

**A GIANT LIVER HYDATIDE CYST SIMULTANEOUSLY PERFORATED TO PERITONEAL AND PLEURAL CAVITIES – A RARE CASE REPORT.**

**Ivan P. Novakov**

*Department of Special Surgery; Medical University - Plovdiv*

**Abstract.**

**Background.**

The most common complications of hydatid disease of the liver are biliary rupture of the cyst, concomitant bacterial infection and free rupture into the peritoneal cavity.

**The aim** of this study is to present a relatively rare case of simultaneously expression of three complications of liver echinococcosis: bacterial infection, spontaneous perforation to free peritoneal cavity and communication through the diaphragm with the right pleural cavity.

**Case presentation.**

We report a case of a 62-year-old woman that was presented to our emergency department with sudden onset of severe, continuous diffuse abdominal pain. At the time of emergency laparotomy rupture of a giant right lobe liver hydatid cyst into the free peritoneal cavity with acute peritonitis and communication through the diaphragm between cyst's fibrotic capsule and right pleural cavity were established.

**Conclusion.**

We consider the presented case interesting because of the three simultaneously appeared emergency complications of the liver echinococcosis: bacterial infection, perforation to peritoneal cavity and communication with right pleural cavity.

*key words:* liver hydatid cyst, perforation, acute peritonitis, emergency laparotomy.

*address for correspondence:* [inovakov2003@yahoo.com](mailto:inovakov2003@yahoo.com)

**Introduction**

The hydatid cyst is a parasitic disease mainly caused by *Echinococcus granulosus* (1). These cysts ordinary have a chronic, latent, and asymptomatic course which are developed more frequently in liver and lungs, while may be formed in other organs. They may be found as an incidental findings during routine clinical examination or even followed by radiographic or ultrasonography evaluation (2).

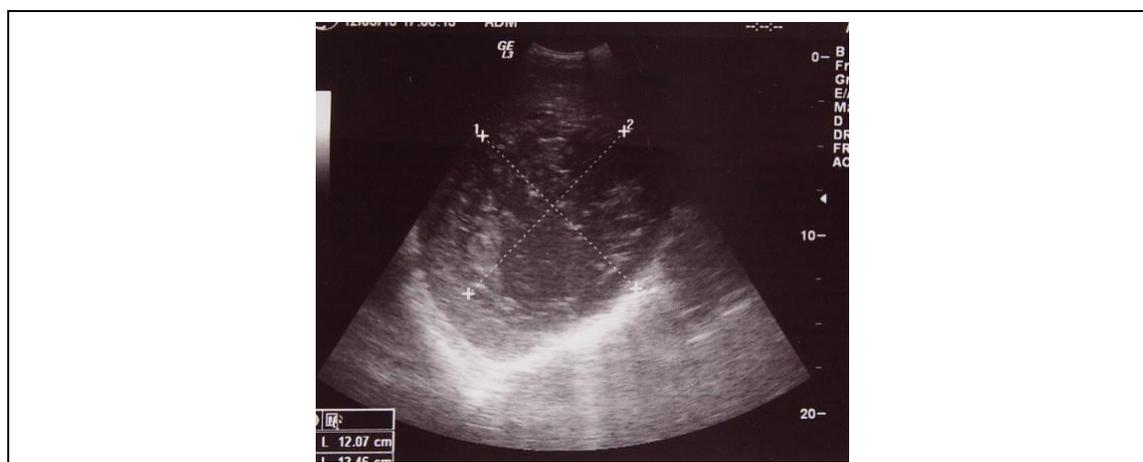
Most common complications of the liver hydatid disease are the death of the parasitic cyst, bacterial infection and also perforation into biliary tract. Relatively rare are presented cases with rupture of the cyst into the free peritoneal cavity and through the diaphragm into pleural cavity (1-4).

**The aim** of this study is to present a relatively rare case of simultaneously expression of three complications of liver echinococcosis: bacterial infection, perforation to free peritoneal cavity and communication through the diaphragm with right pleural cavity.

**Case presentation.**

We report a case of a 28-year-old woman that was presented to our emergency department with sudden onset of severe, continuous diffuse abdominal pain. On abdominal physical examination, diffuse pain, rigidity and rebound tenderness were noticed. Physical examination on other organs did not reveal any positive findings.

Abdominal sonography demonstrated cystic lesion (maximum of 13 cm in diameter) into the right hepatic lobe and free fluid in all abdominal quadrants (Fig. 1).



**Figure 1.** Abdominal sonography image shows a giant right hepatic lobe cyst.

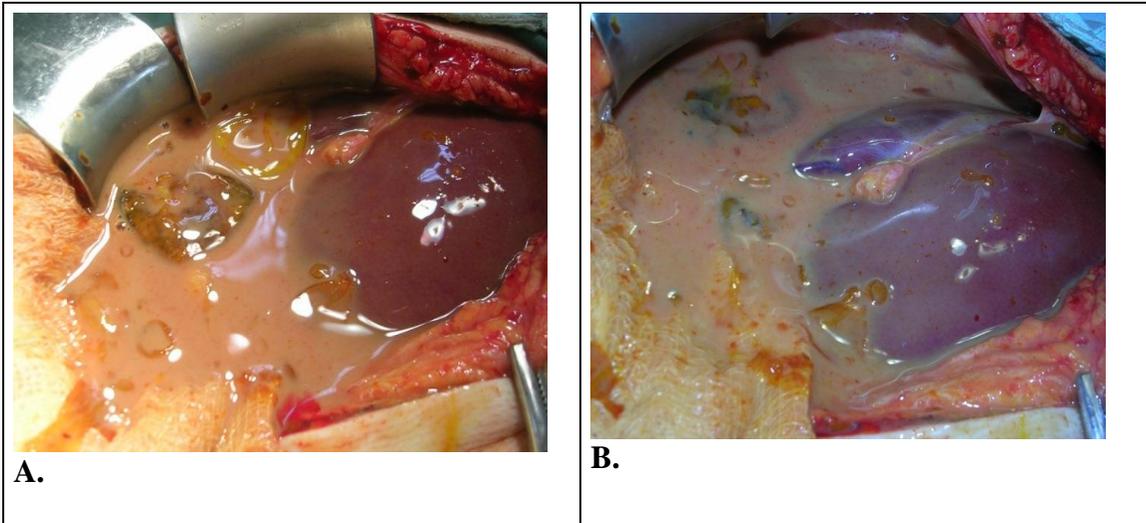
The woman was hospitalized in our Department of Thoracic and Abdominal Surgery and emergency laparotomy was performed. At the laparotomy it was found a giant infected liver hydatid cyst ruptured into the peritoneal cavity. The cyst was localized in the right hepatic lobe (VI, VII and VIII segments), with prominent fibrotic capsule and firmly adhered to the right diaphragm. Acute purulent peritonitis was established with multiple daughter vesicles into the free peritoneal cavity (Fig. 2A; Fig. 2B).

The daughter vesicles and the purulent exudate into the peritoneal cavity were aspirated and the peritoneal cavity was washed out with hypertonic saline. The liver hydatid cystic content (purulent effusion, remaining daughter cysts, germinative membranes) was aspirated and fibrotic capsule was washed out with iodine solution. The prominent part of fibrotic capsule (outside the liver) was excised and careful observation of the right diaphragm established communication between fibrotic capsule of the cyst and right pleural cavity (through the diaphragmatic fistula with diameter approximately 15-20 mm).

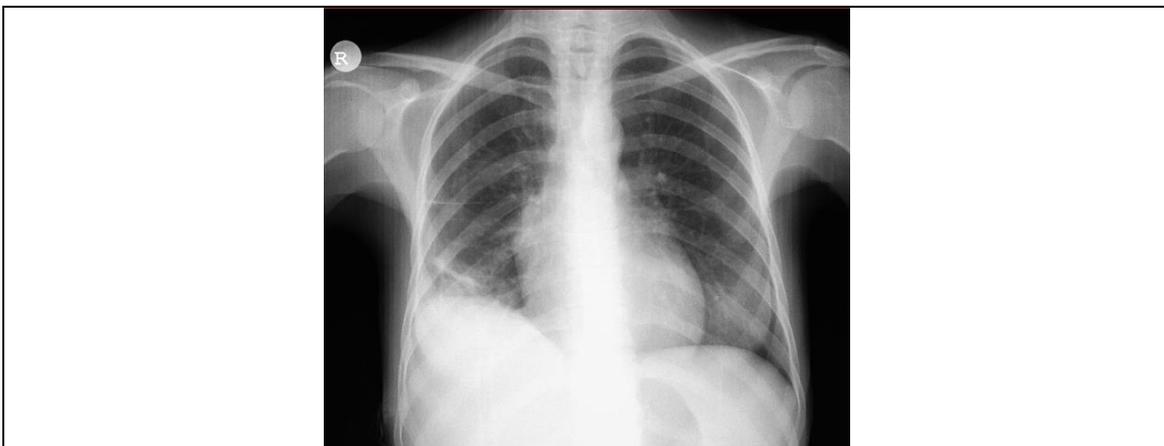
The diaphragmatic fistula was excised and the defect of the right diaphragm was sutured. A tube drain was placed into the residual fibrotic capsule (into the liver parenchyma) and a free peritoneal cavity was drained (drain into the right upper quadrant and drain into the pelvic space). At the end of the emergency operation, tube drain was placed into the right pleural cavity through the thoracic wall.

The thoracic drain was removed at the 4<sup>th</sup> postoperative day, with fully inflated lung (fig. 3). The peritoneal cavity drains were removed at the 7<sup>th</sup> postoperative day after operation and the drain into the residual liver fibrotic capsule at the 12<sup>th</sup> day.

The woman was discharged after eighteen days of hospitalization and was directed to be treated by parasitologist.



**Figure 2A; 2B.** Multiple daughter hydatid cysts and purulent exudate into the free peritoneal cavity established during emergency laparotomy.



**Figure 3.** Chest X-ray right after removing the tube drain demonstrates fully inflation of the lung.

### Discussion.

Hydatid cyst is caused by infection of larvae of the parasite *Echinococcus granulosus*. Hydatid cysts may form in any organ. The liver is most commonly involved - 70% of cases. About three fourths of hydatid cysts are located in the right liver and are singular (1-4).

Most patients with hydatid cysts are asymptomatic, and the diagnosis is usually made incidentally during clinical or radiological examination for unrelated reasons. In other cases the first clinical presentation of echinococcosis is due to expression of complications of the hydatid cyst (2,3,5).

Intrabiliary rupture is the most common complication of the liver hydatid cyst, with an incidence

of 5% to 25% of patients. Free intraperitoneal rupture occurs infrequently - approximately 3 - 4% of all cases of liver hydatid disease. Intraperitoneal cysts may rupture spontaneously, due to increased intracystic pressure, or as a consequence of trauma, leading to the spread of hydatid fluid in the peritoneal cavity. Rupture into the peritoneal cavity of hydatid cyst must be considered as a serious complication (1-7).

Infection of the liver cyst can occur either as a primary infection or as a secondary infection following an episode of a leak into the biliary tree (a cystobiliary fistula). Bacterial super infection of a liver hydatid cyst can occur and present like a pyogenic abscess and symptoms range from mild fever to full-blown sepsis (2,3).

Hydatid cysts situated in the upper liver surface have a tendency to grow upwards and if uncomplicated they may find their way through the diaphragm and become intrathoracic. Rupture into the chest, like into the peritoneal cavity is considered as a serious complication. Rupture may occur into the pericardium, mediastinum, the lung and bronchial tree or the pleural cavity (8,9).

We present a case of liver hydatid cyst, located in the dome of the liver and complicated with the three mentioned above complications: bacterial super infection, rupture into the free peritoneal cavity and communication to pleural cavity.

We consider that bacterial infection in the presenting case is a form of secondary infection with origin by biliary tree. We established several small cystobiliary fistulas onto the inner surface of the fibrotic capsule, that are accepted like a way of the bacterial infection to the parasite.

We consider that the motion of the diaphragm and the intrathoracic subatmospheric pressure are responsible for the huge dimension of the hydatid cysts in the presenting case. The motion of the diaphragm, together with bacterial super infection we accept as immediate reasons for the spontaneous peritoneal rupture of the hydatid cyst.

We established firmly adhesions between fibrotic capsule and right diaphragm, with obliterates the space between liver and diaphragm, as a result of pericystic chronic inflammatory process. As the size of the cyst increases, the diaphragmatic fibres get thinner from the pressure and eventually rupture. If there are adhesions in the pleural cavity then the rupture is directed into the bronchial tree. In cases where there are no pleural adhesions the rupture may appear only in the pleural cavity. With the presenting case, we demonstrate not exactly pleural rupture of a liver hydatid cyst. We established only defect of the diaphragm with communication between fibrotic capsula and right pleural cavity, without leakage of the hydatid content into the right pleural cavity. Because of that, there wasn't need of thoracotomy and only suture of the diaphragm and drainage of the pleural cavity were quite enough.

### Conclusion.

We consider the presented case interesting because of the three simultaneously appeared emergency complications of the liver echinococcosis: bacterial infection, perforation to peritoneal cavity with acute purulent peritonitis and communication with right pleural cavity through the right diaphragm fistulae.

### References:

1. Avcu S, Özkan Ü, Arslan H. Intrahepatic rupture of liver hydatid cyst: a case report and review of the literature. *Cases Journal* 2009, 2: 64-55.
2. Crausaz PH. Hydatid cyst of the lung and hydatid disease of the liver with intra-thoracic evolution. *J Thorac Cardiovasc Surg* 1967; 53:116-29.

## Science & Technologies

3. Jenkins DJ, Roming T, Thomson RC. Emergence/re-emergence of Echinococcus spp – a global update. *Int J Parasitol* 2005 ; 35 :1205-1219.
4. Kalantari N, Bayani M, Abbas-zadeh M. Rupture of hydatid liver cyst into peritoneal cavity following blunt abdominal trauma; a case report. *Emergency*. 2015;3: 45-7.
5. Saidi F. A new approach to surgical management of hydatid disease. *Ann R Cole Surg Engl* 1997;59:115-118.
6. Spârchez Z, Osian G, Onica A, et al. Ruptured hydatid cyst of the liver with biliary obstruction: presentation of a case and review of the literature. *Rom J Gastroenterol* 2004; 13: 245-250.
7. Wani RA, Malik AA, Chowdri NA, Wani KA, Naqash SH. Primary extrahepatic abdominal hydatidosis. *International Journal of Surgery* 2005;3:125-127.
8. Xanthakis DS, Katsaras E, Efthimiadis M. et al. Hydatid cyst of the liver with intrathoracic rupture. *Thorax* 1981 ;36:497-501.
9. Yilmaz M, Akbulut S, Kahraman A et al. Liver hydatid cyst rupture into the peritoneal cavity after abdominal trauma: case report and literature review. *Int Surg*. 2012; 3: 239-44.