

## “Common Mode of Presentation of Hydatid Cyst in Hadoti Zone Of Rajasthan, India-A One Year Study”

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**Abstract:** Hydatid disease is a worldwide zoonosis produced by the larval stage of the Echinococcus tapeworm. The two main types of hydatid disease are caused by *E. granulosus* and *E. multilocularis*. Dogs or other carnivores are definitive hosts, whereas sheep or other ruminants are intermediate hosts. Humans are secondarily infected by the ingestion of food or water that has been contaminated by dog faeces containing the eggs of the parasite. It may develop in almost any part of the body, Hydatid is often manifested as a slow growing cystic mass. Cyst may be single or multiple, uni or multiloculated, thin or thick walled. Specific signs include the visualization of calcification of the cyst wall, presence of daughter cyst, and membrane detachment.

Despite its world-wide zoonosis, its diagnosis still remains a matter of challenge due to lack of an authentic gold standard for its early detection. In such cases we should be highly suspicious of this disease before making any other diagnosis.

**Aims:** Common mode of presentation of hydatid cyst in Hadoti zone of Rajasthan, India.

**Objective:** The study was undertaken to analyze the spectrum of diverse nature of Hydatid Cyst & derive demographic data in Hadoti region of Rajasthan & study about the risk factors, various modes of clinical presentation and analyze the frequency of organ involvement by hydatid cyst and correlate Ultrasonographic /CT findings with clinical outcome and prognosis and predict the nature of surgery on basis of hydatid appearance and its location.

**Materials and methods:** This prospective study was conducted by selection of consecutive 50 cases with hydatid disease in different parts of the body from the following teaching hospitals attached to Govt Medical College and Associated Group of Hospitals, Kota Rajasthan India. Appropriate Digital X-RAY and USG & CT scans will be performed in patients of suspected hydatid disease during the period from 01 May 2015 to 01 May 2016.

**Results:** A total of 50 patients, who were diagnosed and operated for hydatid cyst, were evaluated. The disease affected females (62%) more than males (38%) and the most common age group involved was between 21-30 years (30%) & most of affected patients was from rural population (74%) and most of patients of hydatid cyst was vegetarian (64%). The most common organ involved was liver (72%) and most commonly right lobe (90%) of liver followed by lungs (8%). Low socioeconomic status and occupation with history of contact with animals were the risk factors of the disease. Majority of cases had history of contact with pets (62%). Thus absence of history of contact with pets doesn't rule out the possibility of disease. Pain abdomen was the most common presenting symptom in liver hydatid (57.75%) and chest pain (75%) in case of lung hydatid. USG abdomen was a very helpful diagnostic tool for liver hydatid. Mostly hydatid cyst are single, unilocular or multilocular and have daughter cyst. CT scan of chest was accurate in diagnosing lung hydatid. Commonest operative procedure used was Excision with external tube drainage (72%) for liver hydatid and for lung hydatid. Surgery is treatment of choice and success rate of surgery is 93%

**Conclusion:** The disease affected all age groups; more commonly in young and middle aged group with female predominance. Low socioeconomic status and occupation, mainly agriculture were the contributing risk factors of the disease. Absence of history of contact with pets doesn't rule out the possibility of disease. Liver, lungs, peritoneum in this descending order were the most commonly involved organs. Pain abdomen was the most common presenting feature in liver hydatid and chest pain in lung hydatid. Diagnostic modality for abdominal and lung hydatid were USG abdomen and CT scan respectively. Majority of liver hydatid were treated by Excision with external tube drainage which is an optimum treatment in our institute. A sound knowledge of various modes of presentation of hydatid disease, combined with clinical symptoms and high suspicion in endemic areas and confirmation by newer diagnostic modalities like USG and CT is it is necessary to accurate pathway of approach for the diagnosis, management and prevention of the disease.

**Keywords:** hydatidosis, endemic, ultrasonography, surgery

### I. Introduction

Hydatid disease is a worldwide zoonosis produced by the larval stage of the Echinococcus tapeworm. The two main types of hydatid disease are caused by *E. granulosus* and *E. multilocularis*.

Dogs or other carnivores are definitive hosts, whereas sheep or other ruminants are intermediate hosts. Humans are secondarily infected by the ingestion of food or water that has been contaminated by dog feces containing the eggs of the parasite. After the outer capsule of the egg has been ingested, the freed embryo (oncosphere) enters a branch of the portal vein by passing through the duodenal mucosa. Most of these embryos become lodged in the hepatic capillaries, where they either die or to grow into hydatid cysts. Some pass through the capillary sieve and become lodged in the lungs and other organs.<sup>(1, 2)</sup>

The former is commonly seen in the great grazing regions of the world—particularly the Mediterranean region, Africa, South America, the Middle East, Australia, and New Zealand—and is the most frequently encountered type of hydatid disease in humans. The classical findings in hydatid disease are well known, however, findings related to disease complications and unusual anatomic locations are less frequently.<sup>(3)</sup>

It may develop in almost any part of the body. The liver is most frequently involved organ followed by lung and the remainder of the body. Hydatid cyst may remain asymptomatic for year until causing local symptoms due to pressure by the cyst or systemic allergic reactions.<sup>(4, 5)</sup>

Hydatid is often manifested as a slow growing cystic mass. Cyst may be single or multiple, uni or multi loculated, thin or thick walled. Specific signs include the visualization or calcification of the cyst wall, presence of daughter cyst, and membrane detachment.

However hydatid cyst with unusual localization may cause serious problems in differential diagnosis.<sup>(6)</sup>

Many of hydatid cases involved local complications (eg, intrahepatic complications, exophytic growth, trans diaphragmatic thoracic involvement, perforation into hollow viscera, peritoneal seeding, biliary communication, portal vein involvement, abdominal wall invasion) or involvement of more distant anatomic sites due to haematogenous dissemination (eg, lung, kidney, spleen, bone, brain).

Hydatid liver disease affects all age groups, both sexes equally, and no predisposing pathologic conditions are associated with infection. Public education about the life cycle and transmission of the disease has help decrease the incidence. Washing hands after contact with canines, eliminating the consumption of vegetables grown at ground level from the diet, and stopping the practice of feeding entrails of slaughtered animals to dogs have all aided in decreasing the incidence of the disease.<sup>(7)</sup>

It still continues to be a common surgical condition in many rural parts of India, carrying a significant morbidity and mortality. Most of the patients present with complications of hydatid disease requiring a major surgical procedure. Early diagnosis is required to reduce the morbidity and mortality. Diagnosis is possible by serological and radiological investigations even at an early stage of disease. The treatment options for the disease vary from medical line of management to various surgical procedures which stand as challenge to surgeons and sometimes complicated by life threatening outcomes.

## **II. Materials And Methods**

The records of all patients admitted to following teaching hospitals attached to govt medical college kota and associated group of hospitals including new medical college, mbs hospital& j k lon hospital kota ( Rajasthan) with surgically and histopathologically proven Hydatid cysts over a period of one years from 1 may 2015-01 may 2016 were carefully examined.

All the cases in the study group were analysed with reference to age, sex, occupation, contact with dogs and sheep, organ involved, clinical manifestation and treatment. Radiological findings correlate with surgery and histopathological findings. Serological test of hydatid and follow up for minimum 6 month about recurrence and any post-operative complication.

### **Inclusion criteria**

1. Patients diagnosed to have hydatid disease and treated in our setup which includes both adult and paediatric age group.
2. Patients diagnosed as hydatid disease post operatively.

### **Exclusion criteria**

1. Patients diagnosed with hydatid disease by investigations but proved otherwise at surgery.

In all these cases, a thorough clinical examination was carried out. Investigations which were relevant for a particular case, like eosinophil count, X-ray, Ultrasonography and CT scan needed for diagnosis were carried out.

Patients were then taken for surgery after the required pre-operative preparation and finally proved by operative removal of cysts and demonstration of hydatid fluid, daughter cysts. Specimen was sent for histopathological examination.

### III. Results

A total of 50 patients with Hydatid disease were identified among the above –

The sex distribution showed female predominance which comprised of 31 patients (62%) and 19 patients (38%) in male & the female: male ratio was 1.6:1.

Most of patients of hydatid cyst from rural population 37 cases (74%) and less in urban population 13 cases (26%). Most of patients of hydatid cyst is vegetarian 32 cases (64%) and 18 cases (36%) is non vegetarian. History of contact with sheep or dogs was present in 31 patients (62%) and absent in 19 patients (38%). The majority of patients were in 3rd decade (21-30 yr.) in 15 patients (30%).

Socio-economic status and occupation: Most of my patients were from the low socio-economic status group which included farmers, labourers, house wives etc. Farmer was the most common occupation of our patients (44%) followed by house wives (32%). Thus occupation like agriculture and low socioeconomic status where in exposure to animals and poor personal hygiene practice is common are also risk factors to the disease.

Liver is the most commonly affected organ: 36 cases (72%) followed by lung 4 cases (8%), retroperitoneal 3 cases (6%), Spleen 2 cases (4%), liver with lung occurs in 2 cases (4%), brain 1 cases (2%) and muscle 1 cases (2%) involvement was present in 1 patient (2%). In my study single organ involvement occurs in most of cases 90%, followed by two organ involvement 6% and three organ involvement occurs in 4%

Abdominal pain was the commonest mode of presentation in liver hydatid 23 cases (57.75%) followed by abdominal pain and vomiting 13 (32.25%). And fever in 2 patients (5%). Only 1 patient (2.5%) had abdomen lump or fever as chief complaint.

Patients with lung hydatid most commonly presented with chest pain 3 cases (75%) followed by cough and chest pain or shortness of breathing in one cases (25%).

The cyst was present in the right lobe of liver in 36 (90 %) cases, only in 3 cases cysts were in the left lobe (7.5%) and both lobe involvement occurs in 1 case (2.5%). Single cyst seen in most of cases (30), and multiple cyst seen in 16 cases, multi locular and unilocular type cyst seen in 24 & 26 cases. Most of cyst have daughter cyst (31 case) and mostly size is greater than 5 cm in 35 cases. And partial or complete calcification seen in 10 cases. One cyst seen rupture in biliary radicle.

In my study most of cases of cyst is diagnoses with both USG and CT in 62% cases and diagnosed with USG alone in 26% cases and MRI done in 4% cases

Most of our patients were treated by Excision with External Tube drainage (36 patients) i.e. 72%. Only excision was done in 6 cases (12%) and 8 cases (16%) refused for surgery and treated with albendazole. Successful treatment was done with surgery in most of cases 39 (93%) and recurrence of cyst occurs in 3 patients (7%), no intraoperative complication seen in my cases.

### IV. Discussion

Despite long standing public health measures to control spread of *Echinococcus granulosus*, hydatid cysts is still endemic in many sheep rearing areas of India. Very few retrospective studies have been undertaken to throw light on the clinical manifestations, diagnosis, treatment and outcome of hydatid cysts in India and how this scenario has changed with time and advancements in surgery. Echinococcosis, is a zoonosis that occurs primarily in sheep-grazing areas of the world, but is common worldwide because the dog is a definitive host.

There are three species of *Echinococcus* that cause hydatid disease. *Echinococcus granulosus* is the most common, whereas *E. multilocularis* and *E. oligarthus* account for a small number of cases. Once the parasite passes through the intestinal wall to reach the portal venous system or lymphatic system, the liver acts as the first line of defences and is therefore the most frequently involved Organ in which the right lobe of the liver is commonly affected.<sup>(8)</sup>

Dogs or other carnivores are definitive hosts, whereas sheep or other ruminants are intermediate hosts. Humans are secondarily infected by the ingestion of food or water that has been contaminated by dog faeces containing the eggs of the parasite. After the outer capsule of the egg has been ingested, the freed embryo (oncosphere) enters a branch of the portal vein by passing through the duodenal mucosa.

Hydatid disease can occur almost anywhere in the body and demonstrates a variety of imaging features that vary according to growth stage, associated complications, and affected tissue. Radiologic findings range from purely cystic lesions to a completely solid appearance. Calcification is more common in Hydatid disease of the liver, spleen, and kidney. Hydatid disease can become quite large in compressible organs. Hydatid cysts can be solitary or multiple.

The imaging method used depends on the involved organ and the growth stage of the cyst. Ultrasonography most clearly demonstrates the hydatid sands in purely cystic lesions, as well as floating membranes, daughter cysts, and vesicles. Computed tomography is best for detecting calcification and revealing the internal cystic structure posterior to calcification.

Magnetic resonance imaging is especially helpful in detecting Hydatid cysts of the central nervous system. Radiologic and serologic findings can generally help establish the diagnosis of Hydatid disease, but Hydatid cyst in an unusual location with atypical imaging findings may complicate the differential diagnosis.

A developed hydatid cysts shows three layers or zones, two of which belong to the parasite and one to the host. The three layers or zones from outside inwards are: pericyst, ectocyst & endocyst.

Intrahepatic Complications of hydatid cysts include cyst rupture and infection. Although rupture may be related to minor trauma, the natural history of hepatic hydatid cysts implies rupture as a complication in 50%–90% of cases (9).

Conservative surgery with omentoplasty is effective to prevent postoperative complications. Percutaneous drainage with albendazole therapy is a safe & effective alternative treatment for hydatid cysts of the liver. Radical surgery with pre- and post-operative administration of albendazole is the best treatment modality for liver hydatid cysts due to low recurrence & complication rates.

## V. Conclusion

From this prospective study conducted by selection of 50 consecutive cases with hydatid disease in different parts of the body from M.B.S Hospital, J K Lon hospital, New Medical College Hospital attached to Government Medical College, KOTA during the period from 1 may 2015 to 1 may 2016, I come to the following conclusions:

The disease affected all age groups, more commonly in young and middle aged group with female predominance. Low socioeconomic status and occupation; mainly agriculture were the contributing risk factors of the disease. Absence of history of contact with pets doesn't rule out the possibility of disease. Liver, lungs, peritoneum in this descending order were the most commonly involved organs. Pain abdomen was the most common presenting feature in liver hydatid and chest pain in lung hydatid.

Diagnostic modality for abdominal and lung hydatid were USG abdomen and CT scan respectively. Majority of liver hydatid were treated by Excision with external tube drainage which is an optimum treatment in our institute.

A very small cases with recurrence was observed in the follow up of patients during a period of 6 months and no mortality was documented. Since the study population is small (50 cases) and the study period (1 years) is short, the study has its own limitation in accurate assessment.

## Reference

- [1]. Lewall DB, McCorkell SJ. Hepatic echinococcal cyst: sonographic appearance and classification. *Radiology* 1985; 155:773–775.
- [2]. Von Sinner W, te Strake L, Clark D, et al. MR imaging of HD. *AJR Am J Roentgenol* 1991; 157: 741–745.
- [3]. Pedrosa I, Saiz A, Arrazola A6, et al. Hydatid Disease: Radiologic and Pathologic Features and Complications DOI: <http://dx.doi.org/10.1148/radiographics.20.3.g00ma06795>
- [4]. Akhan O, Ozem M, Dincer A, Sayek L, et al. Liver hydatid disease, Long term result of percutaneous treatment radiology 1996; 198:259-64
- [5]. Begs I, The radiology of hydatid disease, *AJR Am J Roentgenol* 1985; 145:639-48
- [6]. Engine G, Acunas B, Rozanes L, et al. Hydatid disease with unusual location *Eur Radiol* 2000; 10:1904-1912
- [7]. Barnes S, Lillemoe K. Liver abscess and hydatid cyst disease. In: Zinner M, Schwartz S, Ellis H, Ashley S, McFadden D, editors. *Maingot's Abdominal Operations*. 10th ed. Stamford CT: Appleton & Lange; 1997. p. 1513–1545.
- [8]. Pedrosa I, Saiz A, Arrazola J et al. Hydatid disease: Radiologic and pathologic features and complications. *Radiographics* 2000; 20:795–817.
- [9]. Marti-Bonmati L, Menor Serrano F. Complications of hepatic hydatid cysts: ultrasound, computed tomography, and magnetic resonance diagnosis *Gastrointest Radiol* 1990; 15:119–125.

**Table 1.** Gender distribution of hydatid patients

Sex	No of patients	Percentage
Male	19	38
Female	31	62

**Table 2.** Age distribution of patients

Age	No of patients	Percentage
0-10	3	6
11-20	2	4
21-30	15	30
31-40	13	26
41-50	11	22
51-60	3	6
>60	3	6

**Table 3.**Distribution of hydatid based upon occupation

Occupation	No of patients	Percentage
Farmer	22	44
Labour	04	08
House wife	16	32
Students	06	12
Employee	01	02
Others	01	02

**Table 4.**Distribution of hydatid based upon anatomical site

Site	No of patients	Percentage
Liver	36	72
Lung	04	08
Liver +lung	02	04
Spleen	02	04
Retroperitoneal	03	06
Muscles	01	02
Brain	01	02
Other site	01	02

**Table 5.**Distribution of hydatid based upon geographic area

Area	No of cases	Percentage
Rural	37	74
Urban	13	26

**Table 6.**Distribution of hydatid based upon dietary habit

Dietary habit	No of case	Percentage
Vegetarian	32	64
Non vegetarian	18	36

**Table 7** Distribution of hydatid based upon history of animal exposure

Animal exposure	No of cases	Percentage
Present	31	62
Absent	19	38

**Table.8** Mode of presentation of hydatid disease in liver

Symptoms	No of cases	Percentage
Abdomen pain	23	57.75
Pain abdomen vomiting	13	32.25
Abdominal lump	01	2.5
Fever	02	5
Weight loss	01	2.5

**Table.9** Mode of presentation of lung hydatid

Symptoms	No of cases	Percentage
Chest pain	03	75
Cough +chest pain	01	25
Shortness of breathings	01	25

**Table .10** USG characteristic of hydatid

USG characteristic	No of cases
Single	30
Multiple (single organ)	16
Multiple (more than one organ)	4
Unilocular	26
Multilocular	24
Daughter cyst	31
Calcification	10
Rupture	1
Internal echos	6
Size >5cm	35
Size <5cm	15

**Table.11** Treatment modality for hydatid of liver

Treatment Modality	No of cases	Percentage
Excision	6	12
Excision with tube drainage	36	72
Drug treatment (not operated)	8	16

**Table 12** Treatment success in hydatid

Treatment Status	No of cases	Percentage
Intraoperative complication	0	0
Recurrence after surgery	3	7
Successful surgery	39	93

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