

# Clinical Study of Hydatid Disease

B Kasturi Bai

Assistant Professor, Department of General Surgery, Mahatma Gandhi Memorial Hospital, Kakatiya Medical College, Warangal, Telangana, India

## Abstract

**Introduction:** Hydatid disease has been known from the time of Hippocrates who refers to the disease as “Liver full of water.” The most common form is *Echinococcus granulosus*, which gives rise to cysts. Hydatid disease is prevalent enough in India to be seen by most general surgeons during their careers. The aim of studying hydatid is that it is a common parasitic infestation of surgical interest in our area.

**Materials and Methods:** The present study “clinical study of hydatid disease” is done in the Department of General Surgery, Mahatma Gandhi Memorial Hospital (Kakatiya Medical College), Warangal, Telangana, from January 2015 to September 2016. Consisted of 30 subjects from all the subjects, written and informed consent was taken, thorough examination and investigations and appropriate management were done.

**Results:** In the present study of mean age was the range of 41–50 years. Both females and males had the same range. Overall, male and female ratio is 1:1.3. The most common symptom appears to be pain (66.66%), second most common symptom was mass abdomen (33.33%). Fever history was present in 26.6% of cases.

**Conclusion:** Hydatid disease is one of the commonly met with diseases in M.G.M. Hospital, Warangal. 30 cases were reported during the present study from January 2015 to September 2016.

**Key words:** *Echinococcus granulosus*, Hydatid cyst, Hydatid disease

## INTRODUCTION

Hydatid disease has been known from the time of Hippocrates who refers to the disease as “Liver full of water.”<sup>[1]</sup> The word echinococcosis Greek in origin and means Hedgehog berry.<sup>[1]</sup> Hydatid disease is a parasitic infection caused by several species of the cestode *Echinococcus*. The most common form is *Echinococcus granulosus*, which gives rise to cysts, primarily in the liver and lungs. Much less common is *Echinococcus multilocularis*, which produces an invasive tumor-like replacement of liver tissue. Hydatid liver disease is prevalent enough in India to be seen by most general surgeons during their careers. In India, large series have been reported from Punjab, Andhra Pradesh, and Chennai. Hydatid disease is readily preventable disease, but the reality of situation man’s

intimate contact with his environment would indicate that this condition which has been known since antiquity will remain a problem for the foreseeable future. It remains today a common surgical condition in many rural parts of the world, carrying significant mortality and morbidity. Although the disease entity hydatidosis has been known for many centuries, the nomenclature was verifying from time to time, i.e., “hydatid cyst or echinococcal cyst.” “Hydatidose,” “hydatiodtis,” “Echinococcosis,”<sup>[1]</sup> etc., at present, all the above confusion nomenclature was discarded, and hydatidosis is the terminology accepted in the international congress of parasitology. The aim of studying hydatid is that it is a common parasitic infestation of surgical interest in our area of Rayalaseema districts of Andhra Pradesh and plenty of cases of extrahepatic hydatid disease were reported. Surgery offers a complete cure, and the mortality which can be attributed to surgery is minimal. Hydatid anaphylaxis so much described is not difficult to treat, and in fact, it is rarely met with.

## Ultrasonogram

It detects 98% of Hydatid cysts. It is cost effective in endemic areas can be used both pre-operatively and postoperatively. It confirms the cystic lesion, visualize the

Access this article online



www.ijss-sn.com

Month of Submission : 05-2018  
Month of Peer Review : 06-2018  
Month of Acceptance : 07-2018  
Month of Publishing : 07-2018

**Corresponding Author:** Dr. S Kasturi Bai, Plot No 140, Road No 20, Vivekananda Nagar Colony, Kukatpally, Hyderabad - 500 072, Telangana, India. Phone: +91-9399998860. E-mail: kasturi10@yahoo.com



Figure 1:Ultrasound picture of hepatic hydatid cyst

daughter cysts, defines the anatomical extent of the cyst and its relationship with vascular structures.

The "cart wheel appearance"<sup>[2]</sup> is characteristic of multivesicular cyst. Separation of the laminated membrane produces a "split wall appearance"<sup>[2]</sup> and its complete collapse results in "water lily sign"<sup>[3,4]</sup> presence of hydatid sand is pathognomic more detailed account of the ultrasound findings in hydatid disease is given by Gharbi *et al.*<sup>[4,5]</sup>

Classification of ultrasound appearance in hydatid disease:<sup>[4,6]</sup>

| Type | Description   |
|------|---|
| I    | Pure fluid collection   |
| II   | fluid collection within split wall (water lily sign)                  |
| III  | fluid collection with septa (honeycomb sign)                          |
| IV   | Heterogeneous complex mass (dead parasite) calcified mass (egg shell) |
| V    | Reflecting thick walls <sup>[6]</sup>                                 |

Ultra sonogram is less accurate than CT in localising and delineating the extent of the cyst.

## MATERIALS AND METHODS

The present study "clinical study of hydatid disease" is done in the Department of General Surgery, Mahatma Gandhi Memorial Hospital (Kakatiya Medical College), Warangal, Telangana, from January 2015 to September 2016. Consisted of 30 subjects from all the subjects, written and informed consent was taken, thorough examination and investigations and appropriate management were done. Follow-up period was of 6 months. Results were analyzed.

## Results and Observations

1. In the present study of mean age was the range of 41–50 years. Both females and males had the same range. Overall, male and female ratio is 1: 1.3 [Table 1].
2. The most common symptom appears to be pain (66.66%), second most common symptom was mass abdomen (33.33%). Fever history was present in 26.6% of cases
3. The most common finding was hepatomegaly
4. Duration of symptoms ranged from 3 days to 3 years. Hemoglobin%, chest X-ray and abdominal X-ray, and ultrasonography (USG) abdomen were done in all patients. Computed tomography (CT) and liver function test were done in only a few cases
5. Among the 29 patients who underwent surgery 27 had elective surgery, 2 cases an emergency laparotomy was done
6. Only laparotomy was done for all the cases. Only conservative resection or partial resection was performed in all the cases
7. Management of cavity was done either by packing it with omentum (or) a drain (32 Fr) was placed in the cavity
8. Postoperatively, there were no immediate complications. All the patients received antibiotics for the first two post-operative days and albendazole for 4 weeks before and 4 weeks after surgery. Drains were removed on average on the 4<sup>th</sup> post-operative day
9. Wound infection was noticed in three patients
10. Sutures were removed in an 8<sup>th</sup> post-operative day
11. Patients were discharged on the 9<sup>th</sup> post-operative day.

In the present study, 40% of subjects were in the age group of 41–50 years, 30% were in the age group of 31–40 years, 16% were in the age group of 51–60 years, and 13.33% were in the age group of 20–30 years.

In the present study, 56.66% are females and 43.33% are males [Table 2].

In the present study, 33.33% had a history of contact with the dogs [Table 3].

In the present study, 66.66% of subjects presented with abdominal pain, 83.33% of subjects presented with lump abdomen, 26.66% of subjects had fever, and 6.66% had acute abdomen like picture. Of the 66.66% of subjects with abdominal pain, 50% of subjects also had lump abdomen [Table 4].

In the present study, 60% of subjects had symptoms lasting for a duration of <1 month. 20% of subjects had symptoms lasting for a duration between 1 and 3 months. 13.33% of subjects had symptoms lasting for a duration

**Table 1: Age distribution**

| Age group | n (%)      |
|-----------|------------|
| 20–30     | 4 (13.33)  |
| 31–40     | 9 (30.00)  |
| 41–50     | 12 (40.00) |
| 51–60     | 5 (16.66)  |
| Total     | 30 (100)   |

**Table 2: Sex distribution**

| Sex    | n (%)       |
|--------|-------------|
| Male   | 13 (43.33)  |
| Female | 17 (56.66)  |
| Total  | 30 (100.00) |

**Table 3: Contacts with dogs**

| Contacts with dogs | n (%)      |
|--------------------|------------|
| Present            | 10 (33.33) |
| Absent             | 20 (66.66) |
| Total              | 30 (100)   |

**Table 4: Symptomatology of abdominal hydatid disease**

| symptoms   | n (%)      |
|--|------------|
| Abdominal pain   | 20 (66.66) |
| Abdominal mass   | 10 (33.33) |
| Fever  | 8 (26.66)  |
| Acute abdomen like picture of some other causes (intestinal obstruction and Ac.Du) | 2 (6.66)   |

of 4–6 months. 6.66% of subjects had symptoms lasting for >6 months [Table 5].

In the present study, 40% of subjects had increased bilirubin levels. In all 100% of subjects, USG and CT showed hydatid cysts [Table 6].

In the present study, 76.6% of subjects underwent cystectomy and external drainage, 13.33% of subjects underwent cystectomy with obliteration of cyst wall, and 6.66% of subjects had into removal. 3.33% of subjects were not willing for treatment [Table 7].

In the present study, 73.33% of subjects had no complications, 16.66% of subjects had bile leak, and 10% of subjects had an infection [Table 8].

## DISCUSSION

Abdominal hydatid disease is a common surgical problem at Mahatma Gandhi Memorial Hospital, Warangal, as many as 29 of 30 patients underwent surgeries for hydatid

**Table 5: Duration of symptoms**

| Duration (months) | n (%)     |
|-------------------|-----------|
| <1                | 18 (60)   |
| 1–3               | 6 (20)    |
| 4–6               | 4 (13.33) |
| >6                | 2 (6.66)  |

**Table 6: Investigations**

| S.no | Investigations                      | n (%)    |
|------|-------------------------------------|----------|
| 1    | Increased bilirubin                 | 12 (40)  |
| 2    | USG and suggestive of hydatid cysts | 30 (100) |
| 3    | CT-abdomen                          | 30 (100) |

CT: Computed tomography, USG: Ultrasonography

**Table 7: Treatment modality**

| Surgical modality                    | n (%)     |
|--------------------------------------|-----------|
| Cystectomy+external drainage         | 23 (76.6) |
| Cystectomy+obliteration of cyst wall | 4 (13.3)  |
| In toto removal                      | 2 (6.66)  |
| Not willing                          | 1 (3.33)  |

**Table 8: Complications**

| Complication | n (%)      |
|--------------|------------|
| Bile leak    | 5 (16.66)  |
| Infection    | 3 (10)     |
| Nil          | 22 (73.33) |

disease in the study period of 2 years. 1 patient refused surgery.

### Age

The dictum that hydatid disease is uncommon at extremes of age appears to hold good. The age ranged from 20 to 60 years. The mean age is 40 years. The majority of patients were in the range of 41–50 years. Both males and females had the same range. This is in agreement with the studies of Barros *et al.* who started the mean age of 40 years. Most of the studies give a similar age range.

### Sex

Of a total number of 30 patients in this study, 17 were females and 13 males. The overall male to female ratio is 1: 1.30.

| Sex    | Barrett's | Trivedi and Nanavathy <sup>(1)</sup> | Sachdev and Talwar | Present series |
|--------|-----------|--------------------------------------|--------------------|----------------|
| Male   | 40        | 5                                    | 5                  | 13             |
| Female | 56        | 79                                   | 50                 | 43.33          |
|        | 31        | 2                                    | 5                  | 17             |
|        | 444       | 21                                   | 50                 | 56.66          |

### Symptomology

#### Hepatic hydatid cyst

In general, hydatid disease is regarded as an asymptomatic disease. The cyst appears to be asymptomatic over long

periods of time. The most common symptom appears to be a pain (66.66) the site of pain is the epigastric region in case of left lobe hydatid cyst and the right hypochondrium in case of right lobe involvement. The pain was of dragging sensation and patients had good relief with nonsteroidal anti-inflammatory drugs. The pain was the most common symptom in most of the studies.

Some patients had undergone an upper gastrointestinal endoscopy before the admission.

The second most common symptom was the mass abdomen which was the complaint in 33.33% of patients. Icterus was noted in one of the patients. History of fever was present in about 8 cases 26.6%. This fever was of intermittent in nature.

### **Operative Treatment**

Among the 29 patients who underwent surgery 27 had elective surgery.

They were admitted for elective hepatic hydatid surgery and on the 4<sup>th</sup> admission day developed pain and diagnosed as ruptured hydatid cyst. An upper midline incision was taken. About 500 ml of bilious fluid was present in the peritoneal cavity which was suctioned. The cyst was evacuated of the contents. The layers of the wall of the cyst were removed. Cysto-biliary communication was noticed. Thorough peritoneal lavage was performed with betadine solution and later with normal saline one drain placed in the residual cavity, and another was placed in the pelvis. Abdomen was closed by mass closure technique. Post-operative period was uneventful except for wound infection. Drains were removed on the 4<sup>th</sup> post-operative day.

All the remaining cases were performed as elective surgeries.

### **Open Hepatic Hydatid Surgery**

#### **Indications**

The most common procedure for hepatic hydatid disease is the open procedure. Small hydatid cyst situated deep in either of the lobes is not operated on unless the patient is symptomatic. This was decided preoperatively based on US findings. These symptomatic cysts could be due to dragging sensation of the hydatid cyst or biliary colic. Small asymptomatic cysts were not operated on. They were discharged and were advised albendazole 400 mg bd for 4 weeks. This is in line with the series of Pappidamitrou, Kune, and Barros. However, Shembart *et al.* operated on all hydatid cysts of the liver. There was a higher incidence of hemorrhage. Blood transfusion had to be given. In our institute, nearly all the hydatid cysts had reached large size (4–6 cm) and were quite close to

the surface. Hence, the presence of hydatid cysts was an indication for surgery.

Only laparotomy was performed for all the cases. This is in general line of thought not to contaminate two cavities at the same time. The type of incision was decided on the location of the cyst. Right lobe cysts were operated either by a midline incision or a right subcostal incision.

The left lobe cysts were operated on by a midline incision. Only one left lobe cyst was operated on by the right subcostal incision. Rooftop incision (Chevron) incision was not used for any case. There appears to be no advantage (Saidi *et al.*) as the adequate exposure was possible with either right subcostal or upper midline incision. The mobilization of liver done for cysts located on the superior surface.

Most of the maneuvers were performed for the right lobe hydatid cysts. None of the left lobe hydatid cysts required mobilization. The ligamentum teres was divided between ligatures, and the falciform ligament was divided all the way up to the dome of the diaphragm above the liver. Mobilization of the right lobe of the liver was commenced by the division of right coronary ligament. Once this has begun an assistant on the opposite side of the table lifts the liver upward and forward while strong retraction is applied to the right costal margin using retractor. Great care was taken at this point because small veins entering the vena cava may be torn if excess of traction is applied. After mobilization of the liver, superior surface hydatid cysts were tackled like cysts at other sites.

### **Management of Cyst**

The management of the cyst was, in general, a uniform procedure first after opening the abdomen a thorough search was made for extrahepatic hydatid cysts in addition to the routine exploration.

Small bowels were packed away from the operative site. Cyst was isolated using mops all around. Only conservative resection or partial resection was performed in all the cases.

In this procedure after isolating the cyst, fluid was aspirated, and betadine solution was used for sterilization of the cyst. Betadine was half diluted on normal saline. No other scolocidal agent was used. Any fluid leaking from the puncture site was aspirated by the suction, no special type of suction cone or suction curette was used. The presence of bile staining to the cyst fluid was taken as proof for the presence of cysto-biliary communication. Unroofing of the cyst wall was performed using cautery. The contents of the cavity were removed without spillage by suction. Unroofing

of the entire cyst was performed. Ectocyst was formally opened. Daughter cysts and laminations were removed. Germinal layer (endocyst) was removed in total. A part of pericyst was not removed. Then, the remaining cavity was explored for any biliary communication obvious biliary communication was sutured using 2–0 catgut. Hemostasis was attained by suturing and cauterizing.

### Management of Cavity (Hepatic Hydatid Cyst)

The management of the cavity is also simple. No attempt is done to close it. Either omentum is packed into the cavity, or a drain (32 Fr) is placed in the cavity.

After placing the omentum in the cavity, few sutures were placed between the omentum and pericyst using 2–0 catgut. A thorough peritoneal lavage was performed using the profuse amount of Betadine solution. A large drain (32 fr) was placed in Morrison's pouch in all the cases.

Average duration of surgery was 1 h.

Average blood loss was 50–100 ml. No perioperative blood transfusion was given except in 1 case. The concept of omental pedicle craft was devised by Dawson *et al.* 1988 and popularized B. Papadimitriou.

## CONCLUSIONS

- Hydatid disease is one of the commonly met with diseases in M.G.M. Hospital, Warangal. 30 cases were reported during the present study from January 2015 to September 2016.
- US is the gold standard of diagnosis at MG.M. Hospital, Warangal, due to its noninvasiveness, easy availability, and reproducibility.
- Although US is widely available and non-invasive, it is operator dependent. Failure to identify multiple cysts in the liver and other organs are noted. Hence, CT scan should be used if available.
- The incidence of hydatid disease is more in females than in males (1.33). The most common age range is 40–49 years.
- The most common presentation is pain and mass per abdomen. The duration of pain being 2 years. The general condition was good in all the cases.
- Liver is the most common organ involved (93.33%) lung cysts, peritoneal cysts, splenic, and retrovesical cysts are also reported.
- The indications for surgery in a case of hepatic hydatid cysts are
  - Complicated (infected and biliary colic).
  - Symptomatic large (>4–6 cm) hydatid cysts.

- The indication for surgery for extrahepatic cyst was pain.
- Surgery for hydatid cyst in extremely safe no risk of anaphylaxis is noted.
- Omentoplasty appears to decrease the drain fluid and the duration of the drain.
- The only scolicidal agent used is povidone-iodine (5%).
- The most common procedure for hepatic hydatid cyst is deroofting the cyst wall, evacuation of cyst contents (laminated membrane and germinal layer). Pericyst is not disturbed. The resultant cavity is either packed with omentum omentoplasty or simply drained. A drain in Morrison's pouch is placed in all cases. Minimal blood loss occurs, and no perioperative blood transfusion is required.
- In view of the excellent results of surgery for hydatid cyst, surgery is the best line of management of hydatid disease. Exclusive medical management is best used only for patients not fit for surgery.
- No mortality and low morbidity (10%) were noted in the present study. The morbidity is only due to wound infection. The reasons for the excellent results in the Department of Surgery, MGM, for hydatid disease appear to be:

### Proper Selection of Cases

Only large cysts close to the surface are chosen for surgery.

### Use of Scolicidal Agent

The only scolicidal agent used is povidone-iodine, which is extremely safe.

### Type of Surgery

Simple technique of surgery consisting of cystectomy is used.

### Use of Drains

The peritoneal cavity is drained using an abdominal tube drain (32 Fr) in the Morrison's pouch.

## REFERENCES

- Fischer JF, Jones DB, Pomposelli FB, Upchurch GR Jr. *Mastery of surgery*. 6<sup>th</sup> ed. Philadelphia, PA: Lippincott Williams & Wilkins; 2012. p. 1196, 1210.
- Brunetti E, Kern P, Vuitton DA, Writing Panel for the WHO-IWGE. Expert consensus for the diagnosis and treatment of cystic and alveolar echinococcosis in humans. *Acta Trop* 2010;114:1-6.
- Williams NC, Bulstrode CJ, O'Connell PR. *Bailey and Love's Short Practice of Surgery*. 26<sup>th</sup> ed. Boca Raton, FL: CRC; 2014.
- Worth SC, Dick BM. *Text Book of Surgical Pathology*. New York: Churchill Livingstone; 1979.
- Gharbi HA, Hassine W, Brauner MW, Dupuch K. Ultrasound examination of the hydatid liver. *Radiology* 1981;139:459-63.
- Sabiston DC. *Text Book of Surgery*. 19<sup>th</sup> ed. Philadelphia, PA: Elsevier Saunders; 2012.