

## Case Report

# Hydatid Cyst of the Peritoneum: A Rare Presentation

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## Abstract

**Background:** Hydatid disease is a type of zoonosis disease that is caused by *Echinococcus granulosus* it is the larval stage of the tapeworm. Hydatid disease can manifest anywhere in the body and demonstrates different imaging features that may differ by the affected tissue part, the growth stage of the parasite, and complications. The liver is the most commonly affected organ less frequently than the lung, spleen, kidney, and bones. The peritoneum is a very rarely affected organ and as far as our knowledge is concerned in Ethiopia no paper was published on this area.

**Case presentation:** A twenty-four-year-old farmer female patient presented with a lump in the lower abdomen, and gradually increased in size over the last three months, associated with dull aching pain, anorexia, and decreasing weight. She has no complaints of headache, vomiting, nausea, or any bowel and bladder habits. Hematological and biochemical parameters were tested, and the result showed normal. Ultrasonography of the abdomen was scanned and Contrast-Enhanced Computed Tomography (CECT) of the abdomen and pelvis was diagnosed.

**Conclusion:** Primary or secondary Peritoneal hydatid cyst, represents an uncommon but significant manifestation of the disease. Prevention is the primary choice to reduce the incidence of the disease, but surgical removal of the cyst is the treatment of choice for this kind of disease.

**Keywords:** Extrahepatic hydatid disease; Abdominal lump; Primary peritoneal hydatidosis; Case report

## Abbreviations

CT: Computed Tomography; CECT: Contrast-Enhanced Computed Tomography; USG: Ultra Sonography; HD: Hydatid Disease; MRI: Magnetic Resonance Imaging

## Background

Hydatid disease which is commonly called dog tapeworm is a type of zoonosis that is caused by the larval form of a tapeworm known as *Echinococcus granulosus*. Dogs, foxes, and coyotes have a definitive host, and sheep, cattle, and swine are the intermediate host for hermaphroditic tapeworms. Humans are the accidental intermediate host and infection in them represents the dead end of the parasite [1-3].

Hydatid disease affects any part of the organ, and different kinds of imaging features show according to the affected part of the tissue the growth stage of the parasite, associated complications. From purely the cystic lesions to a completely solid appearance will be observed at radiologic findings. Calcification is more common in Hydatid Disease (HD) [1] of the liver, kidney, and spleen. HD can become quite large incompressible organs [4]. When there is closer contact between people and domestic animals which acts as intermediate host, HD is prevalent in rural parts of many countries.

The echinococcus or hydatid disease is an endemic problem in

some areas of the world including African region [4]. In cattle grazing regions of the world like the Mediterranean, Middle East, Eastern Europe, and South America. Hydatid cysts can be prevalent in almost any organ of the human body. The liver is the most commonly affected organ (75%) less frequently than the lung, kidney, spleen, and bones. The lower incidence rate observed at heart, peritoneum, brain, ovaries, vertebral column, gallbladder, thyroid gland, breast, and bones. Hydatid cysts in the peritoneal cavity account for 13% of the total cases, the rupture of concomitant liver cysts-spontaneously or accidentally during operation treatment is the main result for this disease. Primary peritoneal hydatidosis is a rare condition, even in areas where hydatid disease is endemic [5,6].

The slowly growing cystic masses are the mainly observed manifestation and continue to be a significant health problem in most of the sheep and cattle-grazing areas around the world. Intraperitoneal HD accounts for 13% of all abdominal hydatidosis. The cysts develop secondary to spontaneous or iatrogenic rupture of hepatic, splenic, or mesenteric cysts and can be located anywhere in the peritoneum. Primary peritoneal involvement is extremely rare [5,7].

The main cause of HD in people is caused by infections with the larval stage of the dog tapeworm *Echinococcus granulosus*. HD is a medically important zoonosis, parasitic, and pathogenic infection of humans, resulting from the ingestion of tapeworm eggs excreted in the faces of infected dogs [7].

The disease is transmitted by the fecal-oral route when the eggs of the parasites are ingested and hatched in the human bowel and transmitted by the circulation to various parts of the body [5]. The liver and lung are the main trapped organs for the larvae, if not it may lodge itself in any part of the body including spleen (2% to 3%), kidneys (1% to 4%), uterus, and retroperitoneum (0.5% to 1%), adnexa (0.5% to 1%), pancreas (0.5% to 0.8%), and subcutaneous sites (1% to 2%). One organ or multiple organs could be affected simultaneously, multiple organs involvement may be seen in up to 25% of the patients [2,5]. Human beings become an accidental intermediate host by ingestion of eggs which develop into cysts causing complication and even mortality [8].

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The disease can be diagnosed using the indirect hemagglutination test, but should be combined with CT scan or MRI for better anatomical detail. Surgery remains the main treatment option, which involved removal of the affected part completely or cyst removal when complete excision is not possible [5]. The disease was diagnosed using the indirect hemagglutination test combined with CT scan for better anatomical detail [9,10].

## Case Presentation

This case report is presented an extrahepatic primary peritoneal hydatid disease in a patient, who presented with a lump in the lower abdomen. A 24-year-old farmer female patient presented with a lump in the lower abdomen and gradually increased in size for the last 3 months, associated with dull aching pain, anorexia, and weight loss. She has no other complaints. Hematological and biochemical parameter tests were normal.

Ultrasonography of abdomen revealed a large hypoechoic cystic mass with in the lower abdomen. Contrast-Enhanced Computed Tomography (CECT) of abdomen and pelvis revealed a huge cyst, 9 cm × 17 cm in size in the lower abdomen of the patient (Figure 1). Radiography of chest was normal. Initial differential diagnosis of mesenteric cyst, was made based on findings of USG and CT abdomen pelvis. On exploratory laparotomy, there was a large cyst (35. 20. 40 cm) arising from peritoneum covering the small bowel (Figure 2A and 2B). There are no observed hydatid cystic masses in any other abdominal part of the patient. Excision of the cyst was done without any spillage. Histopathological examination showed acellular and laminated cyst wall with mixed inflammatory cell foci of calcified scolice like material suggestive of calcified hydatid cyst. Figure 3 shows postoperative period was uneventful; patient was asymptomatic at 6-month follow up.

## Discussion

HD or Echinococcosis is a parasitic disease caused by infection with larva of the cestode echinococcus. Four species of the genus *Echinococcus* are known to cause infection in humans: *Echinococcus granulosus* (cystic hydatid disease), *Echinococcus multilocularis* (alveolar hydatid disease), *Echinococcus vogeli* and *Echinococcus oligarthrus* (both causing polycystic hydatid disease) [11].

The life cycle of *Echinococcus granulosus* involves two hosts. The definitive host is usually a dog and other carnivores. The adult worm of the parasite lives in the proximal small bowel of the definitive host, attached by hooklets to the mucosa. Eggs are released into the host's intestine and excreted in the faces. Sheep are one of the most common intermediate hosts. They ingest the ovum while grassing on

contaminated ground [12].

Human beings are become accidental intermediate host. The ovum loses its protective chitinous layer as it is digested in the duodenum. The released hexacanth embryo, or oncosphere passes through the intestinal wall into the portal circulation and develops into a cyst within the liver. If the definitive host eats the viscera of the intermediate host, the cycle is completed.

Human beings are become an intermediate host through contact of a domesticated dog or ingestion of contaminated water or vegetables. The most common affected organs are the liver (59% to 75%), then lungs (27%), kidney (3%), bone (1% to 4%) and brain (1% to 2%). Other sites such as the heart, spleen, pancreas, omentum, ovaries, parametrium, pelvis, thyroid, orbit or retroperitoneum and muscles are very rarely affected [13].

Peritoneal hydatid cyst, either primary or secondary, represents an uncommon but significant manifestation of the disease. Intraperitoneal hydatid cysts are usually secondary to the rupture of a primary hepatic or splenic cyst [7].

Primary peritoneal echinococcosis accounts for 2% of all abdominal hydatidosis. A case, the hydatid embryo gains access to the mesentery by hematogenous or lymphatic route. "Mesenteric hydatid cysts usually present as a non-specific mass, pain due to traction on mesentery and pressure effects on adjacent organs. Sometimes, they can rupture spontaneously" [14].

Serology and imaging are the main diagnostic modalities of hydatid disease. Ultrasound is the preferred first line imaging, but contrast enhanced CT gives more precise information regarding the morphology (size, location, neighborhood and number) of the cyst [15].

Treating the patient by using albendazole has been found to be successful in a proportion of cases, but drug therapy is generally not used as the primary treatment except in cases where the patient is not fit for surgery or the cyst size is smaller or deeply located. Surgery is the most effective treatment. Combination of preoperative albendazole therapy, surgery and postoperative albendazole therapy is a useful regime. Albendazole suppresses the development of hydatid cysts following intraperitoneal inoculation of protoscolices [16].

## Conclusion

Peritoneal hydatid cyst, either primary or secondary, represents an uncommon but significant manifestation of the disease. Intraperitoneal hydatid cysts are usually secondary to the rupture of a

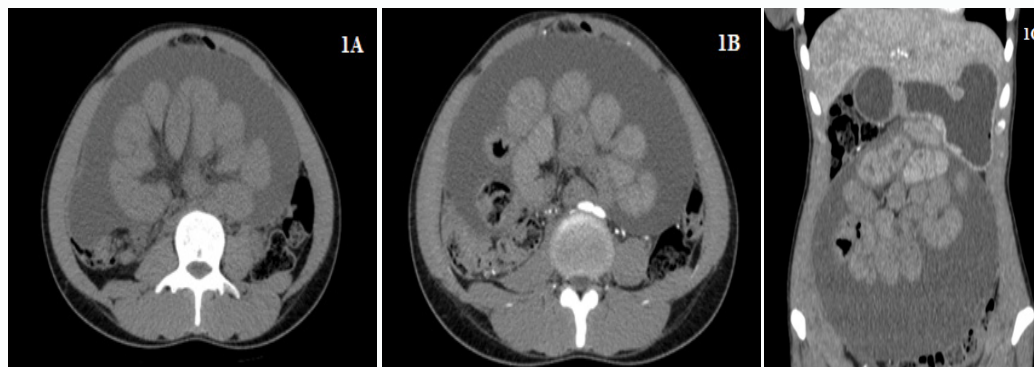
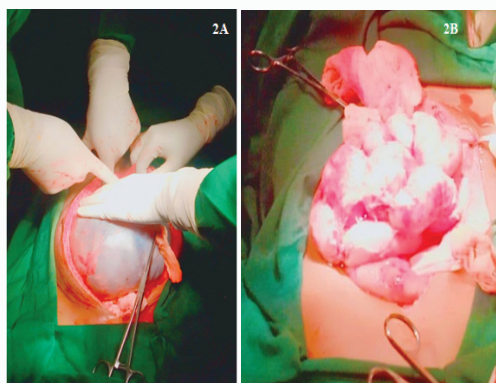


Figure 1: A, B, and C: Shows contrast-enhanced computed tomography of abdomen and pelvis findings.



**Figure 2:** A and B Intraoperative finding of cyst and the small bowel.



**Figure 3:** Post-operative picture on follow up.

primary hepatic or splenic cyst. The hydatid disease is very common in North Africa. Peritoneal primary hydatid cyst is an unusual site. Surgery is the one of the most treatment of choice, but prevention is the best way to reduce the incidence of this disease.

### Ethics Approval

Before the surgery was conducted, safe surgery checklist was completed and filled. Consent for the surgery and publication of the finding on an open journal was signed by the patient and the one of the family members. This is a normal patient care report and none of the experimental technique was applied in this research. Ethical approval was obtained from the hospital medical ethical and research ethics review committee.

### Consent for Publication

Consent for the surgery was taken before surgery by the routine activity form and consent for publication was taken from the patient by using a written form which is prepare by local language. We would like to acknowledge the patient for giving permission to publish this article on journals.

### Availability of Data and Materials

Data that explain about the patient was taken from the patient by asking the history and other examination data were taken from the patient laboratory result, ultra-sonography and computed tomography or CT scan report information has available in Nigist Eleni hospital medical record office.

### Competing Interest

The authors Dr. Adane Desta, Dr. Abel Tesfaye, & Mr Yeshanew Ayele declared that there are no conflicts of interest for the publication of this manuscript.

### Authors Contribution

AD and AT are surgeons contributing from diagnosis of the patient to final follow up of the patient and the 3<sup>rd</sup> author are writing the manuscript in collaboration with another author. Finally, the three authors are reading the manuscript and agree to send for publication.

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