ORIGINAL RESEARCH PAPER

Volume-7 | Issue-7 | July-2018 | PRINT ISSN No 2277 - 8179

INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

RETROSPECTIVE OBSERVATIONAL STUDY OF NON OPERATIVE MANAGEMENT OF HYDATID CYST OF LIVER, LUNG AND PERITONEUM BY PERCUTANEOUS CATHETER DRAINAGE

Radiodiagnosis

Umakant Prasad	MD, Assistant professor, Department of Radiodiagnosis, indira gandhi institute of medical sciences, sheikhpura, patna ,bihar,
Ashok Kumar Dmrd *	DNB Assistant professor, Department of Radiodiagnosis, indira gandhi institute of medical sciences, sheikhpura, patna ,bihar,*Corresponding Author
Amit kumar	MD,Assistant professor, Department of Radiodiagnosis, indira gandhi institute of medical sciences, sheikhpura, patna ,bihar,
Vinod kumar	MD, Assistant professor, Department of Radiodiagnosis, indira gandhi institute of medical sciences, sheikhpura, patna ,bihar,
Deepak kumar	MD, Assistant professor, Department of Radiodiagnosis, indira gandhi institute of medical sciences, sheikhpura, patna ,bihar,

ABSTRACT

Liver, followed by lung are most common organs involved by echinococcus (hydatid cyst) in adult. Smaller lesions may respond with medical therapy alone but larger lesions need surgical therapy along with drug therapy or may need percutaneous aspiration, PAIR procedure (Percutaneus Aspiration, Installation and Reaspiration) or Percutaneus catheter drainage. In our cases, we had done percutaneous drainage procedure under ultrasound/computed tomography guidance for large and symptomatic hydatid cysts of liver, lung, spleen and peritoneal cavity. The result is promising and major surgical procedure could be avoided in these patients. A large number of case series study is needed for stabilization of drainage procedure as alternative of surgical therapy for hydatid cyst involving different organs of the body.

KEYWORDS

Hydatid Cyst, Echinococcus, Percutaneus Drainage.

Introduction

Hydatid cyst is a worldwide zoonosis produced by the larval stage of the echinococcus tapeworm. The two main type of hydatid diseases are caused by echinococcus granulosus and echinococcus multilocularis. The life cycle of echinococcus granulosus involves two hosts. The definitive host is usually a dog but may be some other carnivore. The adult worm of the parasite lives in the proximal small bowel of the definitive host attached by hooklet to the mucosa. Sheep are most common intermediate host. But human may also become intermediate host on getting contact with a definitive host or by ingestion of contaminated water or vegetables containing eggs of echinococcus. Hydatid cyst has three layers: the outer pericyst composed of modified host cells that form dense fibrous protective zone; the middle laminated membrane which is acellular and allow the passage of nutrients, and the inner germinal layer where the scolices and the laminated membrane are produced. Once the parasite passes through the intestinal wall to reach the portal venous system or lymphatic system, liver acts as the first line of defence and is therefore the most frequent involved organ. In human being, the hydatid disease involves the liver in approx 75% of cases, lung in 15 % and others organs 10% cases including kidney, spleen, bone, brain, etc.

Classification of Echinococcal cyst:

WHO IWGE (2011)	Gharbi (1981)	Description	Stage
CE1	Type I	Unilocular anechoic Cystic Lesion With 'double line' sign	Active
Ce2	Type III	Multiseptated 'rosette like' "honey coomb" cyst	Active
CE3A	Type II	Cyst with detached membrane "water lily sign"	Transitional
CE3B	Type III	Cyst with 'daughter cyst' In solid matrix	Transitional
Ce4	Type IV	Cyst with heterogeneous Hypoechoic/hyperechoic contents	Inactive
Ce5	Type V	Solid cyst with calcified wall	Inactive

Liver is the most common organ involved in body. Right lobe is affected more frequently than left lobe. Right upper quadrant abdominal pain is most common symptom. Imaging findings depends on stage of cyst growth. Ring like/curvilinear/dense calcification seen in 20-30% of liver cysts. Diagnosis is usually by ultrasound alone. Ct scan may be needed in technically difficult cases (obesity, bowel gas, abdominal wall deformity or previous surgery, etc) or for evaluation of complications like cyst rupture, infection, exophytic extension, transdiaphragmatic migration, perforation into hollow viscus, peritoneal seeding, biliary communication, portal vein involvement, abdominal wall invasion etc. Lung is the second most frequent site of hematogenous spread in adults and probably most common site in children. Compressible organs such as the lungs and brain facilitate the growth of the cyst and this has been proposed as a reason for the high prevalence of the disease in these organs in childhood. Most cysts are acquired in childhood and remain asymptomatic for a long period of time and later, incidentally diagnosed at chest radiography. Pulmonary hydatid cyst may vary from 1 to 20 cm in size. Cysts are multiple in 30% cases, bilateral in 20% cases and located in the lower lobe in 60 % cases. Calcification in pulmonary cyst is very rare (0.07%). Air within cyst may be seen as thin radiolucent crescent at upper margin of the cyst or air fluid level. Sudden attacks of cough, haemoptysis and chest pain are the most common clinical symptom. After cyst rupture, expectoration of cystic fluid, membrane & scolices may occur. Rupture into pleural cavity may also occur. Allergic episodes may develop after cyst rupture, fatal anaphylaxis is uncommon. Bacterial infection of the cyst is the most serious complications commonly seen after rupture.

Method

Observational retrospective study was done in department of radio diagnosis, Indira Gandhi institute of Medical Sciences (IGIMS), Patna of the patients who undergone for percutaneous drainage of hydatid cyst of Liver, lung, pleura, spleen and peritoneal cavity between January 2015 to December 2017. Total Seven patients, including 2 patients of hydatid cyst of lung and 3 patients of hydatid cyst of liver, one patient of hydatid cyst of spleen, one patient of peritoneal ruptured hydatid cyst were observed for their outcome.

First patient was 45 years male presented with complaints of relapsing and remitting productive cough and chest pain for last 1.5 years with occasional fever. Patient is taxi driver by occupation working at Mumbai. Earlier, patient was investigated in Mumbai and his CECT chest revealed a large (approx 9x8 cm size) non enhancing hypodense cystic lesion involving left lower lobe of lung. The lesion had multiple thin septations and multiple tiny air foci. It appears communicating with right lower lobe segmental bronchus. On the basis of above mentioned imaging findings, radiological diagnosis of hydatid cyst

was made. Patient was advised albendazole and broad spectrum antibiotics to which patient's symptoms did not respond. Later on, patient visited our institution's surgical outpatient department where routine blood test, ultrasound abdomen and repeat CECT chest was advised after clinical examinations. Fresh CECT chest showed that left lung lower lobe cystic lesion is mild increased in size as compared with previous study. ELISA test for echinococcal antibody also turned out to be positive. Ultrasound guided drainage was planned after clinico-radiological discussion for this peripherally located lung lesion. Using sheldinger technique, 14 F malecot catheter was placed in the lesion connected to water seal drainage system. Multiple additional side holes also created in the catheter to facilitate thick content drainage. On aspiration, thick and heterogeneous purulent material came out. The pus sample sent for cytology, gram staining, and culture & sensitivity test and also for histopathology examination. Patient was advised oral antibiotics along with continuation of albendazole tablets. Patient was discharged on the same day after 4 hour of eventless observation and confirmation of catheter tip within the lesion by computed tomography. No evidence of pneumothorax, hemothorax or other complications noted. Catheter was removed 2 weeks later when drain output was nil. Patient was kept on follow up visits at 1week, 2 weeks, 4 weeks & 8 weeks interval. After 8 weeks interval, repeat CT chest was done showing marked reduction in size of lesion with no any residual septa or fluid content within. Cavity was now filled with air. Patient was asymptomatic. Cytology report of the pus sample was inconclusive. Histopathology report showing features of hydatid cyst.
Second patient, 45 years old female patient developed pain abdomen and jaundice. On ultrasound study, there was a large cystic lesion in the liver with internal echo within, s/o infected hydatid cyst. Positive serology for echinococcal antibody also noted. Percutaneous drainage with 14 F malecot catheter was done draining thick material. Drain output was more than 300 ml /day even after 2 weeks of procedure and was positive for bile salt, s/o biliary communication. Gastroenterology consultation obtained and endoscopic CBD plastic stenting was done which resulted in decreased external drain output. External catheter was removed a week later. 6 weeks post stenting, the hepatic hydatid cyst lesion healed and plastic CBD stent was removed.

Third patient was 45 years male with post operative ruptured hydatid cyst showing numerous variable sized peritoneal cysts. Multiple percutaneous catheter drainage of the larger lesions were done using 12 F malecot catheter. Medical treatment with albendazole 10 mg/kg/day continued for 6 weeks post procedure. 2 weeks later, external drain was removed and patient gets cured.

In another case, 55 years old female, a post operative case of residual hydatid type I liver lesion (cyst size more than 8 cm), percutaneous 12 french malecot catheter was placed in situ. Drain was negative for bile salt s/o no biliary communications. Scolicidal agent 5% betadine solution was injected into the cyst and kept for 15 minutes and then aspirated back through the catheter (PAIR procedure). Draining catheter was removed after a week and lesion disappeared completely.
Next patient, 43 yrs old lady, presented in medicine OPD with pain abdomen and epigatric lump. On ultrasound, Left lobe liver cyst with daughter cyst appearance was noted. Percutaneus drainage using 14F malecot catheter was done and scolicidal agent 5% betadine solution was injected into the cyst and kept for 10 minutes and then aspirated back through the same catheter (PAIR procedure). Draining catheter was removed after a 5 days when drain output became nil. Albendazole was continued and lesion disappeared completely.

One more patient, 34 year male presented with surgical OPD with left upper quadrant pain and tenderness. Splenic hydatid cyst was diagnosed using USG and CT scan. Percutaneus drainage using 12 F malecot was done. Catheter removed after a week when drain output became nil. Albendazole continued. Lesion subsided gradually.

Last patient of this series, 37 year male presented in chest OPD IGIMS, with cough, expectoration and chest pain. On CXR, Right mid zone opacity was noted. HRCT revealed hypodense cavity in anterior segment of right upper lobe of lung with internal membranes. No post contrast enhancement seen. No cavity wall calcification noted. Rest of lung was normal with no significant mediastinal lymph nodes or pleural/ pericardial effusion. USG guided PCD was done using 14F malecot catheter. Check X Ray was done. Catheter removed 5 days later when output became nil. Residual air filled cavity with thick membrane remains. Albendazole continued and lesion gradually disappeared.

Result

Seven patients of hydatid cysts of which, 3 involving liver, 2 involving lung, 1 involving spleen and one ruptured peritoneal hydatid was managed with percutaneous drainage, out of which PAIR procedure was also done in liver hydatid cyst in two patients. 3rd patient with liver hydatid cyst had biliary connection and PAIR procedure not done. PAIR procedure was also not done in lung, Splenic and peritoneal hydatid cysts. Albandazole therapy was also continued concomitantly. All lesions regressed completely without any need for surgery and no complication noted.

Discussion

Hydatid cyst of the liver is most common site of involvement followed by lung. Small hydatid cyst can be managed by drug therapy (oral albendazole), but larger and symptomatic lesions need surgical management. The various surgical method used for hydatid cyst are enucleation, cystectomy, cystotomy with capitonnage, cystotomy without capitonnage, lobectomy etc. Aspiration, PAIR procedure and catheter drainage are well established manoeuvres for management of hydatid cysts including liver. Few literatures described about percutaneous aspiration of hydatid cyst of lung but none about percutaneous drainage or PAIR procedure for same. Most of the literature preferring surgery as therapeutic modality for management of lung hydatid cyst.

Summary

Hydatid cyst most commonly involved liver followed by lung in adult. For large and symptomatic hydatid cyst of liver and lung or other organs of body, not responding with medical therapy alone, percutaneous drainage is promising as shown in our study. We had gone through the literature and literatures are available on percutaneous drainage of liver and other hydatid cyst. But we were not able to find any literature regarding percutaneous drainage of lung hydatid cyst as therapeutic measure. All the literature shows surgery as treatment option for medically non responding lesions. Large number of case study needed for establishing percutaneous drainage as treatment modality for medical treatment failure cases of lung hydatid cyst.

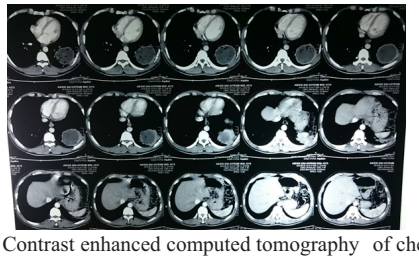

Figure 1a: Contrast enhanced computed tomography of chest show left lung large hydatid cyst lesion .

Figure1b: Non contrast computed tomography image of chest show percutaneous drainage. catheter in situ in left lung hydatid cyst lesion .

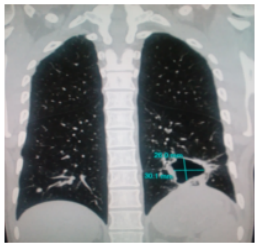

Figure1d: Follow up chest computed tomography show reduction in size of cystic lesion with residual thick walled air filled cavity of lesion.

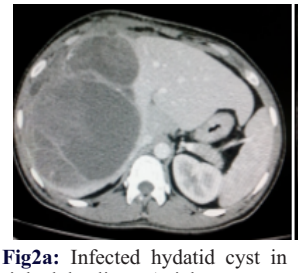

Fig2a: Infected hydatid cyst in right lobe liver. Axial scan post contrast.

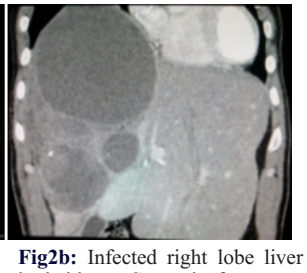

Fig2b: Infected right lobe liver hydatid cyst. Coronal reformat.

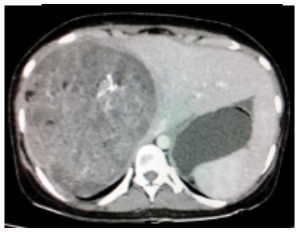

Fig 3a: Axial section showing Postpoerative peritoneal ruptured hydatid cyst.

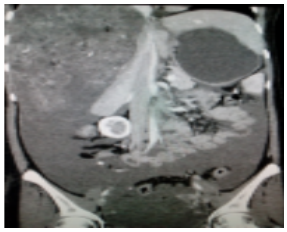

Fig3b: Coronal section showing postoperative ruptured peritoneal hydatid cyst

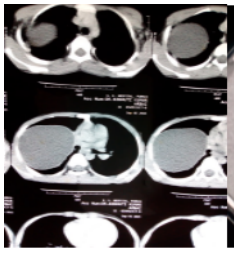

Fig 4: Postoperative recurrent type I hysatid cyst in right lobe liver

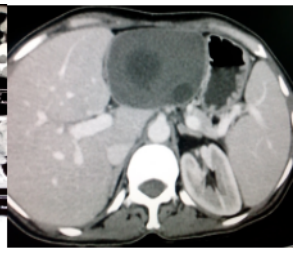

Fig 5: Left lobe liver hydatid cyst with daughter cyst appearance.

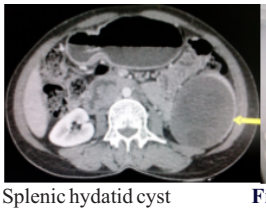

Fig 6: Splenic hydatid cyst

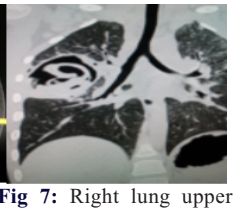

Fig 7: Right lung upper lobe hydatid cyst. Coronal reformat CT

References

1. Akhan O, Ozmen MN, Dinçer A, Göçmen A, Kalyoncu F. Percutaneous treatment of pulmonary hydatid cysts. Cardiovasc Intervent Radiol. 1994 Sep-Oct;17(5):271-
2. Al Karawi MA, Yasawy MI, el Shiekh Mohamed AR. Endoscopic management of biliary hydatid disease: report on six cases. Endoscopy 1991; 23:278-81.
3. Gargouri M, Ben Amor N, Ben Chehida F, et al. Percutaneous treatment of hydatid cysts (Echinococcus granulosus). Cardiovasc Intervent Radiol 1990;13:169-73.
4. Khuroo MS, Dar MY, Yattoo GN, et al. Percutaneous drainage versus albendazole therapy in hepatic hydatidosis: a prospective, randomized study. Gastroenterology 1993;104:1452-9
5. KY Polat, AA Balik, and D Oren. Percutaneous drainage of hydatid cyst of the liver: long-term results. HPB (Oxford). 2002; 4(4): 163–166.
6. Mohammad Sultan Khuroo, D.M., Nazir A. Wani, M.S., Gul Javid, M.D., Bashir A. Khan, M.D., Ghulam N. Yattoo, M.D., Altaf H. Shah, M.D., and Samoon G. Jeelani, M.D. Percutaneous Drainage Compared with Surgery for Hepatic Hydatid Cysts. The New England Journal of Medicine. September 1997; Volume 337 Number 13: pages 883-887.
7. Raymond A. Smego, Jr. Sabha Bhatti Amir A. Khaliq M. Asim Beg. Percutaneous Aspiration-Injection-Reaspiration Drainage Plus Albendazole or Mebendazole for Hepatic Cystic Echinococcosis: A Meta-analysis. Clinical Infectious Diseases, Volume 37, Issue 8, 15 October 2003, Pages 1073–1083.
8. Schiller CF. Complications of echinococcus cyst rupture: a study of 30 cases. JAMA 1966;195:220-2.
9. WHO Informal Working Group on Echinococcosis. Guidelines for treatment of cystic and alveolar echinococcosis in humans. Bull World Health Organ 1996;74:231-42.
10. Zargar SA, Khuroo MS, Khan BA, Dar MY, Alai MS, Koul P. Intrabiliary rupture of hepatic hydatid cyst: sonographic and cholangiographic appearances. Gastrointest Radiol 1992;17:41-5.