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## **Clinical features and management of the hydatid cyst of the liver: A retrospective study department of general surgery, MKCG MCH**

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**Abstract**---Introduction: In India, hydatid cysts of the liver are a serious yet untreated public health issue. Aim: To assess the sociodemographic traits, clinical manifestations, and treatment of individuals with liver hydatid cysts in a developing nation. Materials and methods: This retrospective study was conducted in Department of General Surgery, MKCG Medical College and Hospital, Berhampur over a period of 24 months from July 2019- June 2021. 23 individuals who were diagnosed with a liver hydatid cyst based on clinical symptoms, imaging tests, or serology underwent a retrospective, descriptive analysis. The data was evaluated and statistically analysed using IBM® SPSS® 23.0, for Windows®, to bring out the results of the study. Results: The patients' average age was 36, with the age range of 25 to 45 being the most frequently afflicted (10, 43.47%). The majority of the patients were female (56.5%). The most frequent symptoms were abdominal pain (21, 91.3%) and palpable liver (7, 30.4 %). The two

main imaging tests utilised to make a diagnosis were computed tomography and abdominal ultrasonography. The most common type of cystic lesion was unilocular and anechoic. The majority of patients' liver cysts were located in the right lobe. Surgical excision of hydatid cysts was done in 44.4 percent of the patients, with pericystectomy being the most frequent form of surgical procedure. Conclusion: In India the hydatid cyst of liver is a common cause of morbidity. Surgery is still the preferred course of therapy in the majority of patients, and clinical examination supported by imaging studies is necessary for the diagnosis.

**Keywords**---hydatid cyst, pericystectomy, unilocular.

## **Introduction**

In developing countries like India, hydatid cysts of the liver (HCL), which are most frequently brought on by the tapeworm *Echinococcus granulosus*, are a serious but underappreciated public health issue [1]. The incidence of cystic echinococcosis per 100,000 people in Southeast Asia was estimated by a World Health Organization (WHO) study in 2010 to be 0.8 (95% confidence interval (0.2-2)) [2]. However, for a number of reasons, it is challenging to estimate the impact of HCL in India. First, due to the lack of comprehensive research and surveys spanning the entire endemic population, the overall prevalence of the disease is significantly underreported in many epidemiological studies and series. Second, the Government of India's surveillance system, the Health Management Information System, has a tendency to underreport or report data on parasitic zoonosis, including HCL, insufficiently [3].

*Echinococcus* has three hosts throughout its life cycle: a dog, which serves as the definitive host, an intermediate host (such as a sheep, goat, or bovine), and occasionally an incidental host (human). According to reports, India has between 2 and 5 percent of domestic dogs with *E. granulosus* infection [4]. It is customary to butcher domestic animals and give domestic dogs their raw organ meat. One method of transmission to people may be through the contaminated food and environment caused by the eggs produced in their stools. The location and size of the cyst affect the clinical signs of an *Echinococcus* infection. Early on in the infection's course, it's possible for there to be no symptoms when cyst is not large [5]. HCL can eventually manifest as epigastric or right upper quadrant abdominal discomfort, nausea, vomiting, and hepatomegaly as the condition worsens [6].

Making a diagnosis is frequently aided by imaging studies in conjunction with immunodiagnostic methods [7, 8]. Because it is simple to use, widely accessible, and reasonably priced, ultrasonography (USG) is the first imaging modality of choice for determining the number, location, size, and life of cysts [9]. The presumed imaging diagnosis may be strengthened by antibody testing. A negative serologic test, however, rarely excludes echinococcosis [10]. Deep-seated lesions can be diagnosed using computed tomography (CT) scans and magnetic resonance imaging, which can also be used to assess the size and health of avascular fluid-filled cysts [6].

HCL can be treated surgically, using percutaneous methods, with drugs, or by monitoring. The typical and preferred method of treating HCL permanently has been surgical cystectomy [11]. However, alternate therapy methods such as cyst puncture, aspiration, chemical injection, and reaspiration (PAIR) have gradually supplemented and in some cases even taken the place of surgery as the preferred course of action [6, 12]. Albendazole-based chemotherapy is frequently used in addition to other forms of treatment since it lowers the rate of recurrence [4]. At this study, we examined the demographic traits, clinical manifestations, and treatment of HCL in MKCG MCH, Berhampur. This study aims to give clinicians helpful details regarding the disease's epidemiology and clinical picture in the context of a developing country.

### Materials and Methods

This study was conducted in Department of General Surgery, MKCG Medical College and Hospital, Berhampur over a period of 24 months from July 2019-June 2021. The study included is a retrospective, descriptive analysis of patients with HCL. Hydatid cysts cases were diagnosed using nursing admission data at the surgery department. every medical record obtainable. Patients who experienced extrahepatic hydatid cysts without any liver damage were omitted from the investigation. 23 patients who had HCL were included in the analysis. Imaging scans were used to make the diagnosis and Enzyme-linked immunosorbent assay-based serology (ELISA). a USG and a CT scan, either separately or together, were carried out to determine and assess the existence of hepatocellular and extrahepatic hydatid cysts. Based on the classification of HCL's USG and CT appearance the cysts are categorised per the WHO categorization system. Our patient group underwent observation, albendazole therapy, the PAIR technique, modified catheterization technique, and surgery as therapeutic methods. The nature and size of the cyst were taken into consideration by the doctors while choosing the treatment option. Clinical and surgical data from cases were noted and statistically analysed using IBM® SPSS® 23.0, for Windows®, to bring out the results of the study.

### Results

The patients' average age was 36, with the age range of 25 to 45 being the most frequently afflicted (10, 43.47%). The majority of the patients were female (56.5%). The most frequent symptoms were abdominal pain (21, 91.3%) and palpable liver (7, 30.4 %).

Table 1: Demographics of the study population (n = 23).

	Age group (in yrs)	%
5-25	3	13.04
25-45	10	43.47
45-65	4	17.4
>65	6	26
	Sex	
Male	10	43.5
Female	13	56.5

Table 2: Clinical features in the study population.

Clinical features	Number (%)
Abdominal pain	21(91.3)
Fever	6(26.1)
Jaundice	2(8.7)
Abdominal mass	3(13)
Nausea/vomitting	2(8.7)
Physical examination	
Palpable liver	7(30.4)
Abdominal tenderness	4(17.4)
Icterus	2(8.7)
Abdominal distension	1(4.3)

Table 3: Cyst characteristics in USG and CT abdomen.

Cyst characteristics	Number	%
USG abdomen		
Unilocular anechoic cystic lesion	5	26.3
Multiseptated cyst	2	10.5
Cyst with detached membranes	3	15.8
Cyst with daughter cysts	3	15.8
Cyst with heterogenous contents	4	21
Calcified wall	1	5.3
Features suggestive of infection	1	5.3
Total	19	100

Cyst characteristics	Number	%
CT abdomen		
Unilocular anechoic cystic lesion	5	25
Multiseptated cyst	2	10
Cyst with detached membranes	3	15
Cyst with daughter cysts	3	15
Cyst with heterogenous contents	1	5
Calcified wall	4	20
Features suggestive of infection	2	10
Total	20	100

Table 4: Involvement of different lobes of the liver (n = 22).

Lobe of liver	Number (%)
Right lobe	11(50)
Left lobe	5(22.8)
Caudate lobe	1(4.5)
Right and left lobes	3(13.7)
Right and caudate lobes	1(4.5)
All lobes	1(4.5)

Table 5: Modalities of treatment.

Modalities of treatment	Number	%
Observation	2	8.7
Albendazole monotherapy	4	17.5
PAIR (+albendazole)	5	21.7
Surgery (+albendazole)	11	47.8
Modified catheterization techniques (+albendazole)	1	4.3

## Discussion

In India, echinococcosis is still a major public health issue. The echinococcal infection is most frequently found in the liver. [13] Thus, HCL is given more consideration by the general population. The findings of this investigation include estimations of racial and ethnic traits, medical symptoms, and treatment of HCL in patients receiving hospital care in a tertiary hospital in India. According to our research, the median age is 36 years. Similar to the research conducted by Jastaniah et al. and Hazra et al. [4, 14]. The age range of 25 to 45 years is also shown in our analysis as the most typical age range for HCL victims. The most economically active age group is between 25 and 45 and consists of a sizeable workforce involved with farming and animal raising which is a major contributor of HCL.

Our study's male to female ratio was 0.8 (43.5 % male, 56.5 % female), which is consistent with the findings reported by Ahmadi and Hamidi and Abebe et al. [15, 16]. In India, women are actively involved in domestic work, farming, and caring for animals. This practise is important in rural areas of the nation since a sizable portion of the young male population leaves the country in search of employment opportunities, leaving the female population in charge of all agricultural and livestock-related tasks. The female population may be more susceptible to the parasite and develop HCL as a result.

Abdominal pain and fever were the two most common symptoms among the individuals in our study. Abdominal pain was the presenting symptom in 84 % of the study group, according to Biluts et al. [17]. According to a study conducted in Ethiopia, 97.6% of the patients complained of stomach pain. In the same study, fever was the most common presenting ailment, followed by nausea, vomiting, and weight loss [16]. Contrarily, in our study, fever was more frequent than nauseousness, vomiting, malaise, and weight loss. The greater proportion of individuals with infected hydatid cysts in our research sample is likely the source of the higher frequency of fever (26.1 %). The most frequent physical finding in our study population's clinical examination was palpable liver and abdominal tenderness. This outcome is consistent with a study by Hazra et al., which revealed that 49.5% of the patients exhibited hepatomegaly in varied degrees [18]. In nearly 30% of the individuals in our study, the cyst's largest dimension was more than 10 cm.

In our patients, the diagnosis was made based on the clinical symptoms, USG, CT, and serology results. However, due to financial constraints, not all patients could have concurrent use of USG, CT scan, and immunodiagnostic method to confirm the diagnosis. For the assessment of Echinococcus, USG has a sensitivity of 90 to 95 % [19]. In a low-income nation like India, the high sensitivity of USG paired with its low cost makes it a useful and economical investigative modality. In our investigation, the cyst's unilocular and anechoic look was the most frequently observed ultrasonographic finding, followed by the cyst's heterogeneous echoic pattern. In a research by Niron et al. assessing the USG appearance of HCL, it was discovered that 40 out of 65 cysts displayed the spherical, unilocular, and anechoic features that are most frequently observed, with only a few cases exhibiting unusual USG findings. [20]

Our USG findings are likewise supported by the CT imaging in our study population, with the unilocular, simple cystic lesion being the most frequent finding. In contrast to USG, CT was more effective at detecting cysts with calcified walls. This discrepancy can be related to the fact that USG is better at visualising cysts in their active stages than CT is at detecting minute calcifications within cysts [21].

In our study population, we found that hydatid cysts were most frequently seen in the right lobe of the liver. In their research in Yemen, Alghoury et al. found that the right lobe of the liver was affected by 65.78 % of isolated hepatic cystic echinococcosis [22]. Our findings concur with those of studies from Nepal and Greece, according to which the right lobe is the most typical site for HCL [4, 23]. Due to the way portal blood flow is, the right lobe of the liver is more significantly impacted than the left lobe [24]. The type and size of the cysts, the knowledge and equipment that are accessible, and the patients' compliance with long-term follow-up all influence the treatment option [25]. Since surgery is the most effective way to remove cysts and produces a full recovery, several authors suggest it as the sole form of care [26,27, 11]. In our study, surgical excision of hydatid cysts was done in 47.8 percent of the patients.

In our study population, partial pericystectomy was the most common type of surgery. This outcome is consistent with a study by Bayrak and Altintas, which found that partial pericystectomy, laparoscopic surgery, or open surgery accounted for the vast majority of operations performed on HCL patients [28]. In their work, Hazra et al. discovered that partial pericystectomy is a tissue sparing procedure. Additionally, compared to other surgical techniques, its safety and simplicity offer a benefit to both the surgeon and the patient [4]. Our study population's surgical indications closely resemble those presented at the 2009 expert meeting of the WHO-*Informal Working Group on Echinococcosis*. The most common indications are liver cysts with daughter vesicles, cysts that are close to the skin and could rupture, infected cysts when percutaneous surgery is not an option, cysts that communicate with the bile ducts, and cysts that are squeezing nearby tissues [27]. PAIR, modified catheterization method, and albendazole monotherapy were implemented as less invasive modalities of care in individuals who did not need or qualify for surgery. If there are no contraindications to other modalities of care, they can be great alternatives to surgery in places with little resources and low economic standing. PAIR is mostly used to treat >5 cm active

cysts (including unilocular and membrane- detached cysts) [29]. For active cysts less than 5 cm, individuals with multiple cysts in different organs, peritoneal cysts, and patients who cannot have surgery, albendazole is recommended [27, 30]. Regardless of the method of administration, albendazole was administered as supplementary therapy to all patients. Numerous studies have supported the use of albendazole as an adjuvant to conventional therapy and supported its effectiveness in preventing the recurrence of the hydatid cyst [31, 32].

## Conclusion

In India, the hydatid cyst of the liver is a serious but undertreated public health issue. This study's findings on HCL's demographics, clinical characteristics, and therapeutics can be used to plan the clinical and societal response to the illness. It is essential to raise awareness of the disease and make sure USG facilities are accessible throughout India. The epidemiological pattern of the disease should be explained by multicentric research with a bigger sample of individuals.

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