

## A Study of clinical Evaluation and Management of Hydatid Disease of Abdomen

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### Abstract

**Introduction:** Hydatid cyst (Cystic Echinococcosis) caused by larval stages of *Echinococcus granulosus*, is a zoonotic parasitic disease. **Materials and Methods:** A retrospective study of 25 patients presenting to OPD of Government General Hospital, Guntur who have been diagnosed with Hydatid cyst of abdomen (LIVER) between January 2018 to January 2020. Inclusion criteria was only those in whom diagnosis had been confirmed by morphological examination of operative specimen showing either daughter cysts or characteristic laminated membrane, later confirmed by findings of scolices and laminated membrane under microscope. This study group consists of 25 patients of different age groups, different places and professions. **Results:** Mean age was 40 years. Sex incidence revealed male preponderance in the study. Duration of illness in the present study varied from 6 months to 5 years. Most cases were from the rural areas. The most common presentation is pain abdomen in the Right upper Quadrant (RUQ). Open incision and drainage of Hydatid cyst with omentoplasty was done in 21 cases and PAIR was done in 04 cases. No mortality was observed. **Conclusions:** Males were most frequently affected sex (4:1). The most frequent symptom was pain in RUQ with lump in upper abdomen on right side. Most common was anorexia and vomiting followed by distention.

**Key words:** Hydatid disease, hydatid cyst, PAIR, mortality, morbidity

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### I. Introduction

Human echinococcosis is a zoonotic disease (a disease that is transmitted to humans from animals) that is caused by parasites, namely tapeworms of the genus *Echinococcus*. Echinococcosis occurs in 4 forms: <sup>[1]</sup>

- (i) cystic echinococcosis, also known as hydatid disease or hydatidosis, caused by infection with a species complex centred on *Echinococcus granulosus*;
- (ii) alveolar echinococcosis, caused by infection with *E. multilocularis*;
- (iii) two forms of neotropical echinococcosis: polycystic caused by infection with *E. vogeli*; and
- (iv) unicystic caused by *E. oligarthrus*.

The two most important forms, which are of medical and public health relevance in humans, are cystic echinococcosis (CE) and alveolar echinococcosis (AE). Geographical distribution: Cystic Echinococcosis is globally distributed and found in every continent except Antarctica. Alveolar Echinococcosis is confined to the Northern hemisphere. In endemic regions, human incidence rates for cystic echinococcosis can reach more than 50 per 100 000 person-years, and prevalence levels as high as 5%–10% may occur in parts of Argentina, Peru, East Africa, Central Asia and China<sup>[2,3]</sup>. In livestock, the prevalence of cystic echinococcosis found in slaughterhouses in hyperendemic areas of South America varies from 20%–95% of slaughtered animals. The highest prevalence is found in rural areas where older animals are slaughtered. The disease is very much prevalent in Kurnool, Kadapa, Rayalaseema, Guntur, Krishna districts and Tamil Nadu and Karnataka states.

The hydatid infection is reported to be associated with areas of low rain fall, where the people are dependent upon the ponds and stop well for water, which act as a vehicle for transmission of the disease from the domestic live stock to human beings.

Both cystic echinococcosis and alveolar echinococcosis represent a substantial disease burden. Worldwide, there may be in excess of 1 million people living with these diseases at any one time. Many of these people will be experiencing severe clinical syndromes which are life-threatening if left untreated. Even with treatment, people often face reduced quality of life.<sup>[4]</sup>

For cystic echinococcosis, there is an average of 2.2% post-operative death rate for surgical patients and about 6.5% of cases relapse after an intervention, thereby requiring prolonged recovery time<sup>[5,6]</sup>. The 2015 WHO Foodborne Disease Burden Epidemiology Reference Group (FERG) estimated echinococcosis to be the

cause of 19 300 deaths and around 871 000 disability-adjusted life-years (DALYs) globally each year. Annual costs associated with cystic echinococcosis are estimated to be US\$ 3 billion for treating cases and losses to the livestock industry.<sup>[1]</sup>

Treatment:<sup>[1,7]</sup>

Both cystic echinococcosis and alveolar echinococcosis are often expensive and complicated to treat, sometimes requiring extensive surgery and/or prolonged drug therapy. There are 4 options for the treatment of cystic echinococcosis:

- Percutaneous treatment of the hydatid cysts with the PAIR (Puncture, Aspiration, Injection, Re-aspiration) technique;
- Surgery
- Anti-infective drug treatment
- “watch and wait”.

The choice must primarily be based on the ultrasound images of the cyst, following a stage-specific approach, and also on the medical infrastructure and human resources available.

## II. Material & Methods

This study of clinical evaluation and management of Hydatid disease of abdomen was done between January 2018 to January 2020 at Government General Hospital, Guntur, Andhra Pradesh. A retrospective study of 25 patients presenting to OPD of GGH, Guntur who have been diagnosed with Hydatid cyst of abdomen (LIVER) between. This study group consists of 25 patients of different age groups, different places and professions. The clinical data, investigations and surgical procedures undertaken are recorded. All the cases were diagnosed based on Ultrasonography (U/S) and X-rays and CT abdomen. The age, sex, h/o dog contact, duration of hospital stay, clinical presentation, treatment advised, findings and difficulties encountered during operation and post op management of patients as well as morbidity and mortality were recorded and analyzed.

Inclusion criteria: Only those in whom diagnosis had been confirmed by morphological examination of operative specimen showing either daughter cysts or characteristic laminated membrane, later confirmed by findings of scolices and laminated membrane under microscope.

Exclusion criteria included those who have refused treatment for hydatid disease.

Statistical analysis: Data entry and analysis was done using Microsoft Excel 2010 version. Data was presented in percentages and proportions.

## III. Results:

Out of the total 25 patients, majority of the patients belonged to fourth, fifth and sixth decades of lifewith mean being 40 years. Sex incidence revealed male preponderance in the study with 80% (n=20) being males and 20% females. With regards to socioeconomic status, most of them belonged to the low socioeconomic status and they earned their livelihood on daily wages. Majority of them are illiterates.

**Table No 1: Demographic details of Patients**

		Number	Percentage
Sex	Male	20	80%
	Female	05	20%
Age	0-20	0	--
	20-50	20	80%
	50-80	05	20%
	>80	0	--

Duration of illness in the present study varied from 6 months to 5 years in case of their hydatid disease. More than 50% of cases presented within second year of onset of their illness.

Majority of patients were from rural areas (21) and remaining (4) were from urban areas. Histories of contact with dogs were available on 02 cases.

The most common presentation is pain abdomen in the Right upper Quadrant (RUQ). In liver Hydatidosis, lump in the upper abdomen was the most common presenting feature. One of the patients was presented with accompanying guarding and rigidity and was diagnosed as amoebic liver abscess. Another case was associated with ascites. Differential count was performed in all cases. Eosinophilia was presented only in 04 patients out of 25 patients.

**Table 2: Organ distribution**

Organ	2018-19	2019-2020
Liver	08	010
Lung	02	

Kidney	01	01
Peritoneum	02	01
Omentum	02	01
Spleen	01	01
Parotid	01	-
Eye	01	01
Muscle	01	01
Multiple organs	02	01

**Clinical presentation:** Most of the patient presented with painless upper abdomen swelling. Pain is a rare symptom while epigastric discomfort and sensation of pressure common in larger cysts. Nausea, vomiting and urticaria are rather uncommon.

**Table 3: Symptomatology**

Symptom	No.of cases
1.Upper abdominal swelling	10
2.Lower abdominal swelling	02
3.All over abdomen-multiple	03
4.Pain abdomen	07
5.Fever	02
6.Vomiting	00
7.Jaundice	01

The general condition of the patient remains good unless there are complications.Hepatomegaly is the painless round swelling in the epigastrium which moves with respiration was the commonest finding on clinical examination.

Jaundice was very rare. Through the hydatid thrill was described as pathognomonic sign for hydatid cyst we couldn't be able to elicit even in one case.

Echinococcus multilocularis is very rare in India, in which cyst will be smaller, containing gelatinous fluid instead of watery fluid. Jaundice and ascites are not common with this form of disease/Because of the tendency of infiltrate and disseminates the disease produced by Echinococcus alveolaria was names as "Malignant Hydatid". Spleen involved in 01 case. Generalized abdominal hydatid is in 02 cases.

**Table 4: Various clinical signs in Abdominal Hydatidosis in present series.**

Sign	No. of cases
Lump abdomen	11
Hepatomegaly	10
Fluctuant cystic swelling	03
Splenomegaly	02
Hydatid thrill	00
Right sided pleural effusion	01
Liver abscess	01
Ascites	01

In a patient of hydatid cyst in superior surface of right lobe of liver, an elevation of right dome of diaphragm was seen in the chest x-ray radiograph film.Most of the cyst in liver were present in right lobe that to on its inferior surface and more than one cyst in liver was present in 03 cases.The patients with involvement of parietal peritoneum were reported by USG as hepatic hydatid probably due to close proximity to right lobe and diaphragm.All patients were received 4-6 weeks of 15mg/kg/day Albendazole and were followed by imaging studies.

05 patients were showed regression in size of cyst and were hence continued on medical management. The remaining patients underwent surgical drainage procedures. Albendazole was continued post operatively for next 06 months.Parietal peritoneum hydatid cysts located between right lobe of liver and right crus of the diaphragm.

Open incision and drainage of Hydatid cyst with omentoplasty was done in 18 cases and PAIR was done in 04 cases. 14 patients underwent excision or enucleation.Post – op complications were wound sepsis (05 cases) and biliary fistula (01 case) which prolonged the hospital; stay upto 21 days.No mortality was observed.

**Table 5: Various procedures adopted in present study**

Procedure	No. of cases
1.Open cystectomy with omentoplasty	18
2.PAIR(Puncture,Aspiration,Injection and reaspiration)	04
3.PPDC (Percutaneous puncture with Drainage and Curettage)	01
4.Radical surgery(total pericystectomy or partial hepatectomy)	01

5.Palliative(simple tube drainage of infected cysts/communicating cysts)	01
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#### IV. Discussion

Cystic Echinococcosis is a preventable disease as it involves domestic animal species as definitive and intermediate hosts. Periodic de-worming of dogs with Praziquantel (at least 04 times a year) improved hygiene in the slaughtering of livestock and public education campaigns have been found to lower and in high income countries, prevents transmission and alternate the burden of human disease. Vaccination of sheep with E. Granulosus with recombinant antigen (EG95) offers encouraging results in prevention and control of the disease. The vaccine is currently being produced economically and is registered in China and Argentina. A programme of combining vaccination of lambs, deworming of dogs and culling of older sheep could lead to the elimination of cystic Echinococcosis disease in humans in less than 10 years.<sup>[8]</sup>

**Geographical distribution:** Cystic Echinococcosis is globally distributed and found in every continent except Australia. Alveolar Echinococcosis is confined to the Northern hemisphere. In endemic regions human incidence rates for cystic Echinococcosis can reach more than 50 per 100000 cases –year.

The highest prevalence is found in rural areas where older animals are slaughtered. The disease is very much prevalent in Kurnool, Kadapa, Rayalaseema, Guntur, Krishna districts and Tamil Nadu and Karnataka states.

The hydatid infection is reported to be associated with areas of low rain fall, where the people are dependent upon the ponds and stop well for water, which act as a vehicle for transmission of the disease from the domestic live stock to human beings.

**Sex distribution:** men are more commonly affected than women probably they are more in contact with dogs.

**Table 6: Showing sex incidence in various series:**

Sex	Barrett <sup>9</sup>	S. A. Trivedi and J. M. Navavaty <sup>10</sup>	Sachdev and Telwas <sup>11</sup>	Grownji
Male	40 56%	5 79%	5 50%	44 71%
Female	31 44%	2 21%	5 50%	18 29%
Total	71	7	10	62

**Age distribution:** Our observations are coincidentally with that of Barret and Thomas 1952 with reference to the age. Though the hydatid disease is contracted during childhood due to the habit of playing with dogs. The disease takes many years to manifest clinically.

**Table 7: Showing Age incidence in different series :**

Age(inyears)	Barretseries <sup>9</sup>	S. A. Trivedi and J. M. Navavaty <sup>10</sup>	Sachdev&Telwas <sup>11</sup>
0-10	9 12.0%	-	1 10%
11-20	18 25.0%	2 28.5%	1 10%
21-30	18 25.0%	4 57.0%	3 30%
31-40	19 26.3%	1 14.0%	4 40%
41-50	3 4.2%	-	-
51-60	3 4.2%	---	--
61 and above	1 1.4%	-	-

A similar kind of study by Baruah A et al<sup>[12]</sup> observed that of the 26 adult patients with hydatid cysts who were part of the study, 14 (53.8%) were males and 12 (46.2%) were females. The mean age was 34.6 years. The most common site of involvement was the liver (69%) followed by lung (19.2%) and brain (7.7%). Palpable mass in the right upper quadrant of the abdomen was the most common symptom (88.3%) for liver hydatid cyst followed by pain abdomen (66.6%). Systemic symptoms like fever and weakness were present in most of the patients. The majority of patients (80%) were from rural areas.

A Comprehensive Prospective Clinical Study of Hydatid Disease by Ankit Kayal, Akhlak Hussain<sup>[13]</sup> found that the mean age was 40 years. The sex incidence revealed female preponderance in the study (M : F : 1 : 2). Duration of illness in the present study varied from 1 month to 6 years in case of liver hydatid disease. Majority of patients were from rural areas (21) and the remaining (4) from urban areas. Swelling was the most common presenting feature. Incidence of hydatid disease at unusual sites in India is higher than in other parts of the world.

Utsav Joshi et al<sup>[14]</sup> on clinical Characteristics and Management of the Hydatid Cyst of the Liver from Nepal observed the median age of the patients was 36 years, with the age group of 25-45 years being the most commonly affected (23, 43.4%). 58.5% of the patients were female. Abdominal pain (49, 92.5%) and a palpable liver (17, 32.1%) were the most common complaint and physical finding in our study population, respectively.

Abdominal ultrasonography and computed tomography scan were the major imaging studies used to establish a diagnosis. A unilocular and anechoic cystic lesion was the most frequent imaging finding. The right lobe of the liver harbored the cysts in the maximum number of patients. Surgery was the preferred modality of treatment (23, 43.4%), with pericystectomy being the most common form of surgical intervention.

## V. Conclusions

Incidence of hydatid disease is higher in south India than in other parts of India and world. As most of cases are from rural settings it seems that here hydatid infection takes place by eating raw vegetables and drinking water contaminated by the infected dogs. In every case of undiagnosed abdominal lump a possibility of hydatid cyst should be kept in mind. Laboratory methods are not of much help in diagnosis because (i) Eosinophilia being nonspecific may be due to other parasitic infections quite common in this part of country and (ii) Casani's intra dermal test is usually not done either due to non-availability of fresh antigen or due to cases of hydatid cyst of rare sites as this possibility is not suspected. Aim of treatment is complete removal of parasite without any spillage during operation and unnecessary damage to host tissue. It is suggested that cooperation of the people in proper checking of the animals, which are strangulated and getting rid of the stray dogs may help in controlling the disease.

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**Figures: Intra operative pictures of Hydatid Cyst**





