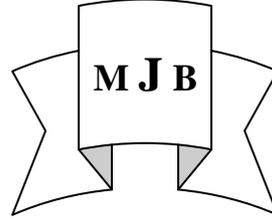


Is it Mandatory to Use a Scolicidal Agent in Liver Hydatid Management

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Abstract

A prospective study was conducted to assess whether conservative surgery is adequate in the management of the hydatid cysts of the liver without using a scolicidal agent. The patients with liver hydatids admitted in AL Zahrawi Hospital in Misan Governorate were enrolled during a period of about ten years from February 2001 to September 2010. The total number of patients was 80 (55 women and 25 men). The clinical presentations and surgical managements of liver hydatid cysts and postoperative complications were recorded. 45/80 (56.25%) presented with simple uncomplicated. The majority of patients had single cyst 50/80: in 60/80 of patients the cyst was present in the right lobe.

We had 10/80 patient (12.5%) presented with infected hydatid cyst they were presented with fever. 5 patients (6.25%) had intraperitoneal rupture of hydatid cysts.

No scolicidal agent was used during the procedures in any patient. Post operative morbidity was seen in 11/45 (24.4%) in uncomplicated cysts while 10/35 (28.4%) in complicated cysts the total recurrence rate 8/80 (10.5.2 patients in un complicated cyst 4.4% and 6 patients in complicated cyst 17%). We can conclude that the management of hydatid cysts of liver can be done without using scolicidal agents and does not affect in increasing the recurrence rate, especially in uncomplicated cysts, avoiding the morbidity of scolicidal agent. Postoperative morbidity is more in complicated than uncomplicated cases.

Key Words: Liver hydatid cyst, drainage, operative techniques without scolicidal agent.

هل ان المواد القاتلة للريوس ضرورية عند الجراحة المحافظة للتخلص من الأكياس المائية للكبد؟

الخلاصة

أجريت دراسة متوقعة لتقييم فيما لو كانت الجراحة المحافظة كافية في معالجة أكياس الكبد المائية بدون استعمال المواد القاتلة للريوس .

المرضى المصابين بأكياس الكبد العدرية الذين راجعوا في مستشفى الزهراوي في محافظة ميسان سجلوا أثناء فترة حوالي عشرة سنوات من فبراير/شباط 2001 إلى سبتمبر/أيلول 2010 حيث كان عددهم الكلي 80 مريضا (55 امرأة و 25 رجل). سجلت العلامات السريرية والاجراءات الجراحية والمضاعفات مابعد التداخل الجراحي لأكياس الكبد العدرية (56.25 %) 45/80. من المرضى لم تظهر حالتهم تعقيدات. أغلبية المرضى أظهروا كيساً وحيداً: 50/80 في 60/80 من المرضى كان الكيس موجود في الفص الايمن للكبد .

كان عندنا 10/80 مريض (12.5) مصابين بكيس عدري ملتهب حيث أظهروا الحمى والألم البطني، مثل خراج الكبد المتقيح 5 مريض (6.25 %) كان لديهم انفجار الكيس العدري داخل غشاء البريتون.

لم يتم استعمال اي مواد مضاد للريوس أثناء الإجراءات لأي من المرضى. سجلت الوبالة ما بعد الجراحة في (24.4 %) 11/45 في الاكياس غير المعقدة، بينما (28.4 %) 10/35 في الاكياس المعقدة. نسبة التكرار الكلية (10 %) 8/80 مريضان في الاكياس غير المعقدة % 4.4 و 6 مريضاً بالاكياس المعقدة . 17 % يُمكننا أن نستنتج بأنه يمكن معالجة الاكياس العدرية للكبد

بدون إستعمال المواد المضادة للفيروس ولا تُؤثّر عليهم في زيّادة نسبة التكرار، خصوصاً في الاكياس البسيطة ، بذلك يمكن ان نتفادى مرضية المواد المضادة للفيروس. ان الاصابة ما بعد الجراحة أكثر في الحالات المعقدة من غير المعقدة.

Introduction

Hydatic disease has been known since ancient time, Hippocrates described, lives of water, Hydatid is Greek “drop of water “

It was postulated to be of animal origin in later part of eighteenth century the term “echinococcus” was coined by Rudulphi in the first decade of nineteenth century. The life cycle of the parasite was elucidated by Haubner in 1855 and it was confirmed as a zoonosis in 1862 by Krabbe and Finsen [14].

Hydatid disease or echinococcosis occurs primarily in sheep – grazing areas of the world, but is common world wide because the dog is a definitive host[6] also because increasing migration growing incidence of world trade and travel high mobility of troops and increasing number of refugees make hydatidosis a global problem[4]. The disease endemic in Mediterranean countries North Africa Spain Greece Turkey Portugal Middle east Australia Newzealand South America Baltic area the Philippines Northern China and the India[15].

Echinococcus is a flat tapeworm characterized by a scolex with four suckers and a double row of 30 to 36 hooklets. the life cycle of Echinococcus alternate between carnivores and herbivores. With dogs being the definitive host. Tapeworm eggs are passed in the feces of infected dogs. Which contaminate herbage that is subsequently eaten by intermediate hosts such as sheep or cattle. Human infestation occurs with consumption of contaminated vegetables or through contact with infected animal or soil [7].

There are four species of Taenia echinococcus that are known to cause the disease.

- 1- Echinococcus granulosus.
- 2- Echinococcus multilocularis.
- 3- Echinococcus oligartus.

4- Echinococcus vogeli.

Echinococcus granulosus is the most common causative of the disease. Where as Echinococcus multilocularis was called as malignant hydatidosis is found in central and eastern Europe Japan Canada and USA. The definitive hosts are the red fox arctic fox dog and cat. While the intermediate host are various members of the rodent family. Human disease is rare but life threatening. Ech. oligartus and vogeli are mainly confined to south America and rarely known to cause human disease[4]. Humans are an end stage to the parasite where the parasite develops its larval stage known as hydatid cyst [6]. three fourth of hydatid cysts are in liver, Rt lobe solitary. then lung and every where in the body except nail and hair [6]. The hydatid cyst has three layers:

- 1- The pericyst or pseudo cyst modified host cells that form a dense and fibrous protective zone its function mechanical support of hydatid cyst
- 2- Outer layer ectocyst which is the laminated membrane it is a cellular allow the passage of nutrient and bacteria.
- 3- Inner layer or endocyst which is the germinal membrane responsible for the production of clear hydatid fluid, the ectocyst, brood capsules, scoleces and daughter cyst [8].

The cycle with two host called sexual cycle and resulting disease is “primary echinococcosis”. there is an asexual cycle is which a new hydatid cyst develop from vital element of larval stage (e.g protoscoleces, daughter cyst) of the parasite in same intermediate host this disease in human is secondary echinococcosis [4]. The development of brood capsules from the germinal layer indicate complete biologic development of the cyst which occur after 6 months of growth, daughter cyst formation is a defense reaction, when the hydatid cyst

exposed to injury cause daughter cyst formation this is called endogenic vesiculation. Ectogenic vesiculation occurs when a small rupture or defect in the laminated membrane occurs and creates a satellite hydatid cyst. this process is un common in E.granulosis but is characteristic for the larval stage of E. multilocularis[8].

Cysts (hydatid) and pericysts in the liver may calcify, calcification of the pericyst which can develop at all stages of the life cycle of hydatid, is found mainly in one third of liver cysts. pericyst calcification does not always indicate that the cyst is dead, but calcification of the endocyst dose.

Patients with simple uncomplicated hydatid cyst of the liver may be a symptomatic for years or presented with non - specific complaints abdominal pain, palpable mass[7]. So its presentation depend on parasite load, the site and the size of the cysts determine the degree of symptom. However at any time any

particular hydatid cyst can under go any of the complication which can be life threatening unless treated early [16]. When complication occur patient present with symptom like abdominal pain dyspepsia vomiting, signs may palpable mass Jaundice and fever [6].

Diagnosis of un complicate hydatid cyst of liver is frequently made on the basis of clinical suspicion and epidemiologic data[7]. Ultrasound has been favored as first-line diagnosis imaging tool because is inexpensive noninvasive and readily available. the specificity of ultrasound to rule out hepatic hydatid cystic disease about 90% [7]. Gharbi etal, proposed an ultrasonographic classification of hydatid diseae [17].

(Table 1). World health organization (WHO) has proposed a standardized classification of cystic hydatid disease (Table 2). Ultrasonoic classification staging system are not only diagnostically important but also clinically relevant because therapy is often stage based.

Table 1 Gharbi classification cystic hydatid disease

Type *ultrasound features.*

- I pure fluid collection.
- II fluid collection with split wall/ detached membrane.
- III fluid collection with multiple septa/ daughter cysts.
- IV Heterogeneous hyper echoic cysts contents.
- V cyst with reflecting thick \pm calcified wall.

Table 2 world health organization classification of cystic hydatid disease

Type *ultrasound features.*

- CI Unilocular lesion with no cyst wall visible.
- CE1 Unilocular lesion with cyst wall visible, hydatid sand “snow flake sign”.
- CE2 Multivesicular lesion, multiseptated, honeycomb sign. daughter cysts visible.
- CE3 Unilocular lesion, detached laminated membrane in side cyst “water lily sign”.
- CE4 Heterogeneous hypo echoic or hyper echoic lesion no daughter cyst, degenerative content.
- CE5 Thick calcified lesion, calcification partial to complete, cone – shaped shadow.

Adapted from Who Informal working Group : Acta Tropica 85 :253, 2003.

CT scan and MRI complement information obtained on ultrasound. CTscan and MRI provide additional structural details and show more precisely the location of the cyst. Endoscopic retrograde

cholangiopancreaticograph (ERCP), may also provide information about communication of the cyst with biliary tract.

Serologic assay mostly to confirm infection suspected on imaging studies or in follow up the patient for recurrence of hydatid disease [7].

The modern treatment of hydatid cyst of the liver varies from surgical intervention to percutaneous drainage or medical therapy. Surgery is still the treatment of choice and can be performed by the conventional or laparoscopic approach[3]. The use of scolicedal agents for injection into the cyst and for use in the surrounding peritoneum, formalin, hypertonic saline, cetrimide, hydrogen peroxide, polyvinyl poridone -iodine, silver nitrate and ethyl alcohol are among some of the many agents that have been used. complete aspiration of all cyst content especially multivesicular disease is difficult and complete sterilization with scolicedal agent is uncertain beside that if scolicedal agent enters the biliary tree serious damage also can occur within the liver[8].

Materials and Methods

This study was conducted prospectively over a period of ten years (approximately) from February 2001 to September 2010 with a further follow up period from 2-10 years in Department of general surgery in Al-Zhrawi hospital, Misan province secondary level health center. The total number of patients included in the study was 68.9% women and 31.1% men.

All the patients were subjected to detailed history and physical examination with all base line investigations such as haemogram kidney function tests liver function tests coagulogram ectorocardiography and chest x ray.

Ultrasonagrapy was the main tool of diagnosis, CT scan was performed in those cases where the results of ultrasonagrapy were equivocal, in patients with suspicion of intrabiliary rupture and / or obstruction of biliary passages based on clinical, biochemical or radiologic findings. Patients were operated on after a preoperative course of albendazol

(10mg/kg for 4 week)to achieve sterilization and decrease the risk of recurrence in case of intra operative spillage except in patients with peritonitis due intra peritoneal rupture who were taken for immediate surgery. all patients were put on albendazol therapy (three courses of 4 weeks with a gap of 2 weeks in between in post operative period).

The choice of operative procedure was guided by size and location of the cyst and the presence of complications. Cyst with rupture in biliary tree, infection, rupture into peritoneal cavity were categorized as complicated cysts.

Follow up of patients:

All patients were followed up for a minimum of 2-10 years. Initially all patient were followed up twice a month for 3months followed by once a month for 1 year and the 3 months for a period of another years. During this follow up patients were subjected to detailed history, clinical examination and ultrasonagrapy. To look at the fate of residual cavity, any infection and any recurrence practically all residual cavities disappeared by 18 month and there was 2 recurrence in the simple cysts and 6 recurrence in the complicated cyst.

Results

Surgical technique

After the diagnosis was established patients were taken for surgical intervention. Right sub costal incision was made in all patients except for the patients with intra peritoneal rupture and cysts in the left lobe where a midline incision was made. After the peritoneal cavity was entered the cyst was exposed and isolated from the remainder of operative field by using large abdominal packs which soaked by normal saline (0.9%). Conservative resection was carried out in all patients, which involves unroofing of hydatid cyst, removal of its contents including laminated membrane, germinal layer, daughter cyst, hydatid fluid and scolices, leaving the pericyst behind.

After the cyst is isolated it is penetrated by a large gauge needle and about 50ml of fluid is evacuated to lower the cyst pressure, the color of the hydatid fluid is observed. After this three stay sutures are placed close to the needle.

Upward traction is applied on the stay sutures the needle is retracted and the cyst is incised between sutures by electrocautery. Through this incision a large sump drain is inserted and suction continued, once the pressure is further reduced, the incision is enlarged to 3-4 cm so that direct vision of the cyst cavity and its contents is obtained. Suction is freely moved around the cavity to evacuate all the liquid. Once all the liquid has been drained the laminated membrane collapses and its daughter cysts are removed with the help of ring forceps. The cavity is rinsed with warm saline inspected for bile leakage and packed with dry white pack soaked in saline. The packs are left in place for a few minutes then removed and examined for any bile stain then mopping of the cavity by pack soaked with saline – mechanical friction to deal with any escaped scolices in the wall of the cavity. The residual cavity is managed by different methods available, depending on size, site and number of cysts and surgeon preference, those techniques are:

1- open drainage of cyst cavity into the peritoneal cavity as in case of small, superficial and shallow uninfected cyst.

2- Obliteration which is done by

a) – Capsularrhaphy b) Captionage c) Omentoplasty d) Introflexion (capsule-apply).

It is a modification of captionage in which the upper edge of the pericyst is sutured to the deepest part of the cavity with absorbable sutures and the other edge is sutured to the collapsed edge by a running suture.

3- External tube drainage, the tube drain is placed in the cavity until no fluid drains out for 48h.

Regarding the presentation, out of 80 patients pain was the most common symptom seen in 45 (56.25%) of patients,

followed by anorexia in 42 (52.5%) patients (Table 4). 37.5% of patients had upper abdominal tenderness. Nausea and vomiting were found in 31.25%. Upper abdominal mass was seen in 31.25%

Jaundice was seen in 25%, fever was seen in 12.5%. Two patients presented to us with abdominal distension. Four patients presented as shock. While hepatomegaly was present in 20% (Table 4).

The majority of patients had single cysts. 62.5% : in 75 of patients the cyst was present in the right lobe (Table 3). Bilobar cysts were seen in 8/80 patients. In the majority of patients 87.5% cyst sizes were 5-10 cm in size, 12.5% cysts were more than 10 cm in size.

Out of 80 patients 45 (56.25%) patients had unilocular cysts, surgical procedures performed in these patients were external tube drainage in 5 patients, omentoplasty in 30 patients, capsule – apply in 6 patients and captionage in 4 patients. The remaining 35 patients had complicated cysts. Among these complicated cysts 20 (43.75%) patients had biliary tree rupture, 15 patients had minor rupture, 5 patients had major rupture (free communication) 10 patients had infected and 5 patients had intra peritoneal rupture (Table 6). All patients with infected cysts presented with abdominal pain and fever. Among patients with intrabiliary rupture, 15/80 – 15 patients presented with jaundice (100%) and 10 patients with abdominal pain (66.6%) while patients with intra biliary rupture-major 5/80 – 5 patients presented with jaundice 100%, 4 patients presented with abdominal pain 80% and one patient presented with shock 20%. 5 patients with intra peritoneal rupture presented with abdominal distension and pain in 2 patients 40% and shock in 3 patients 60% (Table 5).

The method used for management of residual cavity depends on the type of complication (Table 6). Among the patients with infected cysts, omentoplasty was done in 8 patients, capsule-apply in one patient and

captionage in one patient. 20 patients with intra biliary rupture (minor 15/80) omentoplasty done in 11 patients, capsule-apply in one patient and captionage in 3 patients. 5 patients with intra biliary rupture (major) omentoplasty done in 2 patients with suturing cystobiliary communication with absorbable suture and T-tube drainage of CBD. 3 patients internal drainage was done in form choledochoduodenostomy in 2 patients and transduodenal sphincteroplasty with T- tube in C.B.D in one patient. The residual cavity of these patient with internal drainage treated by capsule-apply

in one patient and captionage in 2 patients, those patients with intra peritoneal rupture (n=5) were managed by peritoneal lavage, tube drainage of peritoneal cavity and evacuation of primary cyst, the residual cavity managed by omentoplasty in 3 patients, capsule-apply in one patient and captionage in one patient (Table6). No mortality was recorded.

Post operative morbidity was seen in 11/45 (24.4%) in un complicated cyst while 10/35 (28.4%) in complicated cyst. the total recurrence rate 8/80 (10%). 2 patients in un complicated cyst 4.4% and 6 patients in complicated cases 17%,(Table7).

Table 3 Dermographic profile and topographic distribution of the hydatid liver cyst no=80	
Male	25
Female	55
Lowest age	5
Uppermost age	55
Single(simple)cyst	50
Multiple cyst	30
Uncomplicated	45
Complicated	35
Right lobe	60
Left lobe	12
Bilobar	8
Rural	45
Urban	35
Univesicular	43
Multivesicular	37
Cyst 5-10cm	70
Cyst more than 10cm	10

Most of patients in 3rd and 4th decade of life
 Most of cyst type III, IV and V Gharbi classification

Table 4 Symptomatology

Symptoms/signs	No. of patients (n=80)	Percentage(%)
Nonspecific abdominal pain	45	56.25
Upper abdominal mass	25	31.25
Fever	10	12.5
Jaundice	20	25
Nausea /vomiting	40	50
Anorexia	42	52.5
Upper abdominal tenderness	30	37.5
Hepatomegaly	16	20
Abdominal distension	2	2.5
Shock	4	5

Table 5 Symptoms of complicated hydatid cyst no=35

Pathology	patients	abdominal distension	jaundice	fever	pain	shock
Ruptured In Biliary Tree	20	-	-	-	-	-
Minor	15	-	5	-	10	-
Major	5	-	5	-	4	1
Infected Cyst	10	-	-	10	10	-
Intaperitoneal Rupture	5	2	-	-	2	3

Table 6 Operative procedure for managing residual hydatid cyst cavity

Type Of Cyst	External Tube Drainage	Omentoplasty	Capsule Apply	Captionage	Internal Drainage
Simple(uncomplicated)cyst (45)	5	30	6	4	-
Ruptured in biliary tree(minor)(15)	-	11	1	3	-
Ruptured in biliary tree(major)(5)	-	2+T-TUBE DRAIN	1	2	3
Infected(10)	-	8	1	1	-
Intraperitoneal rupture(5)	-	3	1	1	-

Table 7 Postoperative morbidity

Morbidity	Simple Cyst Uncomplicated(45)	Complicated Cyst(35)
Nausea/Vomiting	6	2
Fever	2	2
Respiratory Infection	2	2
Wound Infection	1	2
Biliary Fistula	-	1
Paralytic Ileus	-	1
Total Morbidity	11/45 24.4%	10/35 28.5%
Recurrence	2(4.4%)	6 (17%)

Discussion

Surgical intervention is still treatment of choice for liver hydatid cysts conservative procedure that we are used in our study which included aspiration, evacuation and dealing with residual cavity, without using scolicalidal agents. There is no detergent agent can kill scolies except mechanical friction[2].many surgeons question their-scolicalidal agent-merit and efficacy.

Miroslav Milicevic said,I do not inject protoscolicalidal agent into an intact or partially decompressed hydatid cyst for sterilization[4]. The cysts are frequently multivesicular and the protoscolicalidal agent do not penetrate into the vesicles and daughter cysts also the cysts can have large volumes and dilute the injected protoscolicalidal agent and the cystobiliary communication need to be evaluated and

managed. There is contraindication to use scolical agent in the complicated hydatid cyst, because the possibility of cystobiliary communication the problem in using the scolical agent in uncomplicated cysts or simple and univesicular cyst and even hydatid cyst with clear content can sometimes demonstrate cystobiliary communication after decompression [4].

Early on surgical management of hydatid cyst via cyst evacuation resulted in high rate of peritoneal implantation so with advancing in surgery increasing experiences in treatment of hydatid cyst presence of especial centers careful aspiration meticulous care in evacuation of cyst content decrease the incidence of leakage and spillage of hydatid fluid during manipulation with correct isolation of the cyst from peritoneal cavity that leads to decrease the recurrence rate in good centers 5-10% or less [8,13].

While the recurrence rate after rupture pleural or peritoneal cavities reach to 25% [8], according to the WHO guidelines preoperative administration should begin between 1 and 4 day before surgery for albendazole and 3 months before surgery for mebendazol and continue for 28 days for albendazol and for 3-6 months for mebendazole, this combination may be more effective to overcome the spillage of hydatid fluid and decreasing the recurrence rate [7].

A- A cyst missed of operation.

B- Local recurrence at operation site or frank recurrence.

C- Secondary intra-abdominal echinococcosis.

D- Occurrence of cyst in other organ.

E- Re infection [4].

Recurrence refer to a cyst increasing in size between ultrasound examination at the original operation site this is result of.

A- Overload exogenous vesiculation.

B- Retained vital protoscolices.

C- Part of the germinal membrane left behind.

A new cyst different site a cyst overlooked at operation and a cyst developing in

another organ is not a recurrence a new cyst developing in peritoneal cavity after operation for secondary echinococcosis is progression of the disease.

The longest interval after initial operation when a recurrence can start developing is not known [4] in our study the recurrence rate is divided in two groups:

A- The recurrence rate after simple uncomplicated cysts was 2/45 (4.4%), it was comparable of normal range with other studies that use in their management of hydatid cyst scolical agent that mean careful aspiration meticulous evacuation of the content of the cyst and good scraping the interior of residual cavity effective in controlling the recurrence rate.

B- While the recurrence rate after complicated hydatid cyst was 6/35 (17%) which was comparable to normal range with other studies actually we did not used scolical agents. So the using the scolical agent in decreasing the recurrence rate is a matter of procedure dependent

the total recurrence rate 8/80 (10%) which is within normal range (Table 7).

Hydatid liver cyst tend to expand slowly and without symptoms and are thus frequently very large on presentation so single lesion are noted in 75% and are predominantly located within the right lobe 75% (Table 7).

Even though the lesion single half contain daughter cyst and or multilocular (multivesicular) [8].

In our study female effected more than male, 2:1 most the cysts within 5-10 cm in size 70/80. 60/80 patients have cyst in right lobe of liver (75%) and half of the patient had multivesicular cysts 73/80 (Table 3). The incidence of disease in female more than male in our study may related to the cases from rural more than urban where the dogs more presented in rural than urban also because of the diet habit related to the females who eat vegetable more than male which contain Iron supplement to replace blood loses.

Out of 80 patient pain was the most common symptom seen in 45 (56.25%) of patient followed by abdominal mass in 31.25% (Table 4), 25% of patient had jaundice and nausea and vomiting was seen in 50%. Fever was seen only in 12.5% patient. 2 patient presented to us with massive abdominal distension with respiratory embarrassment which give history of trauma follow slow distension of the abdomen by secondary echinococcosis due to rupture of the cyst in to the peritoneal cavity, 5% patient presented with shock in three of them had rupture hydatid cyst in peritoneal cavity, anaphylactic shock, one case there was rupture in biliary tree with feature of cholangitis, liver hydatidosis is one of the most common causes of acute abdomen in endemic regions, echinococcal infestation should be suspected in patient who present with abdominal mass, pain, jaundice or anaphylactic shock.

The most common complications from hydatid cysts ruptures internally or externally, followed by secondary infection, anaphylactic shock and liver replacement in order of decreasing frequency[8].

Internal rupture, mean bile enter into the space between the pericyst and endocyst can cause rupture of the laminated membrane and the cyst convert from univesicular to multivesicular [4].

The incidence of intra-biliary rupture ranges from 2.6-30% their complication account for 60% of all complications of hydatid disease and 20% of post-operative morbidity and divid into 1-minor communication not visible or less than 5mm in diameter of bile duct communicated which account for 80-90% of communications. 2- major communications more than 5mm in diameter and communicate with a large bile duct, has incidence of 3-10%[4].

A vital hydatid cyst grows in the direction of least resistance to surface of liver and cause intra-peritoneal rupture which has incidence 1-4% presented as acute

abdomen or anaphylactic shock. May became in silent rupture, the patient presented with abdominal distension [4].

Cyst leakage is a prerequisite for bacterial contamination and the most frequent cause of infection is a cyst-biliary communication. An infected hydatid cyst undergoes structural changes, the parasite dies. The incidence of infected hydatid cyst range from 11-27 % [4].

In our study, rupture in biliary tree was the most common complication, was seen in 20/80(25%) and about 57% (20/35) of all complicated hydatid cyst(Table5). The diagnosis of intra-biliary rupture is suspected clinically in all cases, based on a history of jaundice and cholangitis. Although ultrasound and CT scan define the extent of the disease in uncomplicated cases, they are not always sensitive and specific in suspected biliary tract involvement. So ERCP is the investigation of choice, but we didn't do it because it's unavailable in our hospital or our city. All patients presented with jaundice and abdominal pain one of them presented with shock (had major communication). The rapid discharge of the cyst content into major bile duct can lead to sudden absorption of the hydatid antigen in sensitized patient result in anaphylaxis [4]. The operative approach is to the clean the mother cyst of hydatid membrane, biliary communication with the cyst identified meticulously sutured as much we could. Patient with minor communication 15/20 we did omentoplasty in 11/15 patients and captionage in three patients with major communication. We dealt with the mother cyst after evacuation in two patients omentoplasty was done with exploration of CBD and cleaning the duct then T- tube drainage and the other three patient we did in one capsule apply for the mother cyst and two patient captionage and internal drainage, 2 patient choledochoduodenostomy and one patient trans-duodenal sphincteroplasty(Table6). In all five patients, CBD was grossly dilated. Internal drainage is safe and useful

procedure and is advised in presence of a major biliary communication which is difficult to close or where closure of the communication may compromise biliary drainage or where CBD is grossly dilated[6].

We had 10/80 patient (12.5%) presented with infected hydatid cyst they were presented with fever and abdominal pain, like pyogenic liver abscess most of them 8/10 treated with omentoplasty after evacuation of the contents, other two patients one managed by captionage and the other by capsule- apply procedure(Table 6).

We faced 5/8 patient (6.25%) had intraperitoneal rupture of hydatid cysts, 2 patients presented with abdominal distension and pain due to disseminated abdominal hydatidosis, three patients presented with shock state. there were managed by laparotomy midline incision dealing with mother cavity after evacuation mobbing by gauze soaked with normal saline, peritoneal lavage with normal saline tube drain of peritoneal cavity while the residual cavity managed in three patients by omentoplasty, one with capsule-apply and other one with captionage(Table 6).

In our study there were 45/80 (56.25%) presented with simple uncomplicated cyst(Table 3), which managed in same principle of surgery, but the difference in dealing with residual cavity.

Five patients treated with external tube drainage, six patients treated by capsule apply and four patients by captionage. while the other thirty patients were treated by omentoplasty(Table 6). We did omentoplasty in 54/80 (67.5%) here a flap of omentum is brought to rest within the pericyst cavity with the assumption that omentum will seal small biliary leaks and obliterate the cavity. omentoplasty also protect against infection by promoting reabsorption of serosal fluid and by inducing macrophage migration in septic foci.

There was no mortality in our study, post-operative morbidity was seen in 11/45(24.4%) in uncomplicated cysts as compared to 10/35(28%) in complicated cyst(Table 7). among patients with uncomplicated cyst wound infection seen in one patient, respiratory infection in two patients, fever in two patients and nausea and vomiting in six patients among patients with complicated cyst wound infection in two patients, respiratory infection in two patients fever in two patients nausea and vomiting in two patients and biliary fistula in one patient. Complication such as nausea and vomiting can occur in any of the patient irrespective of the nature of the cyst and type of procedure done.

Fever and respiratory tract infection in the form of basal atelectasis was seen in patients with uncomplicated cyst who were put on external tube drainage probably putting on an external tube hampered respiratory tract excursion because of pain there by increasing the incidence of so called respiratory tract infection. While in complicated cyst, there were multiple cyst in upper surface of the liver and adhesion with diaphragm so the manipulation may affect increasing the incidence of respiratory tract infection. Post-operative biliary fistula was seen in one patient with complicated cyst, the bilious leakage in connected with plural cavity and patient developed pleural effusion, the cyst was large in contact with diaphragm (superior surface of the liver) and the patient done for him thoracotomy and decortication of the pleura. Waghollikar et al[12] also reported no mortality in their study they reported post operative morbidity in 14(32%) patients with wound infection in 6. Chest infection in 3 external biliary fistula in 2 and infection of residual cavity with suppuration in three patients.

Conclusion

The management of hydatid cysts of liver can be done without using scolicedal agents and dose not effect in increasing the recurrence rate, especially in

uncomplicated cysts, avoiding the morbidity of scolical agent. Complicated hydatid represent a special subset of patient who require a timely and appropriate treatment of complication which can be life threatening. Postoperative morbidity is more in complicated than uncomplicated, long term results are equally good. an individualized management and a flexible approach are the key to successful management. Omentoplasty best method for managing the residual cavity it obliterate the cavity protect against infection ,internal drainage is safe and useful procedure especially in the presence of a major biliary communication which is difficult to close.

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