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**Original Research Article**

# Hydatid disease-still endemic in the southern region of state of Rajasthan, India: a clinical study carried out in tertiary care hospital

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## ABSTRACT

**Background:** Hydatid disease is a zoonosis caused by *Echinococcus* species of Cestode parasite, *Echinococcus granulosus* and *Echinococcus multilocularis* are the species commonly affecting the humans. It is characterised by slowly growing cyst in visceral organ, commonly involving liver and lungs. Dog is definitive host and human are incidental host. It occurs in livestock like sheep and cattle raising population in world. In India it is more prevalent in states of Andhra Pradesh and Tamil Nadu and is also endemic in state of Rajasthan. The aim of this study is to evaluate the epidemiology, clinical picture and different organs involved by Echinococcus parasite. The objective to find out the burden of hydatid cyst disease that has been eradicated in many parts of world, but still prevalent in many developing countries including India.
**Methods:** A retrospective review of 155 patients suffering from Hydatid cyst disease of different organs was done by collecting data from indoor sheets in Geetanjali Medical College and Hospital, Udaipur admitted from 2010 to 2015 i.e. 6 years.
**Results:** A total of 155 patients with hydatid disease were identified in 6 years from 2010 to 2015. There were 96 male (61.93%) and 59 female (38.06%) patients. Liver was the most affected organ-98 (62.23%), next was lung 43 (27.74%), rest were other organs. Majority of cases were in third decade-63 (40.64%).
**Conclusions:** Hydatid disease still is problem and burden for the society. It is difficult for the practitioners to diagnose the disease owing to its non-specific clinical presentation and lack of awareness in society about parasite, which otherwise a preventable disease.

**Keywords:** Hydatid disease, Echinococcosis

## INTRODUCTION

Human *Echinococcosis* is a zoonotic infection transmitted by dogs in livestock raising areas. It is caused by Echinococus species- Cestode parasite commonly known as Tape worm. There are pre dominantly two species affecting human population, *Echinococcos granulosus* and *Echinococus multilocularis* causing *Cystic echinococcosis* (hydatId disease) and *Alveolar echinococcosis* respectively. Dog is definitive host, it is found in small intestine of carnivores. Human infection is acquired from ingestion of the parasite eggs from infected animals. It is a common disease in sheep rearing areas like Australia, South Africa, Greece, Turkey, Iran, Iraq and some areas of British isles.[1] Focci of hydatid disease also exists in India and highest prevalence reported from Andhra Pradesh and Tamilnadu.[2,3] The disease is endemic in poor hygiene and where sheep and cattle are raised as also in our area in this part of state. In one study 10% of sheep slaughtered in Delhi slaughter houses were infected with the larval forms of the parasite.[4]

Liver is the primary site (50% - 70%) followed by lungs and less frequently in spleen, kidney, heart, bones, CNS and other organs.[5] The study was undertaken to access the magnitude of the problem and to estimate the prevalence and burden of disease with clinicopathlogical co-relation in the medical college setup for the period of 6 years.

### *Aetiopathogenesis*

Adult tapewormn lives in the upper small intestine of dogs, a definitive host. Dogs eat the offal infected with cysts. The Echinococcus develops in the dog's intestine. This parasite is about 1 cm long and is made up of a head and 3 segments, the last of which contains about 500 ova. The ova are expelled from the dog's intestine on the grass, vegetables etc. Human beings, cattle & sheep ingest the eggs. So they are infected feco-orally by *Echinococcus granulosus*. Eggs hatch in the intestinal mucosa and transform into oncospheres which penetrate bowl wall & enter portal venous blood and are carried to the liver.

Hydatid cyst consist of 3 layers;

1. The adventitious (pseudocyst), consist of fibrous tissue the result of reaction of the liver to parasite .It is grey in colour and is clean and blended immediately with the liver and is inseparable.

2. Laminated layer (ectocyst) formed of the parasite itself. It is whitish and elastic. The cyst grows very slowly.

3. The Germinal layer: The only living part of hydatid cyst is a single layer of cells known as germinal layer lining the cyst. Endocyst secretes internally the hydatid fluid and externally the laminated membrane .The lifecycle completed when definitive host is infected by viable cyst containing organs of intermediate host.

### *Clinical features*

For a long time perhaps for some years after the original infestation which occurs in childhood, Hydatid cyst remains symptom less. In course of time a visible and palpable swelling in upper abdomen is discovered.

Urticaria, cough and asthma like symptoms and fever may occur. Splenomegaly, bone pains occur when they are affected. Clinical presentation was varying, majority of patients presented with pain abdomen with lump in RUQ in patients with hydatid cyst of liver. Pulmonary hydatid disease presented with fever, chest pain and cough. Splenomegaly was presenting finding in splenic involvement. Parotid hydatid cyst presented as parotid swelling mimicking pleomorphic adenoma. Bony hydatid cyst was a diagnosed after MRI apart from routine investigation, USG was carried out in all cases and was important diagnostic tool in almost all cases excepting in bony hydatid disease.

## METHODS

The records of all the patients admitted in Geetanjali Medical College and Hospitals Udaipur, Rajasthan for a period of 6 years from 2010 to 2015 with surgically and histopathologically proven Hydatid cyst disease were carefully examined. The study included all the data of patients regarding age, sex, address, occupation, habitat, anatomical site of involvement, clinical features, radiological evaluation, routine lab investigations and histopathological diagnosis. In all the cases enucleation or evisceration of cyst was done by open surgery or Laparoscopic surgery. Two patients who were 90 years old and had lung involvement left against medical advice.

The cysts were fixed in 10% formalin and subjected to histopathological examination. The data obtained were compared with other national and international research studies to compare the statistical equations.[6]

## RESULTS

A total number of 155 patients with hydatid disease were identified .There were 96 Males (61.93 %) and 59 Female (38.06%). Age of patients ranged from 7 years to 90 years. Most of the patients involved were in 3rd decade - 63(40.64) followed by 2nd and 4th decade -31 in each (20%).

**Table 1: Sex distribution of hydatid cyst disease.**

| Total no. of cases | Male | Percentage | Female | Percentage |
|---|---|---|---|---|
| 155 | 96 | 61.93 % | 59 | 38.06 % |

**Table 2: Age incidence of hydatid cyst disease.**

| Age in years | Number s of cases | Percentages |
|---|---|---|
| 0-10 | 2 | 1.29% |
| 11-20 | 6 | 3.87% |
| 21-30 | 31 | 20 % |
| 31-40 | 63 | 40.64% |
| 41-50 | 31 | 20% |
| 51-60 | 11 | 7.09% |
| 61-70 | 6 | 3.87% |
| 71-80 | 3 | 2.08% |
| 81-90 | 2 | 1.29% |

Majority of patients were from rural areas -129 (83.22%) and rest were from semiurban towns -26 (16.77 %). Most of the patients were from neighbouring district of Udaipur- 136 (87.74 %) and remaining 19 (12.25 %) were from neighbouring areas of Madhya Pradesh state.

Anatomical organ distribution revealed Hydatid cyst in liver in 98 patients (63.22 %), lungs -43 (27.74%) Liver + lungs -3 (1.93%), spleen in 4 cases (2.5%), kidney in 3 case (1.93%), Omentum-1 patient (0.64 %), parotid gland-1 patient (0.64 %), bone-1 case (0.64 %) and myocardium-1patient (0.64 %).

Farmers constituted the major bulk in involved patients-64 (41, 29 %) followed by House wives -39 (25.16 %) labour -33 (21.29 %) and 19 were unemployed (12.25 %), since they were in their old age.

Hepatic hydatid disease patients presented with pain upper abdomen, hepatomegaly, anorexia and fever. Pulmonary hydatid disease presented with chest pain, cough and fever.

**Table 3: Distribution of hydatid cyst disease based on occupation.**

| Farmer | Labour | House wives | Unemployed |
|---|---|---|---|
| 64 | 33 | 39 | 19 |
| 41.29% | 21.29% | 25.16 % | 12.25% |

**Table 4: Distribution of hydatid cyst disease based on organs involved.**

| Organs | Number of cases | Percentage |
|---|---|---|
| Liver | 98 | 63.22% |
| Lungs | 43 | 27.74% |
| Liver+lungs | 3 | 1.93 % |
| Spleen | 4 | 2.5 % |
| Kidney | 3 | 1.93% |
| Omentum | 1 | 0.64 % |
| Myocardium | 1 | 0.64% |
| Bone | 1 | 0.64% |
| Parotid | 1 | 0.64% |

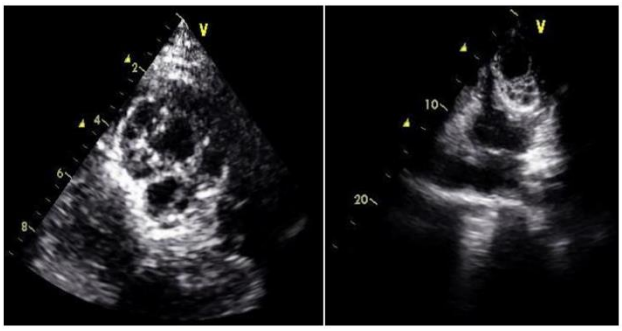

**Figure 1: Transthoracic echocardiographic images showing large septated cystic mass in left ventricular apex.**

Splenomegaly was seen in splenic involvement. Renal hydatid disease was asymptomatic .Giant cardiac Hydatid Disease was seen in a young boy of twenty years who had history of precordial pain,progressive dyspnoea with minimal exertion and palpitation (photo). Hydatid cyst of Parotid gland is very rare and patient presented with a swelling in parotid area. The cyst was enucleated (photo).

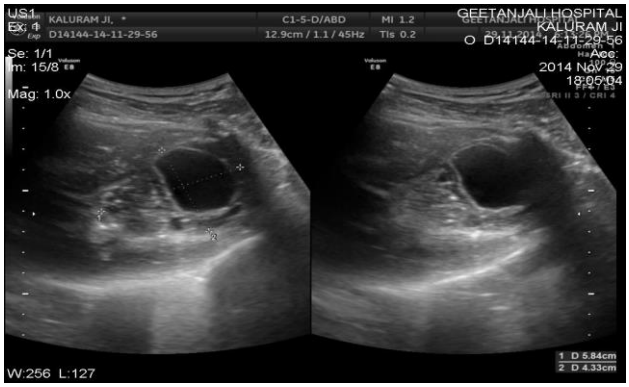


**Figure 2: USG image showing a huge multi-septate cystic mass with dimension 58 mm x 43 mm in the apical region of left ventricle of heart.**

**Figure 3: Hydatid cyst of parotid gland.**

## DISCUSSION

Hydatid disease is endemic in India. The annual incidence is varying, 1 to 200 per 100000 population.[7] A retrospective study was conducted at Geetanjali Medical College & Hospital, Udaipur, Rajasthan, from 2010 to 2015, over a period of 6 years. 155 patients were identified, who had proved diagnosis of Hydatid disease. Their medical records were analysed in accordance with age, sex, occupation, anatomical distribution and clinical presentation.

The majority of patients were male-96 (61.93%) and most of patients were in age from 21 years to 50 years-125 (80.64%), similar as in other studies.[8,9] In rural India, men and women are actively involved in farming, routine labour and animal breeding. Farmers and housewives are more prone as they are involved in house hold activities related to animal breeding and agriculture in rural areas. In an interesting experimental study it was found that female gonadotrophins have an inhibitory action on parasitisation, while male hormones had no such effect or might even increase the susceptibility of host infection.[10]

Liver is the most common affected site- 98(63.2%), as the liver acts as a primary filter in the human body. Lung is the next-43(27.74%) as it is thought to be the second

filter.[10] The hydatid cyst of parotid gland is primary.[11,12] A hexacanth embryo of size 30-35 mm unusually cross the liver and lung capillary beds and once in circulation it may lodge in any part of body, viz. kidney, brain, bone, spleen, heart and rarely in parotid or submandibular salivary gland.[13-15]

## CONCLUSION

Hydatid disease is an important health problem in India. It is prevalent in communities from low socio economic status and in rural areas, who are unaware of this parasite. Hydatid disease has quite an impact on morbidity due to higher infection rate in farmers and house wives, who are mainly involved in cattle raising job in rural areas. Thus improvement in personal hygiene and awareness regarding disease in the community will result in control and even eradication of this morbid condition. In this study we have found that the disease is no exception to any organ of the body. We have come across rare sites like, heart, parotid gland, bone, spleen, omentum and multiple organs apart from liver and lungs.

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