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Hydatid Disease in India: A 2-Year Retrospective Study Highlighting the Need of Imaging in Diagnosis

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Abstract

Background & Aim: Hydatid disease is mainly caused by the larval stage of a tapeworm species of Echinococcus granulsus. Hydatid disease spreads in humans from animals through the fecal-oral route. Hydatid disease mainly infects the liver, and after that lungs and may infect other organs also. Ultrasounds are the base for the diagnosis of hydatid disease. The main objective of the present study is to examine the load of hydatid disease in India for 2 years and focus on frequently utilized visualizing methods for its diagnosis.

Materials and Methods: This was a retrospective study including 200 patients conducted in tertiary care centre for 2 years. Details of patients including age, sex, residence, involvement of organ, the total number of hydatid cysts, and area of the cyst were noted.

Results: Ultrasonography was a majorly utilized method for the diagnosis of hydatid cysts. The hepatic system was greatly influenced by hydatid cysts. The age group in which the disease was common was 30-50 years. Hydatid disease was more prevalent in women, 120 females and 80 males were infected with the disease.

Conclusion: Apart from awareness and regulatory actions that are executed by the Indian government to eliminate hydatid cysts, the outcome of the current research reveals hydatid disease is still considered a major community health issue in the country. Ultrasound helps in the primary detection of hydatid disease but the final detection was attained through operative excision of hydatid cyst. Presently, the operation is the only accessible treatment source for hydatid cysts.

Keywords: Hydatic cyst, ultrasonography, detection, operation

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Introduction

Hydatid disease primarily spreads from animal to human. The two frequent types of hydatid disease in human beings are unilocular hydatidosis and alveolar hydatidosis [1,2]. Echinococcus granulosus leads to unilocular hydatidosis and Echinicoccus multilocularis lead to alveolar hydatosis. Unilocular hydatidosis has global dispersal, especially in groups that bring up poultry products [3-4]. Human beings act as coincidental middle hosts for cystic echinococcosis. Many other animal rearing like sheep, pigs, horses etc can lead to cystic echinococcosis. Many canine animals like a dog are the absolute host and is considered as chief route of disease. Dogs get infected with echinococcus by eating garbage and animal remains carrying hydatid cyst which begins to discard infective eggs in their excreta [2,5-7]. Consequently, humans get infected by consuming the echinococcus granulosus eggs through polluted food or water, which ultimately grow steadily into hydatid cysts predominantly in the liver and then lungs [3, 8-10]. There are no symptoms for years till the cyst grows in proportion, dimensions, position, and rapidity of development of the cyst in the inner part of the organ.

Hydatid cyst is detected with the help of medical visualization which includes, ultrasonography, X-rays, and CT scan. Utilizing peptide p177 with ELISA has a great role in detecting hydatid cysts with a specificity of 82% [11]. Ultrasonography is the primary option for the detection of the disease because of its accessibility, great resoluteness for detection, and absence of radiation. Computed tomography is advised when the ultrasound is inadequate, in the chest and brain during diagnosis of ossification and in overweight persons [12]. The most widely utilized and systemized categorization of the hydatid cyst was suggested by the WHO [13] and formed on Gharbi's categorization [14]. The World Health Organization categorization depends on cystic echinococcosis particularly ultrasound imaging characteristics which support the detection, organization, and follow of cystic echinococcosis. Magnet resonance imaging is a helpful imaging approach and better than many diagnostic methods. Computed tomography and Magnet resonance imaging are very helpful in the detection and handling of cystic echinococcosis and they give a wide understanding of the proportion of the cyst, position, and connection with other organs. Kalovidouris et al [15] and Von Sinner et al [16] demonstrated the categorization of hydatid disease based on computed tomography and magnet resonance imaging.

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Hydatid cysts consist of three covering, the first one is the pericyst (outmost layer), the central coated noncellular layer and the innermost layer is the germinal layer. The central noncellular and internal germinal covering is termed an endocyst and is the walls of the hydatid cyst. The middle layer is sometimes termed an ectocyst [17]. The main objective of the present study is to examine the load of hydatid disease in India for 2 years and focus on frequently utilized visualizing methods for its diagnosis.

Materials and Methods

This is a retrospective study including patients conducted in a tertiary care centre for 2 years. The detail of patients was gathered including patient stature, residency, profession of the patients, the experience with cattle animals or canines. All the subjects were detected based on ultrasonography and X-rays.

Inclusion criteria: Patients in which hydatid disease was detected

Exclusion criteria: Cases that denied surgery for hydatid disease and cases without consent.

Statistical analysis

SPSS software v19 was utilized for statistical analysis. The chi-square test was applied for the examination of the connection between two subjective variables. T-test was applied for the examination of variance in the median age of males and females.

Result

Table 1: Gender and organ distribution of hydatid disease

Organ	Gender		Total (percentage)
	Male	Female	
Liver	42	78	120 (58%)
Lung	29	27	56 (26%)
Spleen	3	10	13 (12%)
Brain	2	2	4(1%)
Kidney	2	2	4 (1%)

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Neck	2	1	3 (2%)
Total (percentage)	80 (40%)	120(60%)	200

As shown in Table 1, hydatid disease is more prevalent in females. In 42 males and 78 females patients liver was affected. Lungs were affected in 29 males and 27 females due to hydatid disease. The spleen was infected in 3 male and 10 female patients. 2 male and 2 female patients were infected in the brain. The kidney was affected in 2 cases in both male and female patients. 2 male patients got infected in the neck and 1 female patient got infected in the neck.

Table 2: Age distribution, number, and percentage of hydatid disease

Age(years)	Number of cases	Percentage
01-10	10	6%
11-20	23	12%
21-30	40	19%
31-40	46	22%
41-50	42	19%
51-60	24	12%
61-70	8	5%
71-80	5	3%
81-90	2	2%

As shown in Table 1, 10 patients were in the age group of 01-10 years. 23 patients were diagnosed in the age of 11-20 years. 40 patients were in the age group of 21-30 years. 46 patients were in the age group of 31-40 years. 42 patients were present in the age group of 41-50. 24 patients are in the age group of 51-60 years. In the age group of 71-80 and 81-90, 5 and 2 patients were diagnosed with hydatid disease.

Discussion

The life span of Ecchinococcos granulose was explained by Haubner [18-20]. In India, a greater frequency of hydatid disease is found in Andhra Pradesh, Tamil Nadu, and Jammu and Kashmir [21]. Excluding hair teeth and fingernails, hydatid cysts can infect any organ. In 16-94% of cases, the liver got infected, followed by the lungs in 19-34% of cases. Symptoms are not seen in an infected human being with echinococcus granulosis early. The cyst can increase in size from

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1mm to 4 mm in diameter within a year. Cyst in striated muscle is infrequent due to the existence of lactic acid and muscle tightening. The trunk, neck, and legs had low muscle tightening and a great reserve of blood which parasitic cysts more likely to develop. Many cases of hydatid cyst was detected by chance while performing abdominal scans. Youngsters are also diagnosed with this disease and show symptoms when it infects delicate organs like the brain and eyes [12,16]. Hydatid cysts are more common in females than in males. This finding relates to studies conducted before [22-23]. Hydatid disease is more prevalent in males whose age is less than 20 years and is more prevalent in females with an age above 20 years. In addition women above the age of 20 visit hospitals more often for medical checkups, and pregnancy-related problems where the hydatid cyst is detected by chance. After the age of 20 women in rural areas are usually involved in household activities, farming, animal catering, reaping crops, etc which may lead to exposure to the infective stage.

In many cases, a hydatid cyst in the hepatic system does not show any symptoms. When the cyst increases in size it causes hepatomegaly and other reactions. The major problem of hydatid cysts in the liver is the formation of a fistula in the biliary duct which breaks into the peritoneal cavity [24]. Ultrasonography is the finest and most suitable method for the detection of cysts in the liver. Computed tomography can help in diagnosing ossification on the walls of the cyst. Magnet resonance imaging is best for illustrating faults in cyst walls and biliary association. The treatment for hydatid cysts includes medication, transcutaneous treatment, and surgery. Medication includes mebendazole or albendazole, but they have less than 31% successful outcomes. Surgical treatment is finest among all but can cause fistula formation and increase the days in hospital [25].

The second most affected organ by the hydatid cyst after the liver is the lungs. In the beginning chest radiographs are taken for the detection of cysts. Computed tomography and Magnetic resonance imaging are the most helpful methods in detecting pulmonary cysts and problems related to them. Hydatid cysts of the lung do not show any symptoms for a longer time and puncturing the pleural wall can have a serious effect on the patient [26]. Surgical intervention is the best treatment method for lung hydatid cysts. It is the most secure treatment with no illness or death, irrespective of the size of the cyst. Hydatid cyst is infrequently seen in the spleen, but if it is present the diagnosis is very difficult for the doctors. Hydatid cysts of the spleen can cause

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problems like anaphylactic shock [27]. Computed tomography is the most useful method of imaging hydatid cysts in the spleen and helps in finding out the amount, proportion, and position. The treatment for a hydatid cyst in the spleen is complete splenectomy. Hydatid cysts are rarely found in the brain. The majority of the brain hydatid cysts are seen in children. Hydatid cysts in the brain can increase in size from 1cm to 10 cm in a year [28]. It can cause sore head, vomiting, behavioral changes, etc. Hydatid cysts can affect the rarest sites like the thyroid gland, gall bladder, pancreas uterus etc [29].

Conclusion

Hydatid disease is a condition mainly affecting the liver and then the lungs. Hydatid cysts can be present in any form and proportion and can be confused with malignant and benign tumors. Imaging greatly supports the detection of hydatid disease and the categorization of hydatid disease broadly. In India mostly ultrasound and computed tomography are utilized for the detection of hydatid cysts. The exact detection of hydatid disease is established after surgical excision of the cyst and histopathological examination.

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