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*Original Research Article*

# Management of hydatid cyst at a tertiary care hospital

**[1]Dr. Ashok V Kulkarni, [2]Dr. Kavya Tharanath, [3]Dr. Santosh K, [4]Dr. Sreenivas Murthy Doddasamiah**

[1]Associate Professor, Department of General Surgery, Sapthagiri Institute of Medical science and Research Centre, Bangalore, Karnataka, India
[2,3,4]Assistant Professor, Department of General Surgery, Sapthagiri Institute of Medical Science and Research Centre, Bangalore, Karnataka, India

**Corresponding Author:**
Dr. Sreenivas Murthy Doddasamiah

## Abstract

Surgery is the main stay treatment for hydatid even though medical therapy is available. Surgery is not done in asymptomatic, calcified cyst in patient more than 65 years because the cyst wall is not redundant and will not collapse, if biliary leakage is present the cyst may have prolonged biliary drainage. Risk of chest infections, subphrenic abscess, Secondary cyst infection, sloughing of calcified adventitia are seen. This prospective study consisted of 30 proven clinical cases of hydatid cyst of liver admitted during the study period. Detailed clinical history with regards to age, sex, socioeconomic status, occupation, contact with dog, past H/O of surgery and medical illnesses, clinical symptoms were taken and patient subjected to clinical examination for making a provisional clinical diagnosis. 20 patients were treated surgically and 9 patients were treated medically. One patient had CCf. Ascites right pleural effusion, pulmonary kochs with hydatid cyst in both lobes of liver, expired due to CCf after prolonged hospital stay of 34 days. 8 patients were treated with preoperative albendazole therapy for 28 days before surgery.

**Keywords:** Management, hydatid cyst, albendazole therapy

## Introduction

Hydatid disease has been known since earliest times. Hippo crates called it livers full of water. The word Echinococcus is of Greek origin and means drop of water or watery vesicle. Some of the important discoveries in Hydatid are noted below. Redi (1684) postulated disease was of animal origin. Pallas (1760) and Goeze (1784) demonstrated the parasitic nature in animals, Jenner (1796) noted scolences in Hydatid cyst are developed from laminated membrane. Rudolphi (1801) was the first to use the name Echinococcus Granulosus in Hydatid cyst in humans. Haubner, in 1855, experimentally confirmed the life cycle of parasite. Krabbe and Finsen in 1862 fed dogs with Human Hydatid cysts and demonstrated that it was a zoonosis. In 1897, aleksinski demonstrated the presence of secondary echinococcosis. The first North American case was observed by Low in 1808 and reported in 1822. The Antigenic nature of Hydatid fluid has been recongnised for more than 100 years. Tommas Casoni was the first to experiment with cutaneous hypersensitivity in response to Intradermal Injection of Hydatid fluid. Casoni's test has been in Routine clinical use since 1912. Surgery was the main modality of treatment until mebendazole in 1970s and

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Albendazole in 1980 were introduced as an adjuvant treatments [1, 2].
Detailed description of and use of ultrasound as a diagnostic aid in Hydatid Cyst of liver was given by Gharbi *et al*. in 1981. Percutaneous aspiration injection and reaspiration (PAIR) was described first by Ben Amor *et al*. in 1987 and later studied in details and published by Eltice (1990) and Gerrgouri (1990) [3].
Surgery is the main stay treatment for hydatid even though medical therapy is available.
Surgery is not done in asymptomatic, calcified cyst in patient more than 65 years because the cyst wall is not redundant and will not collapse, if biliary leakage is present the cyst may have prolonged biliary drainage. Risk of chest infections, subphrenic abscess, Secondary cyst infection, sloughing of calcified adventitia are seen. The above complications can be lethal to elderly patient. Surgery is contraindicated in extremes of age, concomitant severe medical disease and multiple organ cysts 37. Decision whether to operate mainly depends on patient's condition and characteristics of the cyst [4].
Variety of scolicides are tested for their anthelminthic efficacy and safety to biliary tree in Animals and humans.
The most effective scolicidal agents are

1) 15-20, sodium chloride solution.
2) 75-95%, Ethanol.
3) 0.1-0.5%, cetrimide solution.
4) 4)1%, povidone-Iodine.
5) 4-10%, formalin.
6) 6)1.5-3%, Hydrogen peroxide.

Even the most effective agents may not kill all the protoscolces or Germinal layer. Inadequate sterilization results from the lack of contact with all daughter cysts or a low concentration of scolecidal agents in large volume cyst [5].
If cyst biliary communicating (5-30%, of cases) is present improper use of toxic scolecidal can induce caustic lesions of biliary epithelium and causing sclerosing cholangitis. Hence the choice of agent. The concentration, volume and the contact time of agent are important [6].

## Methodology

This prospective study consisted of 30 proven clinical cases of hydatid cyst of liver admitted during the study period. Detailed clinical history with regards to age, sex, socioeconomic status, occupation, contact with dog, past H/O of surgery and medical illnesses, clinical symptoms were taken and patient subjected to clinical examination for making a provisional clinical diagnosis.
Investigations like complete hemogram, routine urine examination, routine biochemical tests, liver function tests, plain x-ray chest, x-ray abdomen and ultrasound of abdomen were done for all patients to confirm the diagnosis and as a baseline investigation for follow up of patients undergoing surgical and medical treatment. Serologic investigations like casoni's test, indirect hemagglutination test and ELISA were done depending upon the availability of the test at our hospital at the time of admission of patient to the hospital. During ultrasonography, the site, size, echogenecity, echopattern, contents of the cyst, evidence of detachment of laminated membrane, evidence for calcification, transonic halo were seen in detail.
20 patients were treated by surgery and 9 medical therapy depending on the individual cases. In 8 patients of preoperative albendazole therapy for one month was given. Postoperative albendazole therapy was given for one month for all patients undergoing surgery, one patient expired due medical cause without any specific treatment for hydatid cyst of liver. One patient who had intraperitoneal rupture of liver hydatied with CCF had poor risk for surgery

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and was treated medically. 2 patients had recurrent hydatidosis, one patient treated with surgery and the other patient medically.
Usual indications for surgery were

1) Large cyst with multiple daughter cyst.
2) Symptomatic cysts.
3) Single superficial liver cysts.
4) Infected cysts.
5) Cyst causing pressure effects.

All cases of surgery were done on elective basis. The operative treatment in our series was conservative.

## Operative procedure

Exposure of the liver was obtained in 12 cases by right paramedian incision, right subcostal incision of the abdomen the liver was mobilised and adhesions of the cyst divided when found adherent to diaphragm particular care was required during the dissection to avoid entering the pleural cavity. The area around the cyst was then carefully isolated by Gauzepacks soaked in a scolidal agent. Initial cyst aspiration and replacement of using a 3-way or 20ml syringe was done provided the aspirate was not bilious or infected. 20% hypertonic saline in 9 cases, 0.5% cetrimide in 7 cases and 1% povidone iodine in 1 case and was not used in 3 patients. The edges of collapsing cyst wall was held with tissue forceps and cyst opened and a sucker itself was inserted into the cavity to remove the numerous daughter cysts or by using sponge holding forceps. All laminated membrane was removed and the cavity was examined for any biliary ductal communications. Four cases had cystobiliary communication and was sutured with catgut. 9 patients underwent cystectomy procedure. In 11 patients the cyst wall was redundant that part of cyst wall was removed (partial percystectomy). Residual cavity was managed by simple closure after instillation in 10 cases, in 9 cases tube drainage was done and in 1 cases omentoplasty was done. Abdomen closed with a drain in subhepatic space to provided egress to any bile leak.

## Results and Discussion

All 30 patients were investigated with complete hemogram which showed anemia in 14 patients (46%), eosinophilia in 5 cases (16%) leucocytosis in 2 cases (6.7%) and leucopenia in one case.
Liver function test showed abnormality in 5 patients (16.6%) with raised bilirubin in 3 cases raised enzymes in 5 cases and reversed Aegratio in one case.
Serologic test were done depending on availability of the test at our hospital at the time of admission of patient. The number of patients undergoing tests and positive and negative results are shown in following table.

**Table 1:** Test results

| Test | No. of patients | No. of positive (%) | No. of negative (%) |
|---|---|---|---|
| Casoni's test | N=23 | 15(65%) | 8(35%) |
| I.H.A | N=18 | 13(72%) | 5(28%) |
| ELISA | N=16 | 14(87%) | 2(13%) |

Casoni's test was done in 23 patients and 15 patients were positive and 8 patients had negative results. IHA was done in 18 cases and was positive in 72% of cases and negative in 28% of cases. Elisa was done in 16 cases and was positive in 87% of cases and negative in

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13% of cases.
Plain x-ray abdomen showed soft tissue mass in 3 cases calcified cyst in one case and signs of peritonitis in one case.
Chest x-ray showed right sided pleural effusion in 2 cases, left lung hydatid cyst in 2 cases, bilateral pleural effusion in one case, bilateral bronchiectasis in one case pulmonary Koch's in 2 cases and elevated right hemidiaphargm in one case.
Ultrasound examination was done in all 30 patients and showed hydatid cysts involving following organs.

**Table 2:** Ultrasound examination

| | |
|---|---|
| Only Right lobe of liver | 17 cases (56.7%) |
| Only Left lobe of liver | 5 cases (16.7%) |
| Both lobes, Spleen, Ovary, Peritoneum | 8 cases (26.6%) |
| Both lobes of liver | 3 cases (10%) |
| Both lobes of liver = spleen | 2 cases (10%) |
| Right lobe of liver= Lt. Ovary | 1 cases (3.3%) |
| Right lobe of liver= Peritoneum = Pelvis | 1 cases (3.3%) |
| Right lobe of liver = Intraperitoneal rupture | 1 cases (3.3%) |

Other findings during ultrasound were mild splenomegaly due to portal hypertension in one case, bilateral renal cortical cyst in one case and ascites in 3 cases, urachal cyst in one case. Univesicular cyst was seen in 12 cases and multiversicular cyst (including 5 cyst with hydatid sand) in 18 cases.

| | |
|---|---|
| Cysts with multiple daughter cysts | -10 cases |
| Cysts with thin septae and loculatin | -6 cases |
| Cyst with hydatid sand | -4cases |
| Cyst with honey comp appearance | -1 case |
| Cyst with double wall | -2cases |
| Cyst with H sand and D cyst | -1 case |

Cyst with calcification - 1 case.
Simple clear cystic appearance - 4 cases.
Cyst with cyst in cyst appearance - 1case.
Total - 30 cases.

20 patients were treated surgically and 9 patients were treated medically. One patient had CCf. Ascites right pleural effusion, pulmonary kochs with hydatid cyst in both lobes of liver, expired due to CCf after prolonged hospital stay of 34 days. 8 patients were treated with preoperative albendazole therapy for 28 days before surgery.

**Table 3:** Treatment

| | |
|---|---|
| Preop albendazole therapy + surgery + postop alb. Therapy | 8 cases |
| Surgery alone+ post op Alb therapy | 12 cases |
| Albendazole therapy alone | 9 cases |

Various surgical procedures in 20 patients were as follows operative procedure.

**Table 4:** Operative procedure

| | **Operative procedure** | **No. of cases (%)** |
|---|---|---|
| 1 | Cystectomy with simple closure | 5(25%) |
| 2 | Cystectomy with tube drainage | 4(20%) |

| | | |
|---|---|---|
| 3 | Partial pericystectomy with tube drainage | 5(25%) |
| 4 | Partial pericystectomy with simple closure | 5(25%) |
| 5 | Partial pericystectomy with omentoplasty | 1(5%) |
| 6 | Chole cystectomy | 1(5%) |
| 7 | Left ovariotomy | 1(5%) |
| 8 | Total Pericystectomy of h-cystt over dome of urinary bladder | 1(5%) |

Left overiotomy-Hydatid cyst involving left ovary was removed intact with overy.
Fluid content of cyst was clear in 3 cases, viscous in 2 cases Bilious in one case. In patients with preop Albendazole therapy 4 cases had clear fluid. 3 had viscous fluid and I had infected. Per operatively no spillage or Anaphylaxis was noted, 20 % hypertonic saline was used as scolicide in 3 cases 0.5-1.0%, cetrimide in 7 cases. 1% povidone iodine in one case and was not used in 3 cases.

**Table 5:** Post-operative complications of surgery

| | |
|---|---|
| Wound infection | 2 cases (10%) |
| Prolonged drainage | 3 cases (15%) |
| Subphrenic abscess | 1 case (5%) |
| Biliary fistula | 1 case (5%) |

Wound infection in 2 patients and subphrenic abscess in one patient. Biliary fistula, seen in one patient subsided spontaneously after 28 days of surgery. Prolonged drainage was seen for more than 10 days in 2 patients which resolved spontaneously. About 11 patients who underwent surgery required blood transfusion either preoperatively or immediate post-operative therapy.
Hospital stay for surgery ranged from 12-42 days. An average post op stay was 13 days, no operative mortality was seen in our patients.
Follow up period ranged from 2 months to $1^{1/2}$ yrs no recurrence of cyst was noted. All 20 patients retuned for follow up after one month of postop albendazole therapy. Up to 6 months 15 patients came for follow up, from 6 months to one year 6 patients came for follow up and by 11/2 yrs one patient came for follow up.
3 patients were treated with albendazole therapy. The indications in our patients were 1 patient had secondary echinococcosis with multiple organ cysts, 1 patient had multiple organ cyst with pulmonary kochs with diabetes, 1 patient had intraperitoneal rupture with CCF and was poor risk for surgery, 1 patient had multiple organ cyst, 1 patient had portal HT, systemic hypertension, diabetes, left lower lobe pulmonary hydatid, 1 patient had B/L Bronchiectasis, 2 patients refused surgery one patient had with systemic hypertension and refused surgery. Totally 6 Patients received a complete therapy of 3 cycles. 3 patients had incomplete therapy and were lost to follow up.

**Table 6:** Follow up

| **Albendazole** | **Success** | **Improved** | **Failed** |
|---|---|---|---|
| Complete therapy | 3(33.3%) | 2(22.2%) | 1(11.1%) |
| Incomplete therapy | - | - | 3(33.3%) |

Therapy was monitored clinically and ultra-sonologically 3 patients had alleviation of clinical symptoms, with size reduction and change in echo pattern in 2 cases, and size reduction with membrane detachment in one case.
2 patients had alleviation of some symptoms with minimal size reduction on ultrasound. One patient had no relief of symptoms nor any change on ultrasound.
3 patients had incomplete therapy with no change in symptom or on ultrasound.

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**Table 7:** Ultrasound changes in Liver

| | | |
|---|---|---|
| 1 | Reduction in size | (>20%)-3 cases |
| 2 | Pseudosolid pattern | 2 cases |
| 3 | Membrane detachment | 1 case |
| 4 | Wall calcification | NIL |
| 5 | No changes | 4 cases |

Follow up period varied from 6 months to 11/2 year. 3 patients were lost to follow up,

**Adverse reactions**

Raised SGOT-SGPT - 2 cases (22%).
Leucopenia - 1 case (11%).
Gl Symptom - 1case (11%).

**Hospital stay on average was 17 days**

Associated medical illnesses like diabetes, hypertension, CCf, Pleural effusion was treated medically. One case of pulmonary kochs was started on antitubercular therapy. 2 patients with left lung hydatid were referred to SDS sanitorium for further managemtn.

**Conclusion**

20 patients were treated surgically and 9 patients were treated medically. One patient had CCf. Ascites right pleural effusion, pulmonary Koch's with hydatid cyst in both lobes of liver, Expired due to CCf after prolonged hospital stay of 34 days. 8 patients were treated with preoperative albendazole therapy for 28 days before surgery.

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