobiliary fistula: A case report and review of the literature. World J Clin Cases 2019;7(7):881-890.
4. Liao GQ, Wang H, Zhu GY, Zhu KB, Lv FX, Tai S. Management of acquired bronchobiliary fistula: A systematic literature review of 68 cases published in 30 years. World J Gastroenterol 2011;17(33):3842-3849.

5. Akazawa S, Omagari K, Amenomori M, Nishiyama H, Mizuta Y, Kohno S. Bronchobiliary fistula associated with intrahepatic biloma after transcatheter arterial chemoembolization for hepatocellular carcinoma. J Hepatol 2004; 40: 1045-1046.
6. Genell SN, Fork FT, Jiborn H. Bronchobiliary fistula in chronic pancreatitis. Case report. Acta Chir Scand 1987;153:473-475.
7. Rose DM, Rose AT, Chapman WC, Wright JK, Lopez RR, Pinson CW. Management of bronchobiliary fistula as a late complication of hepatic resection. Am Surg 1998; 64: 873-876.
8. Cropper LD, Gold RE, Roberts LK. Bronchobiliary fistula: management with percutaneous catheter drainage of a subphrenic abscess. J Trauma 1982; 22: 68-70.
9. Eck BD, Passinault WJ. Bronchobiliary fistula. A rare complication of chronic pancreatitis. Int J Pancreatol 1996; 20: 213-216.
10. Coselli JS, Mattox KL. Traumatic bronchobiliary fistula. J Trauma 1983; 23: 161-162.
11. Yoon DH, Shim JH, Lee WJ, Kim PN, Shin JH, Kim KM. Percutaneous management of a bronchobiliary fistula after radiofrequency ablation in a patient with hepatocellular carcinoma. Korean J Radiol 2009; 10: 411-415.
12. Senturk H, Mert A, Ersavasti G, Tabak F, Akdogan M, Ulualp K. Bronchobiliary fistula due to alveolar hydatid disease: report of three cases. Am J Gastroenterol 1998; 93: 2248-2253.
13. Howman SF, Feng TL, Chamberlain RS, Groeger JS, Blumgart LH. Bronchobiliary fistula complicating oriental cholangiohepatitis. HPB (Oxford) 2002; 4: 131-133.
14. Bhasin DK, Rana SS, Rawal P, Gupta R, Wig JD, Nagi B, Singh K. Successful resolution of bronchobiliary and biliocutaneous fistula by prolonged endoscopic transpapillary biliary drainage. Indian J Gastroenterol 2008; 27: 207-209.
15. Allison MC, Milkins S, Burroughs AK, Rogers HS, Thomas HC. Bronchobiliary fistula due to acute cholecystitis in a subparahepatic gall bladder. Postgrad Med J 1987; 63: 291-294.
16. Mandal A, Sen S, Baig SJ. Bronchobiliary fistula. J Minim Access Surg 2008; 4: 111-113.
17. Memis A, Oran I, Parildar M. Use of histoacryl and a covered nitinol stent to treat a bronchobiliary fistula. J Vasc Interv Radiol 2000; 11: 1337-1340.
18. Hibi T, Sakamoto Y, Asamura H, Tochigi N, Ojima H, Shimada K, Sano T, Kosuge T. Successful resection of hepatocellular carcinoma with bronchobiliary fistula caused by repeated transcatheter arterial embolizations: Report of a case. Surg Today 2007; 37: 154-158.
19. Brem H, Gibbons GD, Cobb G, Edgin RA, Ellison EC, Carey LC. The use of endoscopy to treat bronchobiliary fistula caused by choledocholithiasis. Gastroenterology 1990; 98: 490-492.
20. Vimalraj V, Jeswanth S, Selvakumar E, Jyotibasu D, Rajendran S, Ravichandran P, Balachandar TG, Kannan DG, Surendran R. A case of recurrent biliptysis. J Thorac Cardiovasc Surg 2007; 133: 1662-1663.
21. Velchik MG, Roth GM, Wegener W, Alavi A. Bronchobiliary fistula detected by cholescintigraphy. J Nucl Med 1991; 32: 136-138.
22. Tran T, Hampel H, Qureshi WA, Shaib Y. Successful endoscopic management of bronchobiliary fistula due to radiofrequency ablation. Dig Dis Sci 2007; 52: 3178-3180.

23. Nigro JJ, Arroyo H, Theodorou D, Velmahos GC, Bremner RM. Bullets and biliptysis. Ann Thorac Surg 2002; 73: 1645-1647.
24. Kaido T, Kano M, Suzaki S, Yanagibashi K, Shiota M. Bronchobiliary fistula after hepatectomy for hepatocellular carcinoma. Dig Dis Sci 2006; 51: 1117-1121.
25. Moreira VF, Arocena C, Cruz F, Alvarez M, San Roman AL. Bronchobiliary fistula secondary to biliary lithiasis. Treatment by endoscopic sphincterotomy. Dig Dis Sci 1994; 39: 1994-1999.
26. Kim YS, Rhim H, Sung JH, Kim SK, Kim Y, Koh BH, Cho OK, Kwon SJ. Bronchobiliary fistula after radiofrequency thermal ablation of hepatic tumor. J Vasc Interv Radiol 2005; 16: 407-410.
27. Chong CF, Chong VH, Jalihal A, Mathews L., Bronchobiliary fistula successfully treated surgically. Singapore Med J 2008; 49: e208-e21.
28. Nishimura S, Nakagawa Y, Sakata T, Suga M, Ando M. Bronchobiliary fistula. Nihon Kyobu Shikkan Gakkai Zasshi 1996; 34: 689-693.
29. Ertuğrul I, Köklü S, Köksal AS, Coban S, Başar O, Ibiş M, Sahin B. Treatment of bronchobiliary fistula due to an infected hydatid cyst by a nonsurgical approach. Dig Dis Sci 2004; 49: 1595-1597.
30. Jung SI, Goo JM, Han JK, Jang JY, Lee KU, Lee KH, Im JG. Recurrent bronchobiliary fistula: unsuccessful management with repeated insertion of metallic biliary stent. J Vascular Intervention Radiol 2003; 14: 1577-1579.
31. Taylor MA, Parks RW, Diamond T. Bronchobiliary fistula complicating open cholecystectomy. Ulster Med J 1998; 67: 132-133.
32. Uzun K, Ozbay B, Etlik O, Kotan C, Gencer M, Sakarya ME. Bronchobiliary fistula due to hydatid disease of the liver: a case report. Acta Chir Belg 2002; 102: 207-209.
33. Lucero Pizones JA, Iglesias López A, Alcázar Iribarren Marín M, Márquez Galán JL. Bronchobiliary fistula secondary to biliary stricture after hepatectomy. Rev Esp Enferm Dig 2005; 97: 135-136.
34. Navsaria PH, Adams S, Nicol AJ. Traumatic thoracobiliary fistulae: a case report with a review of the current management options. Injury 2002; 33: 639-643.
35. Berk F, Corapcioglu F, Demir H, Akansel G, Guvenc BH. Bronchobiliary fistula detected with hepatobiliary scintigraphy. Clin Nucl Med 2006; 31: 237-239.
36. Partrinou V, Dougenis D, Kritikos N, Polydorou A, Vagianos C. Treatment of postoperative bronchobiliary fistula by nasobiliary drainage. Surg Endosc 2001; 15: 758.
37. Eryigit H, Oztas S, Urek S, Olgac G, Kurutepe M, Kutlu CA. Management of acquired bronchobiliary fistula: 3 case reports and a literature review. J Cardiothorac Surg 2007; 2: 52.
38. Chua HK, Allen MS, Deschamps C, Miller DL, Pairolero PC. Bronchobiliary fistula: principles of management. Ann Thorac Surg 2000; 70: 1392-1394.
39. Pappas SC, Sasaki A, Minuk GY. Bronchobiliary fistula presenting as cough with yellow sputum. N Engl J Med 1982; 307: 1027.
40. Stockberger SM, Kesler KA, Broderick LS, Howard TJ. Bronchoperitoneal fistula secondary to chronic Klebsiella pneumoniae subphrenic abscess. Ann Thorac Surg 1999; 68: 1058-1059; discussion 1058-1059.
41. Gandhi N, Kent T, Kaban JM, Stone M, Teperman S, Simon R. Bronchobiliary fistula after penetrating thoracoabdominal trauma: case report and literature review. J Trauma 2009; 67: E143-E145.
42. Ong M, Moozar K, Cohen LB. Octreotide in bronchobiliary fistula management. Ann Thorac Surg 2004; 78: 1512-1513; author reply 1513.

43. Oettl C, Schima W, Metz-Schimmerl S, Függer R, Mayrhofer T, Herold CJ. Bronchobiliary fistula after hemihepatectomy: cholangiopancreaticography, computed tomography and magnetic resonance cholangiography findings. Eur J Radiol 1999; 32: 211-215.
44. Jamal Y, Tombazzi C, Waters B, Ismail MK. Bronchobiliary fistula in a cirrhotic patient: a case report and review of the literature. Am J Med Sci 2008; 335: 315-319.
45. Johnson MM, Chin R, Haponik EF. Thoracobiliary fistula. South Med J 1996; 89: 335-339.
46. Adachi T, Tajima Y, Kuroki T, Mishima T, Kitasato A, Tsutsumi R, Kanematsu T. Demonstration of a biliobronchial fistula with a hepatoiminodiacetic acid scan. Am J Surg 2006; 191: 794-796.
47. Hamat H, E Lin, F Saibil, L Cohen. Management of bronchobiliary fistula with endoscopy and octreotide. Gastrointestinal Endoscopy 1995; 41: 398-398.
48. Delande S, Goffette P, Verbaandert C, Rahier J, Graux C, Mazzeo F, Humblet Y, Machiels JP. Bronchobiliary fistula and cholangiocarcinoma: a case report and principles of management. Acta Clin Belg 2007; 62: 438-441.
49. Schwartz ML, Coyle MJ, Aldrete JS, Keller FS. Bronchobiliary fistula: complete percutaneous treatment with biliary drainage and stricture dilation. Radiology 1988; 168: 751-752.
50. Yeatman CF, Fisher RA, Carucci LR, Halvorsen RA. Bronchobiliary fistula after liver transplantation. J Comput Assist Tomogr 2004; 28: 717-720.
51. Katsinelos P, Paroutoglou G, Chatzimavroudis G, Beltsis A, Mimidis K, Katsinelos T, Pilpilidis I, Papaziogas B. Successful treatment of intractable bronchobiliary fistula using long-term biliary stenting. Surg Laparosc Endosc Percutan Tech 2007; 17: 206-209.
52. George TK, Carignan JR. Bronchobiliary fistula after hepatic resection for metastatic colon cancer. J Surg Oncol 1984; 25: 198-200.
53. Kim JH, Kim MD, Lee YK, Hwang SG, Lee JH, Kim EK, Jeong HC. Bronchobiliary fistula treated with histoacryl embolization under bronchoscopic guidance: A case report. Respiratory Medicine CME 2008; 1: 164-168.
54. Watters DA, Barker EM, Kalideen JM. Bronchobiliary fistula after chronic pancreatitis. A case report. S Afr Med J 1984; 66: 576-577.
55. Peacock TB. Case in which hydatids were expectorated and one of suppuration of hydatid cyst of the liver communicating with the lungs. Edinburgh Med J 1850; 74: 33-46.
56. Gandini R, Konda D, Tisone G, Pipitone V, Anselmo A, Simonetti G. Bronchobiliary fistula treated by self-expanding ePTFE-covered nitinol stent-graft. Cardiovasc Intervent Radiol 2005; 28: 828-831.
57. Wei WI, Choi TK, Wong J, Ong GB. Bronchobiliary fistula due to stones in the biliary tree: report of two cases. World J Surg 1982; 6: 782-785.
58. Weis S, Mössner J, Schoppmeyer K. A 79-year-old patient with yellow sputum. Gastroenterology 2010; 138: e1-e2.
59. Aydin U, Yazici P, Tekin F, Ozutemiz O, Coker A. Minimally invasive treatment of patients with bronchobiliary fistula: a case series. J Med Case Reports 2009; 3: 23.
60. Poullis M, Poullis A. Biliptysis caused by a bronchobiliary fistula. J Thorac Cardiovasc Surg 1999; 118: 971-972.

61. Goldman SY, Greben CR, Setton A, McKinley MJ, Axelrod DJ, Charles HW, Gandras EJ. Bronchobiliary fistula successfully treated with n-butyl cyanoacrylate via a bronchial approach. J Vasc Interv Radiol 2007; 18: 151-155.
62. Baudet JS, Medina A, Moreno A, Navazo L, Avilés J, Soriano A. Bronchobiliary fistula secondary to ruptured hepatocellular carcinoma into the bile duct. J Hepatol 2004; 41: 1066-1067.
63. Dai H, Cui D, Li D, Zhai B, Zhang J, Zhang J. Hepatic abscess with hepatobronchial fistula following percutaneous radiofrequency ablation for hepatocellular carcinoma: A case report. Oncology Letters 2015; 9(5):2289-2292.
64. Hai S, Iimuro Y, Hirano T, Suzumura K, Yada A, Fujimoto J. Bronchobiliary fistula caused after hepatectomy for hepatocellular carcinoma: a case report. Surgical Case Reports 2016;2:147.
65. Tseng S, Assar S, Chand N, Gore A, Liao DW. A clever method to diagnose bronchobiliary fistula. Chest annual meeting, October 22-26, 2016; American College of Chest Medicine; Los Angeles.
66. Martino MD, Lagana C, Valdueza JD, Martin E. A bronchobiliary fistula due to giant hydatid cyst. Rev Esp Enferm Dig 2017;109(6):462-463.
67. Odufalu FD, Zubairu J, Silverman W. Bronchobiliary fistula: a rare complication after pancreaticoduodenectomy Case Report 2018;2018: bcr-2017-221895.
68. Chang YC, Lin YM. Bronchobiliary fistula after radiofrequency ablation for hepatocellular carcinoma successfully treated by double drainage. Respirology Case Reports 2018;6(9):e00376.
69. Xi XJ, Zhang Y, Yin YH, LiH, Ma DD, Qu YQ. Bronchobiliary fistula following radiofrequency ablation for liver metastases from breast cancer: A case report and literature review. Medicine 2018;97:43.
70. Kumar P, Mehta P, Ismail J, Agarwala S, Jana M, Lodha R, Kabra SK. Bronchobiliary fistula: A rare complication after ruptured liver abscess in 31/2 – year old child.Lung India 2015;32(5):489-491.
71. Jaber S, Alnima M. Surgical management of thoracobiliary fistula. Iraqi Med J 2014;60(1):21-26.
72. Professor Khalid Naji. Lecture notes GI fistulae. Baghdad Medical College, Department of surgery, 1971.
73. Askkal N. Human hydatid disease in Mousil Iraq. Iraqi Med J 1982;29:80-86
74. Mahmod SS, AlJanabi BM. Hydatid disease in children and youth in Mousil, Iraq. Ann Trop Med Parasitol 1983;77:37-38.
75. Lotfi M, Hashemian H. Hydatid cyst disease of the liver and its treatment. Int Surg J 1973;58:166-169.
76. AlHshimi H M. Intrabiliary rupture of hydatid cyst of the liver. Br J Surg 1971;58:228-231.
77. Atlas D H, Kammeran H. Rupture of echinococus cyst into bile ducts simulating stone in common bile duct. Am J Med;1952;13:384-392
78. Langer JC, Rose DB, Keystone JS, Taylor BR, Langer B. Diagnosis and management of hydatid disease of the liver.. A 15 year North American experience. Ann surg.1984;199:4-12
79. AlFadagh Z, Al-Hwaz M, AlBadir WM. Complicated hydatid cyst in Basrah. Int J Gastroenterol E, 2002; 1(2):27-31