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HISTOCYTOLOGICAL SPECTRUM OF HYDATID CYST: A RETROSPECTIVE ANALYSIS OF 10 SURGICAL CASES AT A TERTIARY CARE CENTRE

Pathomorphology

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ABSTRACT

Introduction: Hydatid disease, also known as echinococcosis, is a parasitic infestation caused by the larval stage of tapeworms belonging to the **genus** *Echinococcus*. Humans act as accidental intermediate hosts, while animals such as dogs, sheep, horses, rodents, and other livestock participate in the normal life cycle of the parasite. Among the various organs involved, the **liveris the most frequently affected site**, owing to its role in filtering blood from the portal circulation. The **lungs** are the next most common location, while other sites such as the spleen, kidneys, peritoneal cavity, brain, and bones are less commonly involved. A notable feature of hydatid disease is the **very slow growth of the cyst**, which allows the infection to remain clinically silent for many years. As a result, although exposure usually occurs during **childhood**, symptoms typically appear **later inadult life** when the cyst enlarges enough to cause pressure effects or complication. **Methods:** Retrospective study included 10 cases of Hydatid Disease diagnosed clinically and radiologically and confirmed by fluid cytology and histopathology. **Results:** Of the 10 patients with histologically confirmed diagnosis of echinococcosis, 70% patients were middle aged men (40-50 years). Liver was the most commonly affected organ (70%) and abdominal pain the most frequent presenting complaint (80%). **Conclusions:** Our study shows that Hydatid disease is relatively common in tropical regions, especially in people of low socioeconomic strata and poor environmental hygiene. Effective prevention relies on **regular deworming of dogs**, improvement of **living conditions and sanitation,** and **community based health education** to reduce transmission.

KEYWORDS

Hydatid Disease, Echinococcus, Deparasitation

INTRODUCTION

Hydatid disease is a parasitic infestation caused by the larval stages of Echinococcus granulosus and Echinococcus multilocularis. The disease is more commonly encountered in developing countries; however, it is also reported in several developed regions, including the Mediterranean basin, South America, and parts of Africa. Dogs and other wild carnivores, such as foxes, act as definitive hosts by harbouring the adult tapeworms in their intestines. The eggs are excreted in the feces and ingested by intermediate hosts, following which the larvae migrate through the bloodstream and develop into cysts in various organs, most frequently the liver and lungs.[1]

The liver remains the most commonly affected organ, accounting for nearly 60–75% of cases. Among hepatic involvement, the right lobe is affected in approximately 80% of patients, while the left lobe is involved in about 20%. Other organs such as the lungs (approximately 15%), spleen, kidneys, peritoneal cavity, and brain are involved less commonly. Due to the slow-growing nature of hydatid cysts, clinical presentation often occurs in adulthood, even when the infection is acquired during childhood.[3]

Diagnosis of hydatid disease may involve several serological investigations, including immunoelectrophoresis, indirect immunofluorescence, ELISA, and hemagglutination tests. Nevertheless, serological tests show reduced sensitivity in cases of isolated pulmonary hydatid disease, and antibody levels may persist for prolonged periods even after complete surgical excision of the cyst.[3]

MATERIALAND METHODS-

This retrospective study included 10cases of Hydatid Disease diagnosed clinically and radiologically and confirmed by fluid cytology and histopathology at the Department of Pathology, Chhattisgarh Institute of Medical Sciences Bilaspur; Chhattisgarh between January 2024 to December 2024. All patients had undergone surgical removal of cyst. Clinical details of the cases were retrieved from hospital records. In 2 cases, peritoneal aspirate was submitted for cytology. For histopathological examination, formalin-fixed, paraffin-embedded samples were cut into 5 µm sections, and stained with hematoxylin and eosin (H&E) stain. The following properties were evaluated in all cases: age, sex, anatomic location (organ involvement), number & size of cysts,cytological and histopathological findings.

OBSERVATION:

Table 1: Age Distribution Of 10 Patients

Age Groups (YEARS)	Males	Females	Total No. Of Patients	% Of Patients
10-19	0	0	0	0%
20-29	0	0	0	0%
30-39	1	1	2	20%
40-49	5	2	7	70%
50-59	1	0	1	10%
>60	0	0	0	0%
TOTAL	7 (70%)	3 (30%)	10	100 %

Table 3: Location Of Hydatic Cyst

CYST LOCATION	NO. OF CASES	% OF CASES
LIVER	07	70%
LUNG	02	20%
PLEURAL FLUID	02 †	10%
TOTAL	10	100%

† In one case, ruptured hydatid cyst in the lung was associated with simultaneous detection of hooklets in the pleural fluid.

Table 4: The Number Of Cysts Among 10 Hydatid Disease.

NUMBER OF CYSTS	NO. OF CASES	% OF CASES
ONE	0	0%
TWO	01	10%
THREE	06	60%
FOUR	03	30%
TOTAL	10	100

Table 5: Presenting Symptoms (N=10)

Presenting Symptoms	No Of Patients	% Of Cases
PAIN ABDOMEN	8	80%
ABDOMINAL LUMP/MASS	1	10%
JAUNDICE	1	10%
TOTAL	10	100%

Table 6: Gross Features Of CYST

CYST Features	Number Of Patients	% Of Cases
RUPTURED	5	50%
CALCIFIED	1	10%
UNILOCULAR	2	20%
MULTIOCULATED	2	20%
TOTAL	10	100%

Table7: Microscopic Features

Histopathologic Findings	Numbers Of Patients	% Of Cases
LAMINATED CYST WALL	07	70%
SCOLEX-CONTAINING MULTIPLE HOOKLETS	03	30%
TOTAL	10	100%

Fig 1- Hydatid Cyst Of Liver

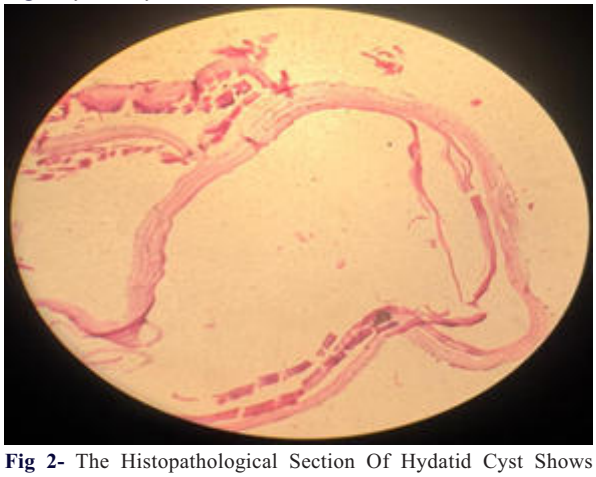

Fig 2- The Histopathological Section Of Hydatid Cyst Shows Laminated Cyst Wall (4x)

Fig 3- Pleural Fluid Cytology Shows Hooklets

RESULTS-

Ten patients who presented to the surgical OPD with complaints ranging from abdominal pain, Abdominal lump/mass ,jaundice were diagnosed with hydatid cyst by histopathologically. The age range from 30 to 60 years.Majority (70%) belong to 40-50 years. All the diagnosed case with hydatid cyst ,mostpatient(80%) present with complaints of abdominal pain.The specific finding of hydatid cyst in histopathology like laminated cyst wall present in(90%) cases and scolex-containing multiple hooklets present in 10% cases.

DISCUSSION

Age Distribution

The present study demonstrates that the majority of patients were in their fourth decade of life, followed by those in the third decade. About 70% of patients belonged to the 40-49-year age group, while 20% were between 30-39 years, with a mean age of 43.5 years. This pattern may be attributed to delayed onset of symptoms or late diagnosis of the disease. Pothare AN et al. reported the highest incidence in the third decade, followed by the fifth decade, supporting the observation that the disease is more commonly detected with advancing age.

Sex Distribution

In the present study, males (70%) were more commonly affected than females (30%), with a male-to-female ratio of 2.3:1. Increased outdoor activities, poorer hygiene practices, and greater involvement in cattle handling among males may explain this predominance. Additionally, easier access to healthcare facilities for males compared to females may also contribute to this finding. Similar male predominance was reported by Samanta et al., with a ratio of 1.3:1.

Anatomical Location

Infection with Echinococcus leads to the formation of one or more cysts, most commonly involving the liver (60–70%), lungs (20%), and other organs (10%).[11] In the present study, the liver was the most frequently affected organ, accounting for 70% of cases in both sexes. Dogs act as the definitive hosts, while sheep, cattle, goats, and horses serve as intermediate hosts. Humans acquire the infection through ingestion of eggs via contaminated food or water or through direct contact with infected hosts. After ingestion, the eggs hatch in the intestinal mucosa, and the larvae penetrate the mucosa to reach the liver via the portal circulation. Most embryos become trapped within the hepatic sinusoids, where they either perish or develop into hydatid cysts, making the liver the most common site of involvement. Larvae that escape hepatic filtration may reach the lungs, the second most commonly affected organ. If they bypass both hepatic and pulmonary barriers, they may disseminate to any part of the body. Additional routes of spread include lymphatic invasion and retrograde migration from the vena cava to the subclavian vein.[12] Understanding these routes of dissemination is important for disease control and prevention.

Unusual Localizations

Hydatid disease has been reported in several uncommon sites, including soft tissues (5.3%), spleen (2.7%), kidney (1.8%), cerebellum (0.9%), paraspinal region (0.9%), and gallbladder (0.9%). In the present case series, hydatid disease involving the pleural fluid was observed, representing an extremely rare location.

Presenting Symptoms

Most hydatid cysts remain asymptomatic, and the clinical manifestations are variable, with no symptom being pathognomonic. Consequently, hydatid disease is frequently underdiagnosed and is often detected incidentally or following the development of complications. Characteristic radiological features play a crucial role in diagnosis. Ultrasonography, computed tomography, and magnetic resonance imaging are highly sensitive modalities for detecting hydatid disease, allowing identification of cystic and avascular lesions, daughter cysts, internal septations, and vesicles. Various serological tests are employed for diagnosis, screening, and postoperative follow-up, including immunoelectrophoresis, latex agglutination, indirect hemagglutination, and ELISA. Routine laboratory investigations may reveal eosinophilia. Serological tests based on the detection of specific IgG antibodies are widely used for diagnosis and follow-up. Although sensitivity is relatively low in pulmonary (50-56%) and other extrahepatic sites (25-56%), it is high for hepatic cysts (80-100%). These tests are particularly useful during follow-up, where rising antibody titers suggest recurrence and declining titers indicate resolution. Recombinant antigens show promise as diagnostic and

follow-up tools; however, their clinical application remains limited due to lack of standardization.[13] [1]

Gross And Microscopic Features

Gross examination in the present study revealed that most cysts were ruptured (50%), followed by multiloculated (20%), uniloculated (20%), and calcified cysts (10%). Histopathologically, the hydatid cyst wall consists of three layers: an outer acellular laminated membrane, an inner germinal membrane, and protoscolices. Calcification may be present within the cyst wall. The cyst is often surrounded by a fibrous capsule or granulation tissue with associated inflammatory infiltrates.[1] In the present series, histopathological findings included scolices in 30% of cases, acellular lamellar cyst walls, and germinal membranes in 70% of cases. In one case of ruptured hydatid cyst, hooklets were identified on pleural fluid cytology.

CONCLUSION

Hydatid disease is still a major problem in rural agricultural communities. The clinical presentationof Hydatid disease depend on location, size, and stage of development of cysts. When the cysts occur in **unusual anatomical locations**, they may mimic other diseases and lead to considerable diagnostic difficulty. The combination of clinical history, radiological and histopathological findings, and serological test results are valuable for accuratediagnosing .**Surgical excision** of the cyst, along with the use of **protoscolicidal agents**, remains the most effective therapeutic approach. Preventive strategies include **regular deworming of dogs**, maintaining **good sanitation and living conditions,** and implementing**community-based health education programs**, all of which help reduce transmission and control the spread of hydatid disease.

REFERENCES

1. Singh K. et al Complications of Hydatid Cyst of Liver and its Management: A Review. Asian Pac. J. Health Sci., 2021;8(3):114-118.
2. Alexiou K, Mitsos S, Fotopoulos A, Karanikas I, Tavernaraki K, Konstantinidis F, et al. Complications of hydatid cysts of the liver: Spiral computed tomography findings. Gastroenterology Res 2012;5:139-43
3. Rawat S, Kumar R, Raja J, Singh RS, Thingnam SK. et al. Pulmonary hydatid cyst: Review of literature. J Family Med Prim Care 2019;8:2774-8.
4. Bektas S, Erdogan NY, Sahin G, Kir G, Adas G (2016) et al. Clinicopathological Findings of Hydatid Cyst Disease: A Retrospective Analysis. Ann Clin Pathol 4(3): 1071.
5. Sarngal S, Gandhi S, Arora S, et al. Unusual Presentation of Hydatid Cyst. Euroasian J Hepato-Gastroenterol 2022;12(1):31–34.
6. Samanta, et al.: Hydatid cyst presentation and its management DOI: 10.3126/ajms.v14i2.48486
7. Kahriman et al. Percutaneous treatment of liver hydatid cysts httt.doi.10.1177/0284185116664226
8. Shahriarirad et al. Journal of Cardiothoracic Surgery https://doi.org/10.1186/s13019-023-02327
9. Pothare AN, Deshpande AV, Nandu VV. Clinical study of hydatid disease. Int Surg J 2016;3:1564-9
10. Azad AD, Charles AG, Ding Q, Trickey AW and Wren SM. The gender gap and healthcare: Associations between gender roles and factors affecting healthcare access in Central Malawi, June August 2017. Arch Public Health. 2020;78(1):119. https://doi.org/10.1186/s13690-020-00497-w
11. Grosso G, Gruttadauria S, Biondi A, Marventano S, Mistretta A. Worldwide epidemiology of liver hydatidosis including the Mediterranean area. World J Gastroenterol. 2012; 18: 1425-1437
12. Mushtaque M, Mir MF, Malik AA, Arif SH, Khanday SA, Dar RA. Atypical localizations of hydatid disease: experience from a single institute. Niger J Surg. 2012; 18: 2-7.
13. Cappello E, Cacopardo B, Caltabiano E, Li Volsi S, Chiara R, Sapienza M, et al. Epidemiology and clinical features of cystic hydatidosis in Western Sicily: a ten-year review. World J Gastroenterol. 2013; 19: 9351-9358.
14. Manzano-Román R, Sánchez-Ovejero C, Hernández-González A, Casulli A, Siles-Lucas M. Serological Diagnosis and Follow-Up of Human Cystic Echinococcosis: A New Hope for the Future? Biomed Res Int. 2015; 2015: 42820516
15. Canda MS, Guray M, Canda T, Astarcioglu H. The Pathology of Echinococcosis and the Current Echinococcosis Problem in Western Turkey (A Report of Pathologic Features in 80 Cases). Turk J Med Sci 2003; 33: 369-374.