

## **Case Report**

### **An Uncommon Cause of Acute Abdomen: Ruptured Liver Hydatidosis**

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**Abstract:** One of the most important complaints of patients applying to emergency services is acute abdominal pain. Considering that many diseases cause a sudden abdominal pain, it is a difficult and time-consuming process to assess these patients and diagnose them accurately. Hydatid cyst, or echinococcosis, one of the parasitic diseases, is located mostly in the liver and is asymptomatic in many cases. They are rarely ruptured into the peritoneal cavity due to traumas or spontaneously and this may cause acute abdominal pain. Still more rarely germinative membrane remains intact and appears with a cystic mass in the intra-abdominal or pelvic region. In this study, a case is presented of an acute abdominal pain caused by a giant daughter vesicle which moved to the pelvis due to the spontaneous rupture of hydatid cyst in the liver of a male patient aged 32.

**Keywords:** Acute Abdomen; Hydatid Cyst; daughter vesicle.

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## **INTRODUCTION**

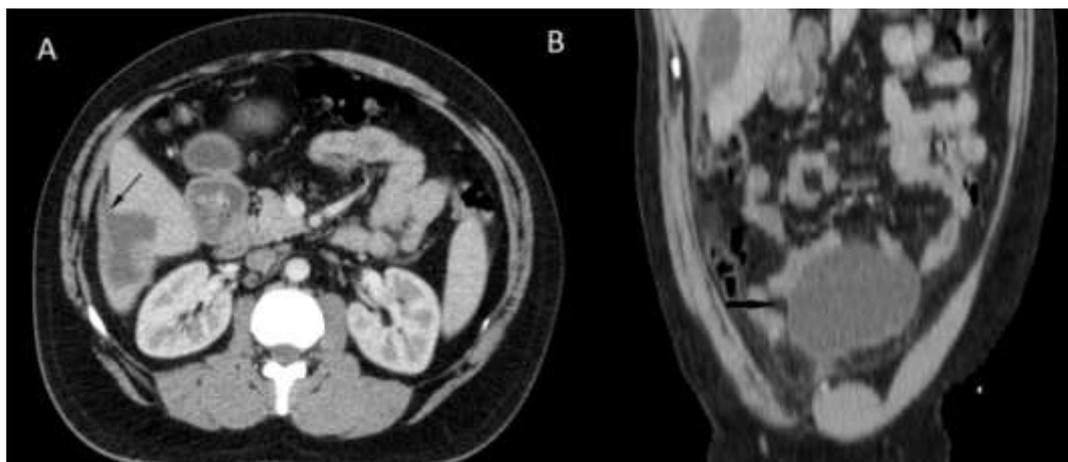
Hydatid cyst (HC) is a parasitic infestation caused by *Echinococcus granulosus*. Although the disease is found most commonly in the liver and the lungs, it can also be seen anywhere in the body. Cyst hydatid may rupture through trauma, surgery or spontaneously.

The spontaneous rupture of hepatic HC into peritoneal cavity is a rather rare and life-threatening case. Patients usually apply with acute abdominal symptoms such as abdominal pain, nausea and vomiting [1]. Abdominal ultrasonography and computerized tomography are useful in displaying both the lesion in the liver and intra-abdominal fluid [2]. Moreover, as in the case we presented, they help us see the daughter vesicles with intact germinative membrane which are spread into abdominal cavity after the rupture of hepatic HC as cystic masses.

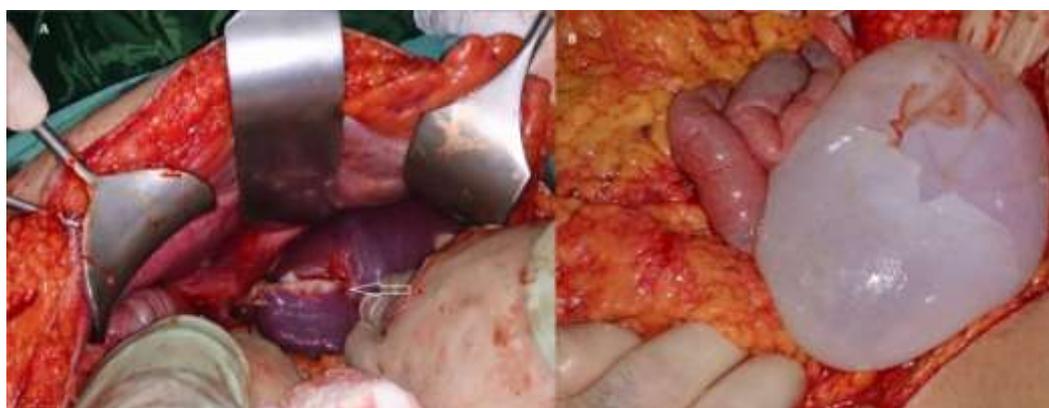
## **THE CASE**

A 34-year-old male patient applied to the emergency unit with complaints of acute abdominal pain, nausea and vomiting. The patient stated that abdominal pain had begun suddenly in all parts of the abdomen 4 hours before and then the complaints of nausea and vomiting had accompanied it. He also pointed out that he had not been exposed to any trauma. Axillary temperature was measured to be 37.8°C, radial pulse 118/minutes, and blood pressure 110/70 mm/Hg. Abdominal examination revealed sensitivity and

defense in all quadrants, notably in the right upper quadrant and pelvis. All the values were within normal limits in biochemical and complete blood count tests except the fact that eosinophile rate was slightly higher (7 %). Urgent abdominal computerized tomography of the patient was performed with pre-diagnosis of acute abdomen. The tomography revealed a fluid collection of 5x4 cm in size contoured to the lobule extending to the sub-hepatic zone along the sub-capsular zone in the right lobe posterior-inferior segment of the liver (Figure 1-A). In the abdominal center line, a cystic lesion, which was 7x11 cm in size, extending to the pelvic zone and displaying peripheral contrast, was observed (Figure 1-B). As a consequence of the findings obtained from physical and radiological examinations, the patient was taken urgently to the operating theater. During the operation, a lesion of 5x6 cm in size and compatible with ruptured HC was seen in right lobe segment of the liver (Figure 2-A). A free daughter vesicle, which was 12x10 cm in size and had intact germinative membrane, was found in the pelvis (Figure 2-B). The daughter vesicle was taken out of the abdominal cavity without doing harm to the membrane integrity. The ruptured HC zone in the liver was washed with hypertonic saline while the intra-abdominal cavity was washed with physiological saline solution and external drainage was applied to the cystic cavity in the liver. The patient was discharged on the 4th day after the operation because he did not have any complaints and no complications occurred. The patient used albendazole for 6 months. The follow-ups did not reveal recurrence.



**Fig 1: Abdominal computed tomography: A) Fluid collection in the right of the liver, B) Intraperitoneal pelvic cystic lesion**



**Fig 2: Intra operative view; A) Ruptured hydatid cyst in liver, B) Intra peritoneal daughter vesicle with intact germinative membrane**

## DISCUSSION

Simple and uncomplicated HCs do not usually exhibit symptoms. Cysts without symptoms are defined during a routine examination, a surgical intervention or autopsy. On the other hand, very few patients with liver HC display symptoms depending on the toxic effects of the parasite or mechanical pressure. These symptoms involve a blunt pain in the upper right quadrant of the abdomen and a swelling in the abdomen. Moreover, dyspepsia, vomiting, jaundice and fever can also be seen. The most common symptom in examination is hepatomegaly [3, 4].

On the other hand, more apparent symptoms are seen in patients with liver HC in whom complications developed. The most important complication is rupture to the biliary tract. Rupture to the biliary tract may occur spontaneously or as a result of trauma and lead to cholangitis. Another complication is that cysts in the liver that reach enormous dimensions apply pressure on adjacent structures and organs. Thrombosis after pressure by the cystic mass applied to inferior vena cava may cause Budd-Chiari syndrome. A less common complication is the rupture of the cyst into adjacent organs or body cavities.

Hydatid cysts grow in the direction where there is the least resistance. Intra-cystic pressure increases in cysts that reach extremely large dimensions. In dead cysts, on the other hand, intra-cystic pressure is low. Especially, superficial live cysts whose intra-cystic pressure is higher than 50 mm Hg may rupture to adjacent organs, biliary tracts or body cavities [5, 6].

Intra-peritoneal rupture of the HC occurs spontaneously or as a result of a trauma. Its incidence was reported to be 5.5 % [1]. An increase in intra-cystic pressure, growth of cystic dimensions, an increase in the cyst wall tension and superficial location of the cyst are predisposing factors for spontaneous rupture. When cystic content and surrounding membranes rupture into the abdominal cavity, peritoneal irritation occurs and acute abdominal symptoms are seen [1, 7]. Abdominal pain, nausea and vomiting are among the most frequent symptoms. Allergic reactions like urticaria can be seen in 25 % of the cases [1, 2]. Systemic anaphylactic reactions can be seen in 1 % of the patients with intra-peritoneal rupture [8]. The patient we presented in this study had not had any complaints before. He applied to the emergency unit with a sudden abdominal pain, nausea and vomiting. It was seen during the operation that a ruptured cyst had been located superficially. The

patient lived in an area which was endemic in terms of HC.

Primary radiological instruments used in the diagnosis of ruptured hepatic HC are ultrasonography and computerized tomography. Diagnostic laparoscopy is also another method that can be used in preoperative diagnosis [2, 4, 8].

Sensitivity and defense were observed in all abdominal quadrants, notably in the upper right quadrant and pelvic zone during the physical examination of the patient in our case. The sudden abdominal pain in all quadrants was mimicking hollow organ perforation. Abdominal tomography revealed a cystic lesion with a size of 7x11 cm in the pelvic region. Lobule contoured fluid collection with a size of 5x4 cm was observed in the liver of the patient in the right lobe posterior-inferior segment, extending to the sub hepatic region along the sub capsular area. This was the most effective finding that helped us diagnose the preoperative rupture of hepatic HC.

After the rupture is diagnosed as HC, medical treatment should be begun against allergic reactions and urgent surgical treatment should be planned. The purpose of the surgical treatment is to prevent complications, to eliminate local disease, and to reduce rates of morbidity, mortality and recurrence. Cystic content and germinative membranes should be removed and peritoneal cavity should be washed. In the surgery of perforated hepatic HC, simpler and shorter procedures such as external drainage, unroofing, and filling the cavity with omentum should be implemented instead of radical and complicated surgical procedures like peri cystectomy and hepatectomy. Although some scolicidal agents are used in the washing of peritoneal cavity, there is no consensus in this regard. Hypertonic saline is not appropriate as it leads to hypernatremia and does damage to peritoneal surfaces. Even though povidone-iodine and 10 % hydrogen peroxide were found to be more effective than hypertonic saline as scolicidal agents in experimental studies, they, too, had toxic effects on peritoneal surfaces [9, 10].

There were no symptoms of allergic reaction in our case. The patient was taken to the operation theater with a ruptured HC for urgent surgery. During the operation, a free daughter vesicle with an intact germinative membrane was observed among the intestines in the pelvic region. It was taken out of the abdomen taking care not to perforate it. A spontaneously ruptured cystic cavity was seen in the liver. The inside of the cavity was washed with hypertonic saline while the abdominal cavity was washed with physiological saline. External drainage was performed on the cystic cavity. No complications occurred in the patient in the post-operative period. The patient used albendazole for 6 months. No recurrence was observed in the follow-ups.

Cases of ruptured HC into peritoneal cavity are rare and they should be taken into consideration especially in the differential diagnosis of acute abdomen in endemic regions. In ruptured HC cases, it is a rare situation for the germinative membrane of the daughter vesicle to remain intact. Abdominal computerized tomography may be useful for an early and accurate diagnosis in cases of patients who live in endemic regions in terms of HC or who have a history of visits to those regions and apply with acute abdominal symptoms. As in our case, if intra abdominal cystic mass is detected, careful assessment of the liver with regard to possible ruptured HC disease may help us consider the diagnosis.

Mustafa Ugur, Seckin Akkucuk, Cem Oruc, Yavuz Savas Koca, Alperen Kayali and Erhan Kizilkaya declare that there is no conflict of interest in this study.

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