ORIGINAL ARTICLE

An experience of 58 cases of Hydatid Liver treated surgically in a tertiary care hospital in an endemic area of Kashmir Valley in India

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Abstract

Objective: Hydatid disease is very common in Kashmir Valley of India. To evaluate the result of various open surgical treatments for hydatid disease of the liver.

Design: Retrospective study.

Setting and duration: The study was carried out at Sher-i-Kashmir Institute of Medical Sciences, Srinagar, Kashmir, India from January 2006 to December 2010.

Methodology: 58 cases of hydatid cyst of liver treated during this period.

Results: Partial excision with residual cavity management in 33 cases was observed, while there was total excision (Cystopericystectomy) in 10 cases, enucleation and Tube drainage in 12 cases, CBD exploration + 'T' tube with cavity drainage in 2 cases and cysto jejunostomy in 1 case

Conclusion We conclude that in this Era of Laparoscopic Surgery and with availability of aspiration and grinding apparatus with laparoscopic Surgeons though producing similar results in selected cases but open surgery remains the main stay of tteatment as it also provides appotunity of on table search of billiary leakage, simultaneously tackling hydatid cyst disease.

Keywords: Hydatid cyst disease,Cystoperisystectomy, minimal invasive PAIR technique (percutaneous aspiration under radiologic) sonographic guidance.

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Introduction:

Hydatid disease is now a common problem worldwide due to globalization but is predominant in regions like Mediterranean countries, the Middle East and South America[1]. Hydatid disease being a challenging problem in these endemic areas is revisited frequently in order to minimize the recurrence. The cycle of this disease is well described. It is a zoonotic problem caused by Echinococus Granulosus (more commonly), Echinococus multilocularis, Echinoccous oligaratus and the Echinococus volgarus. The hydatid cyst practically has an outer fibrotic pericytic layer called the ectocyst; that is host tissue layer around the actual parasite which is the inner germinal layer.

Amongst various presentations of hydatid disease; liver is the commonest organ involved (60-70%), followed by lung (20-30%) and other organ involvement being rare[2].

The treatment of hydatid disease of liver is complex with many options available and recurrence still being common. It should be impressed upon that improvement in basic hygienic concepts may reduce the load of the disease in endemic areas[3].

Surgery though being the mainstay of treatment there is no consensus about the optimal way to treat hydatid disease. In general the teams involved in treating hydatid disease consider treating it with l open surgery[1-3], minimal invasive PAIR technique[4] or laparoscopy[5] along with Mebendazole or Albendazole therapy.

The controversies regarding laparoscopic and PAIR treatment is that they are applicable to se-

lective patients. On the other hand open surgical treatment is applicable to all types and complications of hydatid disease of liver with a recurrence rate of 10-15 %[6].

Materials and methods:

58 cases of hydatid cyst of liver treated by open surgery at tertiary care centre at Kashmir Valley of India by a single surgeon were studied prospectively. The study period was over five years from Jan 2006 to December 2010. All patients were evaluated with baseline Ultrasonography followed by a CT abdomen. Few cases were also subjected to ERCP and MRCP if deserved due to presence of jaundice, cholecystis, Intrahepatic Biliary duct dilatation or increased alkaline phosphates. The hydatid cyst of the liver was graded according to Gharbis classification. All patients had a heamogram, liver function test, X-ray chest and hydatid serology done. Ellisa test was the immunological investigation done to diagnose hydatid.

Patients were planned for a procedure according to the CT appearance, clinical presentation and location of the cyst.

Patients with infected cyst were preferably only drained externally after removal of membrane.

Smaller cyst <6 cms which were peripherally located were considered for resection. Authors believe in doing non anatomical and less liver sacrificing procedure due to benign nature of the disease and so did not do any right or left hepatectomies for same. So deep seated (thick liver parenchyma all around the cyst) smaller cysts were all excluded for excision.

Bigger non infected cyst with liver thinned pericytic protruding out one of the surfaces was considered for drainage followed by complete membrane removal and then the cavity was either obliterated by captonage or omental packing. Part of pericyst thinned out on liver surface appearing redundant was partially excised so that the cavity left for obliteration was smaller.

These patients were operated through a right subcostal incision with left extension if required. Liver was mobilized by dividing the ligamentous attachments with parietal wall. Surrounding abdomen was isolated from liver with packs soaked in scoliocidal agent. We use cetrimide or iodine solution as scoliocidal agent. All patients with peripherally located cyst were considered for complete resection (Figure 1&2). The deep seated cysts or bigger cyst not amenable to excision were aspirated with utmost spillage preventive measures. After complete evacuation cyst was filled with scoliocidal agent and left for 10 minutes. The cyst was then reaspirated and partially excised and the residual cavity was managed with either captonage obliteration or omentum placement. Patients with biliary communication had either direct closure of a visible small rent; A CBD exploration in addition was considered in patients with bigger communication with associated biliary dilatations. In these patients the cavity was either drained or had a cystojejunostomy.

We have a protocol to follow all patients with ultra sonogram every six months for first three years and then annually. All the patients were treated post operatively with Albendazole of 10mg/kg body in two divided doses for 3 months with every month protocol of 3 week on drug and one week off. During the period when patient was off the drug liver function test was done and the drug therapy was continued only if Liver Function Test was normal.

Some selected patients with multiple cysts also received albendazole therapy for two months prior to surgery.

Type one cyst with serology suggestive of hydatid disease was explained preoperatively that there is still a possibility of cyst being simple and not hydatid.

All patients diagnosed to have disease were also referred to the team involved in doing PAIRS for hydatid cyst liver in our institute and those not taken up by them were operated (58 patients) upon by our team.

Table 1: *Preoperative Investigations:*

USG Abdomen	58/58 (100%)
CECT Abdomen	54/58 (93.10%)
MRCP	2/5820 (3.44%)
X-ray Abdomen – Demarked Lesion	12/58 (20.68%)
X-ray Chest + Revealing Pulmonary	4/58 (6.89)

Results:

The series was made up of 58 patients treated by a tertiary health care unit in Kashmir valley of India. These patients were prospectively followed up from January 2006 to December 2009. The cases studied were single surgeon's experience. There were 22 males (37.93 %) and 36 females (62.06%) with a mean age of 45 years (13-75 years). Majority of the patients had CT abdomen done 54 (93.10%). All patients (100%) were subjected to base line USG, two patients had in addition MRCP done (Table 1). All patients had x-ray abdomen and chest done.

Plain X-ray abdomen correlating with hydatid disease is low and is more conspicuous if the cyst is calcified.

There were four patients who had concurrent pulmonary hydatid cyst on X-ray chest 4/58 (6.89%). B/L liver hydatid were diagnosed in 5/58 patients (8.62%).

Majority of the patients presented with mild pain right upper abdomen which lead to the diagnosis in 36 (62.06%). There was an incidental diagnosis for non related pain or USG done during pregnancy in 12 (20.68%). We treated three (5.71%) on emergency basis; this included cases of ruptured hydatid, of which one patient had frank biliary peritonitis due to major left duct communicating with the cyst ruptured. Four patients had infected hydatid presenting with pyrexia (6.89%). There were 2 patients who presented with obstructive jaundice (3.44%) (Table 2).

Table 2: *Symptoms leading to diagnosis:*

Symptoms	**No. of patients**	**Percentage**
Pain	36/58	62.06%
Incidental	13/58	22.41%
Fever	4/58	6.89%
Rapture	3/58	5.17%
Obstructive Jaundice	2/58	3.44%

These hydatid cysts were classified in accordance to Gharbi classification.

Maximum number of cyst in the series was type III (58.62%) followed by type IV and type I (Table 3).

Table 3: *Gharbi Classification of the Cyst type*

Type of Cyst	**Gharbi Classification**	**No. of patients (%)**
Type I	Pure Single Walled Cyst	10/58 (17.24%)
Type II	Cyst with a split in the wall (water lily sign)	2/5 (3.44%)
Type III	Cyst with multiple septum (honey comb)	34/58 (58.62%)
Type IV	Heterogeneous echographic pattern (cyst - solid)	11/58 (18.96%)
Type V	Reflecting thick walls	1/58 (1.72%)

A group of patients had emergency operation in view of cholangitis, peritonitis or infected cyst. Surgical procedure was tailored according to the location, size and type of cyst. Majority of the patients had cyst drainage with removal of all membranes and cavity management with partial excision of redundant ectocyst, residual cavity was managed with captonage or omental packing (56%). The peripheral smaller hydatid was treated with cystopericystectomy along a liver margin in 10 patients (17.24%). Patients with infected hydatid, biliary communications or obstructive jaundice were considered for tube drainage of the cavity along with closure of the evident fistula site in 2 patients and CBD exploration with 'T' tube drainage. One patient, who presents with frank biliary peritonitis, was considered for cystojejunostomy. Total number of patients who had tube drainage were twelve (20.68%). Surgical procedures tailored were as shown in Table 4.

Moving from convential (simple membrane removal and tube drainage of cavity) to newer methods of cavity management (captonage, omental or falciform packing and excising redundant pericyst) and more radicality in the removal of hydatid cyst when fulfilling our criteria for excision showed less amount of recurrence

Table 4:

Surgery done	No. of patients	Percentgae
Partial excision with residual cavity management	33/58	56.89 %
Residual cavity capittonage	20/58	34.48%
Omental or facliform packing	13/58	22.41%
Total excision (Cystopericystectomy)	10/58	17.24 %
Enucleation and Tube drainage	12/58	20.68 %
CBD exploration + 'T' tube with cavity drainage	2/58	3.44 %
Cysto jejunostomy	1/58	1.72 %

Table 5: *Complications*

Complications	No. of patients	Percentage
Early Post operative		
Bile leak	2	3.44%
Fistula	1	1.72%
Wound infection	1	1.72%
Pleural effusion	2	5.17%
Atelactasis	1	1.72%
Total Early complications	7/58	12%
Late Post operative Complications		
Residual collection with-out membrane	2/58	3.44%
Actual recurrence	2/58	3.44%

as well as residual cavity complications.

Routine post operative complications including wound infection, pleural effusion, and atelactasis in were observed as early complication in 12% of patients (Table 5).

One patient with bile leak beyond 8 days and was managed successfully with post operative ERCP and papilotomy. Increasing the flow towards the duodenum in this patient helped the leak stop in 48 hours. The other patient with bile leak was later labeled as biliary fistula as he required tube drainage of cavity for beyond two weeks in post operative period (1.72%) as he did not agree to an endoscopic intervention. The drain was removed 20th post operative day once the drainage was negligible. The follow up period ranged from 3 months to 58 months. There were two cases of residual cavity collection both in the group of tube drainage, who were diagnosed as doubtful recurrence on follow up ultrasound abdomen at six months and 16th month each. Another two patients had actual hydatid cyst recurrence (3.44%).

Discussion:

Hydatid disease of liver is a parasitic infection caused more commonly by the Echinococus Granulosus prototype of the species[3]. In endemic areas treatment of hydatid disease of liver is a major challenge. Two common modes of presentation of hydatid disease of liver include vague pain in right upper abdomen or an incidental diagnosis during evaluation for some other problem[7]. Ultrasonography is a very useful baseline investigation for the diagnosis of the disease with sensitivity of 100%[8-10]. Commonly most of the centers use the Gharbi's classification for hydatid cysts which can be simply based on USG[1]. Gharbi classified hydatid into five categories, where type II and III are characteristics of hydatid cysts, type I and V are only suggestive of hydatid cyst and type IV is difficult to predict and mimic's a pseudo tumor. Authors based on their experience personally believe that CT is a very important in supplementing the diagnosis in hydatid disease especially in type IV cysts, in multiple cyst and to locate exact site and size; as this helps charting appropriate procedure for a particular case. CT, MRI, MRCP are also useful for documenting and defining the vascular and biliary anatomy[1]. ERCP and MRCP may be useful tool in patients suggestive of biliary communications by indirect signs of dilated biliary radicals or daughter vesicles within the ducts[1]. In our series we did MRCP on 2 cases of suspected biliary communication and leak. Actually 3 patients confirmed to have gross bile leak into the cavity during surgery. One of these patient presented as emergency also had biliary peritonitis.

Overall we had 5 biliary communications of which three were identified on table and managed appropriately and two presented as post operative complications of bile leak and fistula (one each). According to the literature, post operative bile leaks are reported to be as high as 16%[13]. A meticulous attention should be payed to biliary communication in preoperative period and if not atleast on table to avoid complications related to biliary communications[7]. Surgery remains the main stay of treatment. The

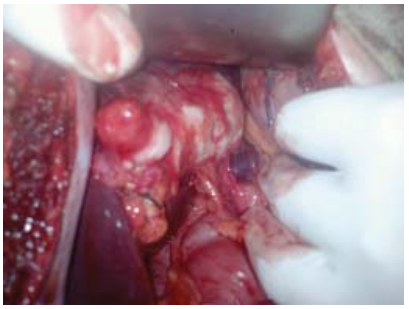


Figure 1& 2: *Excision of hydatid liver in total*


Figure 3 & 4: *Excision of another , peripheral hydatid with ligation of biliary communication identified and same was confirmed after opening up the cyst*

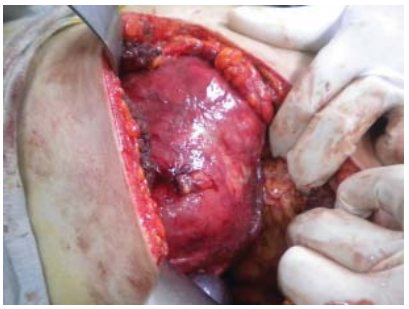
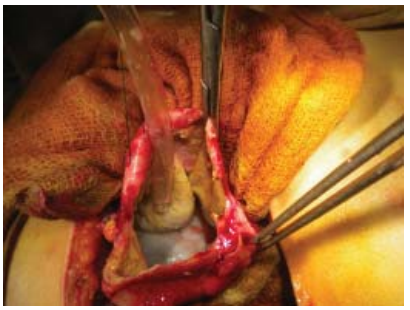

Figure: *Big Hydatid managed with partial excision with captonage*


Figure: *Hydatid membranes delivered*


Figure: *Capittonage being done*

trend of surgery is now moving towards more radical procedure[14], to achieve less recurrence. The availability of aspirator grinder apparatus has helped Laparoscopic Surgeons in managing hydatid cysts with similar results in carefully selected patients[15]. We believe in doing non anatomical pericystectomy in selected cases whenever possible. Even if a radical procedure cannot be offered one should try combinations of procedures as partial excision and then managing the cavity with captonage, or omentum or falciform packing of the residual cavity. We managed to have a low recurrence rate (4%) in our unit in an area where hydatid disease is endemic. Most of the authors report a recurrence rate ranging from 8-20%[6,16]. The authors advocate a more radical surgery wherever possible in order to have a low recurrence. In a limited period of five years we had a recurrence in four cases where it was doubtful in 2 patients as there was no membrane seen. It is also possible that preoperative albendazole therapy in recurrent cases led to non viability of cyst. The authors believe that recurrent cyst may be a residual daughter cyst left during previous surgery. A true recurrence will become symptomatic 3–4 years after surgery[17]. Ultrasonography alone is not sufficient to detect relapses following surgery and at times even CT abdomen cannot differentiate a residual cavity and collections from actual recurrence. Indirect haemagglutination test and IgE radioallergosorbent cannot be relied on as they too remain positive for a long time after surgery. Documentation of scolices in the remaining cavity is the only means of definitive diagnosis of recurrence[18]. The role Albendazole has been reported to be effective and pre-operative use of this drug aims to reduce viability of cysts and may reduce risk of spillage[19]. Post operative treatment of hydatid disease with 3-6 cycles of albendazole is now a universal practice and this was followed by us as well.

Conclusion:

Hydatid disease of liver needs more radical surgery when ever the site is favorable, especially in a tertiary health care center. More radical approach and meticulous clearance and manage-

ment of cavity can decrease the rate of recurrence.

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