

Research Article

Surgery for intra-abdominal hydatid disease: a single centre experience

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ABSTRACT

Background: Hydatid cyst is one of the commonly encountered parasitic disease in agricultural countries. Man is an accidental host. However the parasite can cause cystic lesions in various organ systems of the body. Intra-abdominal hydatid cyst continues to be a challenging problem.

Methods: Case records of patients diagnosed and surgically treated for intra-abdominal hydatid disease were studied. Demographic details, diagnostic modalities and surgical approach to each patient was studied.

Results: Ten cases of intra-abdominal hydatid disease diagnosed and managed in a single surgical centre were studied. Eight patients had hepatic disease, one had splenic disease and one had disseminated disease which included both hepatic and peritoneal disease. All were treated surgically.

Conclusions: Males involved in livestock industry are commonly affected. Liver is the commonest intra-abdominal site for hydatid disease. CT scan is diagnostic. Open surgery still continues to be the safest option for treating this condition.

Keywords: Intra-abdominal, Liver, Hydatid, Diagnosis, Management

INTRODUCTION

Hydatid disease is commonly seen in agricultural countries where in animal husbandry is an important occupation.¹ In urban cities, individuals working in abattoirs or managing livestock are commonly affected by this disease.

The disease is endemic in a few rural areas of India. However, cases presenting in urban centres may pose both a diagnostic and surgical dilemma to the attending surgeon. A single urban centre experience of surgically managing intra-abdominal hydatid disease is presented in this paper.

Ten patients diagnosed and treated for intraabdominal hydatid disease were studied retrospectively with an aim to identify the diagnostic investigation and the best surgical approach for the management of intraabdominal hydatid disease.

METHODS

Indoor case records of 10 patients admitted to a single surgical unit in the period from January 2011 to July 2016 with a confirmed diagnosis of intraabdominal hydatid disease were studied retrospectively. The age, sex, geographical background of residence and occupation were specifically noted.

The presenting symptoms, clinical findings and diagnostic investigations which included both hematological and radiological were noted. All 10 patients had undergone open surgical interventions. The intra-operative findings and surgical outcomes including follow up were studied.

RESULTS

10 patients with established diagnosis of intra-abdominal hydatid disease of the abdomen were studied

retrospectively (Table 1). The mean age of the patient was 33.2 years. All 10 patients were male. 5 out of 10

patients hailed from rural settings where as 8 out of 10 had close contact with livestock.

Table 1: Observations of the study.

Factor studied	1	2	3	4	5	6	7	8	9	10
Sex	M	M	M	M	M	M	M	M	M	M
Age (Years)	27	35	32	46	32	36	25	28	34	39
Rural/ (R/U) Urban	R	R	R	U	U	U	R	U	R	U
Contact with livestock (Y=yes, N=no)	Y	Y	Y	Y	N	N	N	N	Y	N
Symptoms										
Fullness-F										
Lump-L	F	F	F	L	F	L	F/P	F/L/P	F	F
Pain-P										
Hematology										
N-Normal										
A-Anaemia	N	N	A	N	N	N	N	A	N	N
L-Altered LFT										
Comorbidities										
DT/HT/IHD	-	-	-	-	P	-	-	-	-	-
P-Present										
USG/CT	+	+	+	+	+	+	+	+	+	+
Organ affected	Liver	Liver	Spleen	Liver	Liver	Liver	Liver	Liver +Peritoneal	Liver	Liver
Surgical option										
DO-Deroofing and Omentoplasty	DO	DO	S	DO	DO	DO	DO	DO+C	DO	DO
S- splenectomy										
C-cystectomy										
Complications										
SSI-surgical site infection	-	-	-	-	SSI	-	-	SSI	-	-
Prognosis										
G-good (no recurrence)	G	G	G	G	G	G	G	G	G	G
P-poor (recurrence)										

Hematological investigations of 8 patients were found to be within normal limits. However 2 patients had severe anemia. Liver function tests of all patients were normal. No immunological tests were performed in any of the 10 patients. Ultrasound was performed on all 10 patients which revealed cystic lesions in various organs. This was confirmed by CECT evaluation. 8 patients had only hepatic hydatid disease (Figure 1).

One had cysts both in the in the liver and the peritoneal cavity (Figure 2). One had an isolated hydatid cyst in the spleen (Figure 3). Open surgical intervention was performed in all the 10 patients. All patients were operated upon by the primary author (KV).

For liver hydatid disease the traditional approach of deroofing with omentoplasty following complete evacuation of all membranes and daughters cyst was

done. For splenic hydatid disease, splenectomy was performed whereas cystectomy that is complete resection of the cyst with an intact peri-cyst wall was done for peritoneal hydatid cysts.

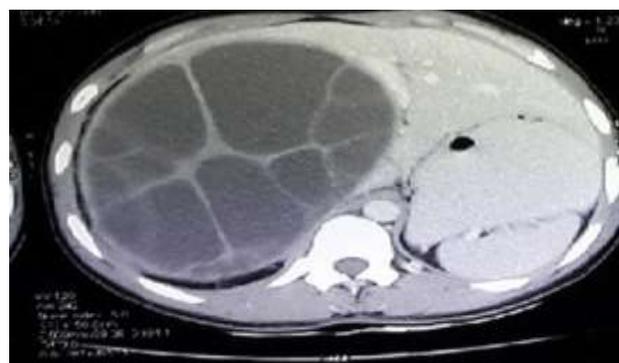


Figure 1: Hepatic hydatid cyst.

There was no bile leak in any of the 10 patients. Surgical site infections were seen only in 2 patients. Mean follow up was 9 months with no evidence of recurrence.

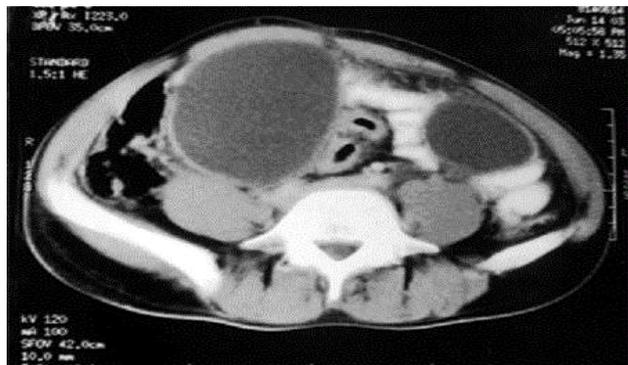


Figure 2: Peritoneal hydatid cyst.

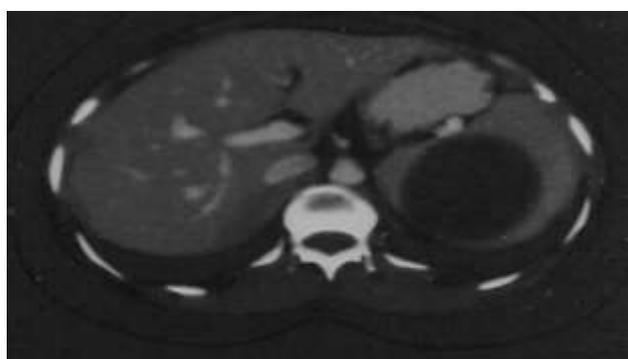


Figure 3: Splenic hydatid cyst.

DISCUSSION

Intra-abdominal hydatid disease always poses a technical challenge to the attending surgeon due to involvement of a variety of organs.^{1,2} Liver is most commonly involved.³ Spleen may also be involved either in isolation or in association with hepatic hydatids. Peritoneal and omental hydatids usually are due to dissemination. Hence these constitute secondary echinococcal cysts. Surgery is the mainstay of treatment.¹

In the present study all 10 patients were males. There is no specific sex predilection. However, males are commonly involved by virtue of rough outdoor involvement with livestock management. The mean age of the patients was 33.2 years.

5 out of 10 patients studied hailed from rural settings whereas 5 were from urban settings. Of the 5 urban dwellers, 1 had disseminated hydatid disease in the liver, omentum and pelvic peritoneum. 5 patients gave typical history of prolonged and close contact with livestock. Contact with livestock may be closely associated with increased incidence of hydatid disease. In the present study 1 patient who was a butcher by profession had disseminated hydatid disease. Humans are an accidental

host. 8 out of 10 patients presented with symptoms of fullness of the abdomen. The symptom of abdominal fullness is due to massive enlargement of either the liver due to the cyst or due to a large cyst occupying a significant portion of the peritoneal cavity as seen in 1 of the patients with multiple cysts.^{4,5} The other common presentation is lump in abdomen. This is usually due to massive hepatomegaly, splenomegaly or a cystic swelling in the peritoneal cavity.⁶

Physical examination will reveal hepatomegaly, splenomegaly or the presence of a cystic swelling in the peritoneal or pelvic cavity. Haematological investigations revealed anaemia in only 2 cases. This may be attributable to low intake of food due to early satiety caused by fullness of the abdomen. Liver function tests were surprisingly within normal limits in all 10 patients.

Diagnosis was confirmed by imaging. To start with an ultrasound was done in all cases which typically revealed cystic masses with internal echoes and internal septations. However, the exact site, size and the contents could only be ascertained by a contrast enhanced CT of the abdomen (CECT). CECT is mandatory in all patients in whom surgery is contemplated. It provides a road map to the surgeon to plan the access to the cyst.⁷

Of the 10 patients, 8 had liver involvement, 1 had isolated splenic involvement and 1 had cysts in the liver and in the peritoneal cavity. Liver is the commonest site for intra-abdominal hydatids. This may be due to filtration function of the liver where in the parasites are filtered off in the liver. However, these localize and develop full blown cysts due to a nutritionally conducive environment. Spleen is the organ next affected in the abdominal cavity. However, cases of splenic hydatid are extremely rare.⁶ Peritoneal hydatids are usually secondary hydatids due to rupture and dissemination.⁵

The decision for surgical intervention depends upon two very important factors: 1) Patients general condition and, 2) characteristics of the cyst. Large cysts involving solid organs in the peritoneal cavity warrant prompt surgical intervention.⁸ Small calcified cysts which are deep seated posing difficulty in access may be managed conservatively.^{8,9}

The structure of the cyst wall is critical to surgical management.¹⁰ In solid organs such as the liver and spleen, compressed parenchymatous tissue admixed with rich vasculature make surgical intervention problematic. Therefore, in the liver, peri-cyst is never resected.¹⁰ Same applies to splenic hydatids where it is impossible to remove the cyst. Hence in the context of spleen, splenectomy is the treatment of choice (Figure 4). Two approaches have been advocated for managing hepatic hydatids. The radical approach comprises of a non-anatomical hepatic resection. This may at times attain the level of over treatment. It may also give rise to complications thereby increasing the morbidity.

Therefore, a non-radical alternative is the safest and best approach. Non-radical alternative is a cystectomy. The principles involved in this approach have to be meticulously followed.⁸⁻¹⁰

These include: 1) neutralization and removal of the parasite, 2) prevention of intra-operative contamination and, 3) management of the residual cavity. The fluid within the cyst is highly antigenic and infective. Therefore, prior sterilization is important.

This can be achieved by instilling agents such as 3%-20% hypertonic saline, 0.5% silver nitrate solution or 0.5% cetrimide. In the event of cyst biliary communications, entry of these agents into the common bile duct (CBD) may predispose to sclerosing cholangitis. The scolical solution is usually left in the cyst 15 minutes before aspirating the cyst.

Prior to opening the cyst meticulous isolation of the areas by dark colored towels either green or black has to be done in order to identify spillage of the cyst content. A hepatotomy is done overlying the cyst (Figure 5).



Figure 4: Splenic hydatid.

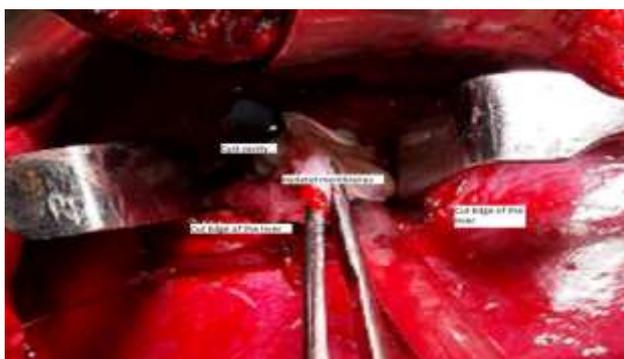


Figure 5: Hepatotomy done to approach the cyst.

Once the endocyst is incised the membranes are visible. These are then sucked out avoiding spillage. After having evacuated the entire cavity, a laparoscope can be introduced in the cyst to ensure complete evacuation of all daughter cysts and contents and identification of any biliary leaks (Figure 6).



Figure 6: Endoscopic view of the cyst cavity after complete evacuation of the contents.

In the event of a biliary leak being identified the leak can be closed with an under-running stitch. The presence of cyst biliary communication needs to be identified pre-operatively either by CT scan or in suspected cases by MRCP. Such patients may present with jaundice or alteration of liver function tests. In the event of a daughter cyst finding its way into the CBD, a formal CBD exploration with placement of T-tube is mandatory. Having evacuated and sterilised the cyst cavity, the dead space needs to be obliterated.

This can be done either by capitonage, introflexion or omentoplasty. In the present case series none of the patients had cyst biliary communications and method for obliterating the cavity was omentoplasty. Omentoplasty is advantageous because it allows macrophages to invade the area thereby enhancing phagocytosis of residual parasitic material. It also helps in prevention of any reactive fluid collection in the empty cavity. A drain may not be necessary in the cyst cavity in cases where omentoplasty has been done. However a subhepatic and subphrenic drain is mandatory to prevent fluid collection in a suddenly created dead space.

For hydatid cysts in the omentum or in the peritoneal cavity complete cystectomy including the peri-cyst lining is done.⁵ The peri-cyst in peritoneal hydatids is extremely thin and not as vascular as seen in liver and spleen hydatids. In case of mesenteric hydatids there is a possibility of compromise of bowel blood supply. In rare cases a segmental resection of the bowel may be required. In such cases meticulous technique and avoidance of spillage of intestinal contents is of utmost importance in order to ensure secure healing of the anastomosis.¹¹ However, in cases of omental hydatids, removal of the cysts may be straight forward.

Complications of surgery for hydatid disease may vary from bleeding to development of surgical site infections (SSI). Meticulous haemostasis is pivotal in preventing haemorrhagic complications. Prophylactic administration of Vitamin K supplements or fresh frozen plasma in very large hydatids of the liver may be helpful in preventing such complications. In the present study Vitamin K supplements were given to all patients 3 days prior to

surgery. SSI's are common in these patients. This may be related to prolonged duration of surgery leading to a breach in the aseptic technique. In the present study 2 patients developed SSI's. However both healed with regular dressings. All patients in the present study were treated with an anthelmintic commencing 1 week prior to surgery to 3 months after surgery.

Albendazole 400 mg twice a day was administered to all patients for a period of 3 months after surgical intervention. Continuation of anthelmintic therapy postoperatively is essential to prevent a recurrence of the disease.¹² Co-morbidities such as diabetes, hypertension and ischaemic heart disease may add to the morbidity and mortality in such cases.¹³ In the present study only one patient had diabetes and hypertension. However, the patient did not develop any morbid complications. The mean follow up in the present study was 9 months. However, 6 patients were lost to follow up. None of the patients had any recurrence or residual disease in the period of follow up.

CONCLUSION

- Male patients involved in the livestock industry are more prone to the development of Hydatid disease.
- Symptoms may be subtle ranging from vague fullness of the abdomen to development of a mass.
- CECT is diagnostic and provides an excellent road map for further management.
- Open surgical method is the method of choice as it ensures complete evacuation and obliteration of the residual cavity.
- A 3 month postoperative course of albendazole is essential for preventing recurrence.

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