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Spontaneous Intraperitoneal Rupture of Hydatid Cyst – A Case Report

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Abstract: Spontaneous rupture of a hydatid cyst into the abdomen is one of the severe complications of echinococcal infection in endemic areas. The incidence of hydatid cyst rupture into the abdomen resulting in anaphylaxis and secondary infections, is on the rise. Rupture can be fatal if not diagnosed and managed promptly. Here we report a middle-aged man with clinical suspicion of a hydatid cyst who denied further evaluation and presented to the OPD after 6 hours with severe abdominal pain. Imaging studies revealed a ruptured hydatid cyst in the intraperitoneal cavity. Intra peritoneal rupture is a serious life-threatening complication of a hydatid cyst. Therefore, it is essential to diagnose and manage patients with hydatid cysts promptly. Expediting medical management with adherence to treatment regimen and surgical interventions if and when required at the earliest is imperative for a good prognosis.

Keywords: Hydatid Cyst, Rupture, Intraperitoneal, Echinococcus, Dog Tapeworm, and Zoonotic

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1. INTRODUCTION

Hydatid disease (HD) is a zoonotic infection spread worldwide caused by the larval stage of *Echinococcus granulosus*[1]. Cystic echinococcosis and alveolar echinococcosis are the two main types of disease. Polycystic echinococcosis and unicystic echinococcosis are less prevalent types [1]. The disease frequently begins without symptoms and might go unnoticed for years. The symptoms and signs that appear are determined by the cyst's size and location. Although alveolar disease usually starts in the liver, it can spread to other body regions, including the lungs and the brain. When the liver is damaged, the Patient may have abdominal pain, weight loss, and skin discoloration with a yellow tint due to established jaundice. Chest pain, shortness of breath, and coughing are all symptoms of lung illness. Eating food or water containing the parasite's eggs, or coming into close contact with an infected animal, spreads the infection. The parasite infects meat-eating animals, and the eggs are secreted in their feces. Dogs, foxes, and wolves are among the most commonly afflicted animals. These animals must ingest the organs of an animal that possesses cysts, such as sheep or rats, to become infected. Sheep are considered intermediate hosts because they commonly produce hydatid cysts in their internal organs, most commonly in their livers and lungs, which can become fertile and possibly contagious for dogs. The dog is infected with *Echinococcus* by eating the viscera of parasite ruminants (Tapeworm). The intermediate larval stage develops in the internal organs of many mammalian species (intermediate hosts), including humans, who cataract the infection by accidentally ingesting tapeworm eggs. The adult worm lives in the small intestine of the carnivore (definitive host), and it develops there during its intermediate larval stage. The sort of disease that arises in humans is determined by the *Echinococcus* strain that caused the infection [1]. The hermaphrodite Tapeworm, *E. granulosus*, has three developmental phases. The pericyst, composed of the host's inflammatory tissue, the exocyst, and the endocyst, which produces scolices and the prologue membrane, make up the cyst's typical structure. Ultrasonography (USG), computed tomography (CT), magnetic resonance imaging (MRI), radiography, and urography are the often used imaging techniques for the diagnosis and assessment of the degree of Hydatid disease [1]. The preferred screening method is USG, which is also employed to check on the effectiveness of therapy. It observes hydatid sand, floating membranes, daughter cysts, and vesicles within the cyst. Symptomatic patients with hydatid disease often show rupture of cysts [2,3]. The hydatid cysts may rupture spontaneously or due to trauma. The cysts may rupture into the pleural cavity, pericardial cavity, bronchus, or peritoneal cavity [2,3,4]. Sometimes, the cases of ruptured hydatid cysts may be misdiagnosed as tuberculosis and other pulmonary diseases, leading to failure in initiating appropriate management of cases. The present case report therefore highlights the awareness regarding the complication of hydatid cyst viz., rupture of the cyst, with a mention of the importance of timely diagnosis and prompt treatment for improving the prognosis.

2. CASE REPORT

2.1 Chief Complaints

A 33-year-old man presented to the outpatient department with intermittent pain in the right upper abdomen, low-grade fever and Dyspepsia for a 2-month duration. No other symptoms were noted, such as nausea, vomiting, diarrhea, or skin rash.

2.2 History of Present Illness

The patient had a contact history with stray dogs.

2.3 Clinical Evaluation

On clinical examination, the body temperature was observed to be 36.5°C, and mild right upper abdominal tenderness without evidence of liver enlargement on the vertical span was observed. In addition, the Patient's cardiovascular system and respiratory parameters were unremarkable.

2.4 Laboratory Investigations

The Patient's white blood cell count was 7,000/mm^3, with 65% neutrophils and 2.6% eosinophils. Urine and stool analyses were done. Biochemical tests for alkaline phosphatase, gamma-glutamyl transferase, aspartate aminotransferase, and bilirubin were within normal limits, but alanine aminotransferase was increased to 50 U/L.

2.5 Imaging Examinations

Due to the abnormal liver function test and right upper abdominal pain, abdominal sonography was performed. Abdominal sonography revealed an abscess in the right lobe of the liver. In addition, a cystic mass in the right lobe of the liver was shown.

2.6 Final Diagnosis

The patient was advised for admission for further evaluation. However, the patient denied admission and was discharged against medical advice. After 6 hours, the patient presented to the emergency department with severe abdominal pain. CT (Computed Tomography) scan abdomen was done. CT scan revealed a ruptured infected Hydatid cyst of the right lobe of the liver with Consolidation (Figure 1).

Fig 1: Non-contrast Computed Tomography scan showing ruptured hydatid cyst in the right lobe of the liver with consolidation

2.7 Treatment

The patient was advised for Incision and drainage under local anesthesia. A 32-gauge needle was inserted, and about 750 ml of pus was drained.

2.8 Laboratory Investigations

The drained pus was sent to the laboratory for further evaluation. Gram staining of the pus sample by Hucker's modification revealed hooklets suggestive of a ruptured hydatid cyst (Figure 2); wet mount examination also showed hooklets signifying rupture of the hydatid cyst (Figure 3). Acid-fast staining was performed using the Modified Zeihl Neelsen technique with 5% sulphuric acid revealing Hooklet pattern, suggestive of the Hydatid cyst (Figure 4).

2.9 Outcome and Follow Up

The Patient had a good recovery and was discharged in good condition. Follow up was uneventful.

Fig 2: Gram staining of the pus done by Hucker's modification showing hooklets signifying ruptured hydatid cyst

Fig 3: Wet mount of the pus specimen showing hooklet pattern signifying ruptured hydatid cyst

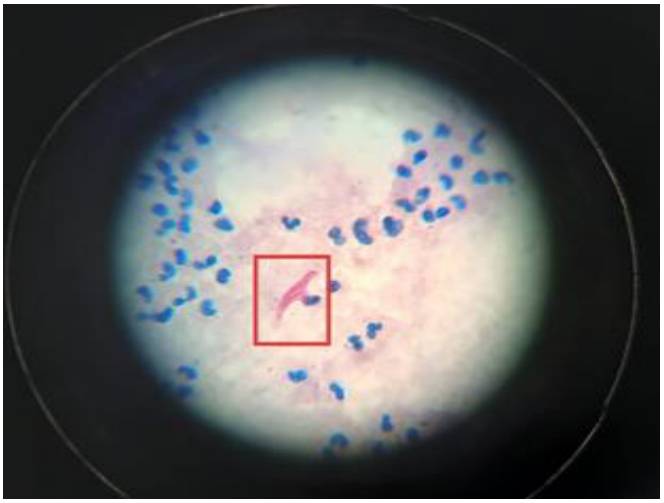

Fig 4: Acid-fast staining of the pus specimen using Modified Zeihl Neelsen technique with 5% sulphuric acid showing hooklet pattern signifying ruptured hydatid cyst

3. DISCUSSION

Echinococcal disease is an infection due to Echinococcal tapeworms belonging to the family Taeniidae. The aetiology of hydatid cysts in the liver is associated with *Echinococcus granulosus*, a Tapeworm infestation linked to zoonotic transmission from dogs. Depending on the area, the percentage of dog feces containing *E. granulosus* eggs ranged from 8.3 to 41.3 % in a study by Chaâbane-Banaoues et al [5]. There are several types of dog Tapeworm species. *Echinococcus granulosus* and *Echinococcus multilocularis*, which cause cystic echinococcosis and alveolar echinococcosis, respectively, are the two main species of medical and public health significance. Both diseases are significant and severe, the latter particularly so due to their high mortality rates and dismal prognosis if not treated properly [6]. The clinical features of hydatid cysts vary depending on the size and location of the lesion and the pressure given by the enlarging cyst to the organ involved [7,8]. The liver and lungs are the most commonly affected organs [9]. The hydatid cyst may rupture if not diagnosed and treated promptly, leading to complications [4]. If the hydatid cyst ruptures into the bronchus, the patient may present with cough, chest pain, breathlessness, and hemoptysis [10]. Rupture of the hydatid cyst into pleural space might even be life-threatening with complications like pneumothorax, collapsed lung, bronchopleural fistula, large residual cavity, etc[11]. In the present case, the hydatid cyst form of Tapeworm was noted in the liver, which Ultrasonography diagnosed and confirmed by CT-Abdomen scan. Ultrasonography (USG), computed tomography (CT), magnetic resonance imaging (MRI), radiography, and urography are the commonly utilized imaging techniques for the diagnosis and assessment of the degree of Hydatid Disease. The preferred screening method is USG, which is also employed to check on the effectiveness of therapy. It makes precise observations of hydatid sand, floating membranes, daughter cysts, and vesicles within the cyst. For Hydatid disease, a CT scan has good sensitivity and specificity [12,13]. In the present case report, the patient had severe abdominal pain following Hydatid cyst rupture. A complete blood count was done, which revealed eosinophilia and liver parameters were normal. Trauma or increased intracystic pressure might cause an intraperitoneal hydatid cyst to rupture [14,15,16]. A wide range of potentially fatal immune responses, including allergic reactions and anaphylactic shock, arise in response to the cyst content and spread to the peritoneal cavity [14,17]. The primary treatment modality for hydatid disease is surgical intervention followed by chemotherapy. Carefully assessing perforated cystic cavities is necessary. Additionally, any remaining cystic contents should be expelled, and the cystic cavity's free edges should be extensively removed. A saline solution can be injected through the common bile duct or cystic duct to perform a leakage test on perforated cysts that are found in the liver to determine how the cyst and biliary tract are connected [18]. Before the procedure is completed, abdominal drains should be placed both in the abdomen and the cystic cavity. To avoid disease recurrence brought on by missed cystic contents during surgery, anthelmintic medication should be started as soon as feasible for patients with intraperitoneal rupture. Albendazole (10–15 mg/kg per day) is the most popular anthelmintic drug. The treatment duration usually lasts for about one to twelve months[14,19]. The patient underwent emergency incision and drainage, a catheter was placed, and the pus of about 750 ml was drained and sent for microbiological evaluation. Wet mount, Gram stain, and acid-fast staining were done in the microbial laboratory. In wet mount and Gram stain testing, there was a hooklet pattern suggestive of a hydatid cyst. The sulphuric acid concentration was reduced from 20 percent to 5 percent to stain hydatid cyst for acid-fast staining. With surgical interventions for rupture of hydatid cyst, the patients might go into complications like pneumothorax, empyema, spillage of hydatid contents, etc. [18]. However, in this case, the Patient had an uneventful recovery and was discharged in good condition.

4. CONCLUSION

Hydatid cyst is one of the common infections of the lung in endemic areas. The case report concerns a patient with a history of exposure to a stray dog and presented with a ruptured hydatid cyst in the peritoneal and pleural cavities of the patient. Though the clinical diagnosis of the hydatid cyst was made in the initial stages and planned for further investigations by the clinicians before the rupture, the non-compliance of the patient lead to the rupture of the hydatid cyst into the peritoneal and pleural cavity. The case was managed with incision and drainage of the pus and anthelmintic drugs. The patient was discharged in good condition. This report emphasises that failure to adherence to the treatment regimen could lead to complications. Rupture can be prevented by prompt diagnosis, proper evaluation and management of hydatid cyst cases. Quality healthcare

outcomes depend on clinicians' and patients' adherence to recommended treatment regimens. Non-compliance could lead to health risks as well as an economic burden to the patients.

5. AUTHORS CONTRIBUTION STATEMENT

Dr. Mymoonah Risha prepared the original draft. Dr. Lakshmi Krishnasamy analysed the data and gave the necessary inputs to finalize the manuscript. Dr. Vyshnavee Subramanian and Dr. Ezhilnilavan Murugesan gathered the data about the work. All authors have made a substantial, direct, and intellectual contribution to the manuscript and approved it for publication.

6. CONFLICT OF INTEREST

Conflict of interest declared none.

7. REFERENCES

1. Echinococcosis. World Health Organization (World Health Organization) - Fact sheets [Internet]. World Health Organization; 2021 [cited Jun 16 2022]. Available from: https://www.who.int/news-room/fact-sheets/detail/echinococcosis.
2. Akbulut S, Ozdemir F. Intraperitoneal rupture of the hydatid cyst: four case reports and literature review. World J Hepatol. 2019 Mar 27;11(3):318-29. DOI: 10.4254/wjh.v11.i3.318, PMID 30967909.
3. Sabzevari S, Badirzadeh A, Shahkaram R, Seyyedin M. Traumatic rupture of liver hydatid cysts into the peritoneal cavity of an 11-year-old boy: a case report from Iran. Rev Soc Bras Med Trop. 2017 Dec;50(6):864-7. doi: 10.1590/0037-8682-0292-2017, PMID 29340470.
4. Balci AE, Eren N, Eren S, Ulkü R. Ruptured hydatid cysts of the lung in children: clinical review and surgery results. Ann Thorac Surg. 2002 Sep;74(3):889-92. doi: 10.1016/s0003-4975(02)03785-2, PMID 12238856.
5. Chaâbane-Banaoues R, Oudni-M'rad M, Cabaret J, M'rad S, Mezhoud H, Babba H. Infection of dogs with Echinococcus granulosus: causes and consequences in a hyperendemic area. Parasit Vectors. 2015 Apr 17;8:231. doi: 10.1186/s13071-015-0832-3, PMID 25888846.
6. McManus DP, Zhang W, Li J, Bartley PB. Echinococcosis. Lancet. 2003 Oct 18;362(9392):1295-304. DOI: 10.1016/S0140-6736(03)14573-4.
7. Rostami A, Mozafari M, Gholipourmalekabadi M, Caicedo HH, Lasjerdi Z, Sameni M, et al. Optimization of fluoride-containing bioactive glasses as a novel scolicidal agent adjunct to hydatid surgery. Acta Trop. 2015 Aug;148:105-14. DOI: 10.1016/j.actatropica.2015.04.021, PMID 25917714.
8. Santivanez S, Garcia HH. Pulmonary cystic echinococcosis. Curr Opin Pulm Med. 2010 May;16(3):257-61. doi: 10.1097/MCP.0b013e3283386282, PMID 20216420.
9. Moro P, Schantz PM. Echinococcosis: a review. Int J Infect Dis. 2009 Mar;13(2):125-33. DOI: 10.1016/j.ijid.2008.03.037, PMID 18938096.
10. Rawat S, Kumar R, Raja J, Singh RS, Thingnam SKS. Pulmonary hydatid cyst: review of literature. J Fam Med Prim Care. 2019 Sep;8(9):2774-8. DOI: 10.4103/jfmpc.jfmpc_624_19, PMID 31681642.
11. Puri D, Mandal AK, Kaur HP, Mahant TS. Ruptured hydatid cyst with an unusual presentation. Case Rep Surg. 2011;2011:730604. doi: 10.1155/2011/730604, PMID 22606591.
12. Gharbi HA, Hassine W, Brauner MW, Dupuch K. Ultrasound examination of the hydatic liver. Radiology. 1981 May;139(2):459-63. DOI: 10.1148/radiology.139.2.7220891, PMID 7220891.
13. Marrone G, Crino' F, Caruso S, Mamone G, Carollo V, Milazzo M, et al. Multidisciplinary imaging of liver hydatidosis. World J Gastroenterol. 2012 Apr 7;18(13):1438–47.
14. Yilmaz M, Akbulut S, Kahraman A, Yilmaz S. Liver hydatid cyst rupture into the peritoneal cavity after abdominal trauma: case report and literature review. Int Surg. 2012 Sep;97(3):239-44. doi: 10.9738/CC116.1, PMID 23113853.
15. Malik AA, Bari SU, Amin R, Jan M. Surgical management of complicated hydatid cysts of the liver. World J Gastrointest Surg. 2010;2(3):78-84. doi: 10.4240/wjgs.v2.i3.78, PMID 21160854.
16. Karakaya K. Spontaneous rupture of a hepatic hydatıd cyst into the peritoneum causing only mild abdominal pain: A case report. World J Gastroenterol. 2007;13(5):806-8. doi: 10.3748/wjg.v13.i5.806, PMID 17278209.
17. Toumi O, Noomen F, Salem R, Rabeh H, Jabra SB, Korbi I, et al. Intraperitoneal rupture of hydatid cysts. Eur J Trauma Emerg Surg. 2017 Jun;43(3):387-91. doi: 10.1007/s00068-016-0662-9, PMID 27084544.
18. Belli S, Akbulut S, Erbay G, Koçer NE. Spontaneous giant splenic hydatid cyst rupture causing fatal anaphylactic shock: a case report and brief literature review. Turk J Gastroenterol. 2014 Feb;25(1):88-91. DOI: 10.5152/tjg.2014.3521, PMID 24918138.
19. Sozuer E, Akyuz M, Akbulut S. Open surgery for hepatic hydatid disease. Int Surg. 2014 Dec;99(6):764-9. doi: 10.9738/INTSURG-D-14-00069.1, PMID 25437585.