

Case Report

A RARE CASE OF RUPTURE OF HEPATIC HYDATID CYST THROUGH DIAPHRAGM IN THE PERICARD

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Summary

The hydatid disease is one of the most common tapeworms disease caused by the larvae of *Echinococcus granulosus*. Its distribution is endemic, covering different regions of the globe. Infection of humans, who are an intermediate host occurs primarily by ingestion of food and water contaminated eggs by the parasite or by direct contact with contaminated dogs. After entering the intestine, the larvae pass through the wall of the bowel into the portal blood and lymph vessels, and by them reach the liver, which is their first barrier. Thus the liver is the most common target organ for the development of an echinococcal cyst. The lung is the second most commonly affected organ. Almost all other organs are affected, but the overall incidence is about 10%. Involvement of the heart and pericardium is between 0.5 and 2%.

We present a rare clinical case of a 31-year-old man with symptoms of hydropericardium as a result of liver microperforation of an echinococcal cyst through the diaphragm into the pericardium. The diagnosis was confirmed by echocardiography, chest X-ray, CT of the abdomen and the chest, and by intraoperative findings. Thoracotomy and laparotomy were combined with other surgical procedures to treat the condition.

Key words: echinococcosis, tamponade of the heart, hydropericardium

Introduction

Hydatid disease is one of the most commonly occurring teniasis caused by the larvae of *Echinococcus granulosus*. Its distribution is endemic [1, 2]. The main reservoir of the parasite are dogs and various other predators who feed on organs from dead infected herbivores. Humans get infected most often through ingestion of parasite eggs, which hatch in the intestine, pass through the wall into the blood and lymph vessels and then infect various organs [3, 4]. The liver is affected in 75% of the cases, lungs – in 15%. Involvement of all other organs accounts for up to 10% of cases [4]. Cardiac hydatid disease present 0.5-2% of cases with systemic echinococcosis infection [5, 6]. The most frequent localization is the left ventricle of the heart, interventricular septum, followed by the right

ventricle. Localization in the pericardium without affecting it is extremely rare, most commonly caused by perforation through the diaphragm and into the pericardium of a liver echinococcal cyst. In this case, the clinical presentation was by cardiac tamponade with precordial pain, tachycardia, shortness of breath and fatigue [5-9]. Diagnosis is confirmed by echocardiography, abdominal ultrasound, chest X-ray and CT / MRI of the abdomen and thorax. Treatment is most commonly surgical with different surgical accesses and techniques.

Clinical case

A 31-year-old man was admitted in to the clinic of cardiology in Pleven with a clinical presentation of constrictive pericarditis – strong precordial pain, tachycardia, shortness of breath and fatigue. Echocardiography revealed hemodynamically significant pericardial effusion. (Figure 1). The electrocardiogram also showed diffuse involvement of the pericardium. A chest X-ray was obtained that demonstrated pericardial effusion (Figure 2). A CT scan of the abdomen and thorax visualized an echinococcal cyst in the right hepatic lobe fused with the diaphragm and pericardium and a large pericardial effusion (Figure 3). The patient was admitted to Second Surgery Clinic of Pleven University Hospital for surgical treatment. Clinical laboratory tests revealed elevated WBC – $19.2 \times 10^9/l$, fibrinogen – 5.2 g/l and GGTP – 319 U/l. Results from other paraclinical investigations were normal.

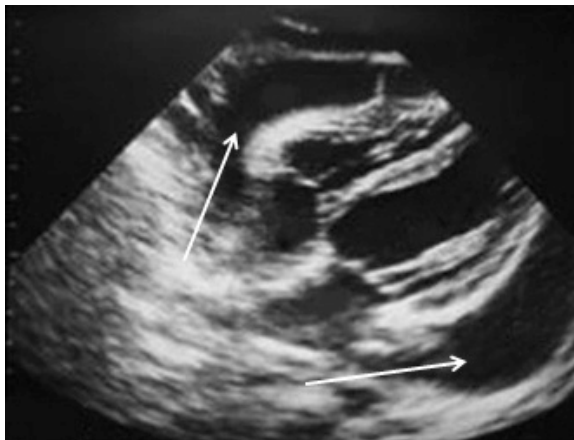


Figure 1. Echocardiography. Arrows show significant pericardial effusion

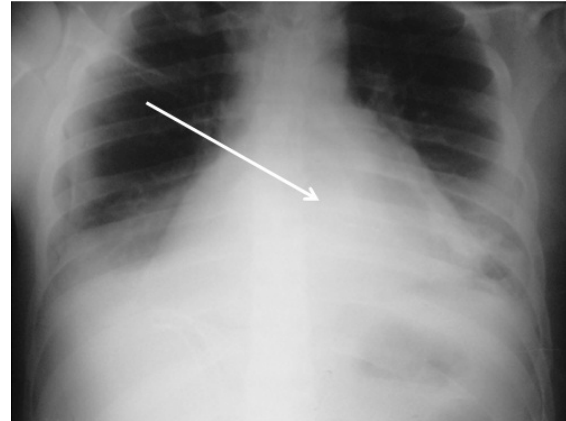


Figure 2. X-ray of the chest. Arrow shows large cardiac shadow as a result of pericardial effusion



Figure 3. CT of the chest and abdomen. Arrow shows intimately fusion of echinococcus cyst in the right hepatic lobe with the diaphragm and pericardium, and pericardial effusion

Left thoracotomy under general anesthesia revealed increased volume of the pericardium, which had closely fused with the diaphragm. Pericardiectomy was performed and 400 ml. of pus-like fluid mixed with fibrin deposits was drained out. The microbiology test of the sample collected proved no growth. On revising, a communication between the pericardium and an echinococcal cyst in the right hepatic lobe was found. Pericardial lavage with 25% NaCl, 3% hydrogen peroxide and yodasept as anticestodal agents was performed. The pericardium was left

open, the thorax was drained by a tube drainage under the left lung base. The thoracotomy incision was closed and then urgent upper middle laparotomy was performed. Pus-like fluid from the infected echinococcal cyst of the right hepatic lobe was found in the abdominal cavity, infiltrating the diaphragm. The cyst was opened and drained. The fluid drained was again pus-like and with a lot of scoleces. The microbiology test of the sample collected proved no growth. There was no communication between the cyst and the biliary route. The germinative membrane was removed and the newly formed cavity was lavaged with the same anticestodal agents. This was followed by lavage of the abdominal cavity. Drainage was placed on the cyst location, under the liver and in the pelvis. The abdominal incision was closed. The patient was discharged on the 12th day, and a 6-month therapy with an anthelmintic agent (Albendazole) was prescribed.

Discussion

Echinococcosis is one of the common parasitic diseases in humans. It is endemic worldwide. Affected areas are: South America, Africa, Northern, Southern Europe, Northern and Western Canada, Australia, New Zealand, regions along the Mississippi River and Alaska in the U.S. [1, 2]. It is caused by cestodes of the Echinococcus family, which mainly infects dogs and other dog-like animals (wolves, foxes), which are final host of the parasite. Intermediate hosts are some herbivores (sheep, cows, goats and camels). Humans can be hosts as well, mostly by ingestion of food, infected with parasite eggs. In the human intestine the eggs turn into larvae that penetrate the lining and from there, through the blood vessels, reach the portal system. Through the blood-stream the oncospheres get into the liver and from there to almost all internal organs [3, 4]. In the internal organs they form localized echinococcal cysts. The incubation period is long, the disease develops at any age and more often affects females. The percentage of internal organ involvement is as follows: liver – 75%, lung – 15%, all other organs (muscle, bone, brain, heart, etc.) – 10% [4]. The hydatid disease is rare with an incidence of 0.5-2% of the cases with systemic echinococcus infection [5, 6, 10, 11]. The most common locations in the heart are: left ventricle, interventricular septum followed by the right ventricle. Localization in the

pericardium without affecting the myocardium is extremely rare, as most cases are complications of perforation of a hydatid liver cyst through the diaphragm, with subsequent development of cardiac tamponade [5-9, 12, 13]. In most cases the presentation of echinococcosis in humans is asymptomatic. The clinical signs appear as a result of compression of the affected organs or neighboring structures. The most serious complication is rupture of the cyst with subsequent echinococcal anaphylactic shock. When an echinococcal cyst perforates into the pericardium the clinical presentation includes dyspnea, tachycardia and chest pain [5-9, 14]. In this case, the diagnosis was made by echocardiography [11, 15, 16], other imaging techniques like CT and MRI [7, 17] and a large number of blood tests including testing for specific antibodies by ELISA, of eosinophilia in peripheral blood etc. The differential diagnoses entertained are cardiac tumors and other congenital cysts of the pericardium, intrapericardial hematoma, etc. [16]. In some cases of perforation of a liver hydatid cyst into the pericardium, a bacterial superinfection can be present, with a clinical presentation of purulent pericarditis. Surgical treatment is a method of choice in all cases of pericardial involvement from a ruptured hydatid cyst [6, 18, 19]. In order to reduce the risk of peritoneal dissemination in case of accidental rupture of the cyst during surgery it is advisable to apply anthelmintic drugs before and after surgery [20].

Conclusion

Involvement of the pericardium in cases of hepatic echinococcosis is very rare. The clinical picture in the case presented is that of constrictive pericarditis. The accurate diagnosis in these cases is most commonly established during surgery.

Surgical treatment requires simultaneous operation of the pericardium and liver with mandatory measures to prevent dissemination.

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