

THE EXPERIENCE OF TWO BANAT REGIONAL UNIVERSITY HOSPITALS IN THE MANAGEMENT OF HYDATIC CYSTS: REVIEW

EXPERIENȚA A DOUĂ SPITALE UNIVERSITARE REGIONALE DIN BANAT ÎN MANAGEMENTUL CHISTURILOR HIDATICE HEPATICE: RECENZIE

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ABSTRACT | REZUMAT

The hydatid cyst is a zoonotic disease caused by *Tenia Echinococcus*. Surgery is needed in most cases. We aimed to describe our regional center's experience in discovering the hydatid cyst by liver ultrasonography and the surgical management of hepatic hydatid cysts (HHC) after diagnosing it by liver ultrasonography.

Keywords: hepatic hydatid cysts, surgical treatment, liver ultrasonography

Chistul hidatic este o zoonoză cauzată de *Tenia Echinococcus*. Tratamentul chirurgical este necesar în majoritatea cazurilor. În acest studiu ne-am propus să descriem experiența centrelor noastre în managementul chirurgical al chisturilor hidatice hepatice (HHC) după depistarea acestuia prin ecografia ficatului.

Cuvinte cheie: chisturilor hidatice hepatice, tratament chirurgical, ecografia sistematică a ficatului

The liver hydatid cyst, a parasitic disease produced by *Taenia Echinococcus*, determines, due to the complications that it generates, both the suffering of the organ and the suffering of the whole body quite like a systemic disease. Pathological consequences, in the absence of rigorous and timely treatment, can be fatal. The general morbidity through hydatid cyst remains high, with all the prophylactic measures taken in many countries. This high morbidity, sometimes leading to major hepato-biliary sequelae, fully justifies the interest that it has been given and continues to keep the disease in the care of clinicians and surgeons around the world. We find the same situation in Banat region of Romania.

Abdominal ultrasound, computed tomography and nuclear magnetic resonance have practically changed the clinical diagnosis of the disease. Today most cases are detected in the early stages, when the disease is asymptomatic, and the therapeutic results are much improved. Traditionally, surgical treatment was the only accepted treatment. Today, medical therapy with modern antihelmintics has proven to have several advantages, especially for the prophylaxis of relapses and in patients whose surgery is prohibitive.

EPIDEMIOLOGY

Taenia echinococcus granulosus is a parasite of the dog with relative specificity, in the sense that it can adapt to other hosts, but then this adaptation is less perfect, its proliferation process being limited and it fails to complete its biological cycle. Due to this fact, when discussing the epidemiology of the hepatic hydatid cyst, we must refer to both human and veterinary parasitology (11). *Taenia echinococcus granulosus* is widespread on the globe surface (11). Human and animal hydatidosis encompasses large, unevenly spread areas, being more commonly encountered in rural individuals, related to certain professions such as: shepherds, butchers, and cattle breeders (16). The main source of infection is the dog, which is the definitive host (11).

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According to the World Health Organization, the most widespread areas of hydatidosis in the world are: North America (Alaska, Canada), South America, Mediterranean basin, Central Europe, Siberia, Australia, South Africa. In Romania, the areas with high incidence of echinococcosis are the region around the Carpathians mountains and the Subcarpathians area, where sheep breeding is prevalent. In our country the incidence of hydatid disease is average. Unfortunately banning has an above average incidence (11).

EVOLUTION AND COMPLICATIONS

The development of the larval form of the parasite in the liver is slow, reaching after 15-20 years the diameter of 15-20 cm (17). Depending on the rate of growth of the parasite, the location in the liver, the age and the tolerance of the patient, the hepatic hydatid cyst can produce symptoms by itself or due to the appearance of complications (9).

The most common complications of HHC are: biliary complications; septic complications; cyst rupture; hydatid cirrhosis; portal hypertension syndrome (9, 20).

At the Railway University Hospital, III Surgery Clinic for a period of 10 years (2005-2015), 76 patients with hepatic hydatidosis were submitted to surgical interventions, of which 44 men (58%) and 32 women (42%) aged 7-72 years old, the average age was 38.5 years.

At the Municipal Clinical Hospital, Surgical Semiology Clinic for a period of 10 years (2008-2018), 79 patients with hepatic hydatidosis were submitted to surgical interventions, of which 40 men (50.6%) and 39 women (49.4%) aged 16-81 years old, the average age was 30.9 years.

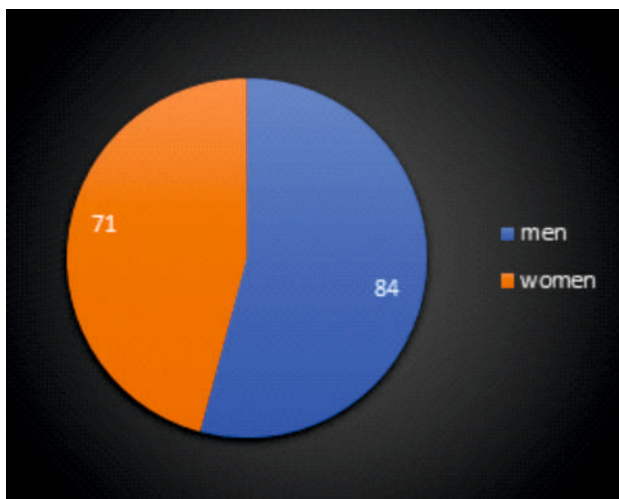


Fig. 1. The male-female report of the presented case



Fig. 2. The male-female report of the presented case in comparison to the two clinics

MATERIALS AND METHODS

In 52 cases (33.5%) it was a multiple hepatic hydatidosis, double in 44 cases and triple in 8 cases. In 23 patients (15%), extrahepatic locations of hydatidosis were also encountered: pulmonary 5, transverse mesocolon 4, large epiploon 5, caudal pancreas 3, diaphragm 3. A number of 11 hydatid cysts were calcified. Complicated cysts were detected in 55 cases, of which 23 biliary fistulas (16 - colecisto-cystic and 7 coledoco-cystic) and 22 superinfected.

In total, 175 surgical interventions were performed in 175 hepatic hydatid cysts (HHC).

The treatment of choice for uninfected cysts was the ideal cystectomy with primary perichystorafia after filling the remaining cavity with isotonic chlorinated solution with Ampicillin 1000mg in 90 cases (40 %), the total perichistectomy associated or not with the filling of the remaining hepatic cavity in the hepooon 47 cases (30,3%) and partial parrotectomy Lagrot procedure in 40 cases (25,8%). This statistic also includes calcified cysts in which total perichistectomy was performed and those with biliary fistula, in which the intracavitary suture of the fistulous tract was associated with total or partial perichistectomy. In a number of 5 cases, perichistectomy was performed by thoracic approach with the filling of the hepatic cavity by frenoplicature. Only one case required atypical right hepatectomy, the right hepatic lobe being occupied almost entirely by a giant hydatid cyst, with a longitudinal diameter of 20 cm.

Multiple drainage was performed in the abscessed cysts in 23 cases (15%), marsupialization in 5 cases (3.2%) and chisto-jejunostomy in the Y-Roux loop in 5 cases (3.2%), in which it was reintervened. due to the retention of the remaining cavity. Complementary interventions were imposed by: the existence of extra-

hepatic cysts in 23 cases (20 cases resolved by total pericectomy and 3 case by splenectomy); biliary involvement - 65 cases (60 cases resolved by cholecystectomy and 5 cases by cholecystotomy); coledoduodenostomy 10 cases and Kehr external biliary drainage in 14 cases.

Postoperative complications were minimal in the case of uninfected cysts: sectoral necrosis of the omentum in 5 cases (3.2%). In the case of the superinfected cysts the complications were represented by 4 infections of the surgical wound (2.5%), by 4 prolonged external drainages (2.5%) and 2 cases a liver abscess (1.2%). In this way the complication rate reached 9,7%. Reintervention was required in 5 cases: a hepatic abscess by retention of the remaining cavity 2, an omental necrosis 1 and a hepatic cyst remaining 2.

Postoperative ultrasound follow-up after ideal cystectomy showed minimal changes in the first 3 months postoperatively, over 50% reduction of the remaining cavity over the next 3 months and persistence of asymptomatic residual liver cavity in about 30% of patients at one year postoperatively.



Fig. 3. The cyst is isolated to prevent contamination



Fig. 4. Sterile 20% saline solution is injected to kill the scoleces

In conclusion, the therapeutic behavior towards the remaining hepatic cavity is specific to each case, following-up the peculiarities of one and every case. The treatment of choice in uncomplicated cysts was the ideal cystectomy with primary perichystorphy. In the case of calcified cyst the total perichistectomy was performed, and in the abscessed cysts the best results were obtained by multiple external drainage. On the other hand, in the cysts with biliary fistula the intracavitary fistulorafia associated or not with external biliary drainage or bilio-digestive bypass was practiced with exceptional surgical perspectives and consequences.

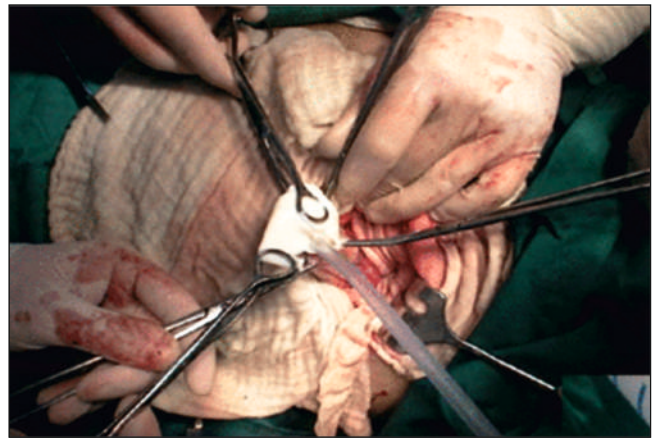


Fig. 5. The endocyst (internal subsequently germinal layer) is removed

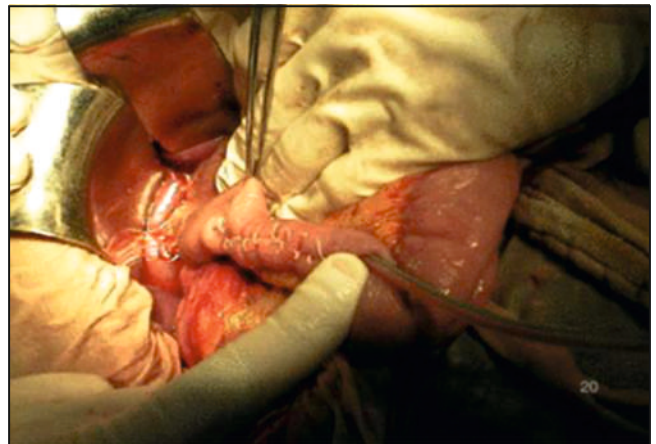


Fig. 6. The omentoplasty

RESULTS AND DISCUSSIONS

Echinococcosis is an endemic disease in many parts of the world but is not considered to be endemic to Romania. Overall, all patients underwent surgical intervention in Banat region as indicated for HHC (16).

The decision regarding the type of surgical intervention was based mainly on surgeon preference according to cyst location, depth and proximity to vital

organs. Peri-cystectomy was attempted in all patients when technically feasible (single peripheral cyst). In some cases, specifically when the cyst was too deep, there were multiple cysts, or there was proximity to vital organs, the unroofing of the cyst or hepatectomy was chosen to minimize complications. All kind of surgical departaments own criteria for operation and standardization of the the surgical treatment.

We prefer the method of unroofing the cyst as the first line procedure for most of HHC. Similarly to our approach, many prefer performing unroofing associated with partial cystectomy, as the procedure is simpler and easier to perform.

However, one of the main disadvantages of conservative surgery, such as unroofing, allow for a higher recurrence rate of the cyst. Similarly, the recurrence rate in our study was higher in the unroofing surgical intervention group. Earlier study by Yuskel et al. (2008) reported that more radical hepatic surgery diminish early recurrence of HHC (1, 2, 13, 18, 23, 25, 29, 30, 31, 36, 38).

Another potential limitation of unroofing is the occurrence of anaphylaxis, and this can be a catastrophic side effect and necessitates careful planning to avoid intra-abdominal spillage of the hidatyc cyst contents into the peritoneal cavity.



Fig. 7. Unique hepatic hidatic cyst (28)

Recent studies showed that pre- and post-operative administration of medical anti-parasitic agents reduced the risk of anaphylactoid reactions and prevented recurrence of HHC in the liver and other organs (including myocard, small bowell, bones and so on). This observation needs further validation by performing prospective randomized trials (7, 9, 22, 27, 18, 34).

Major morbidity is not common in surgical management of the HHC as it would be expected for a benign

disease. Furthermore, mortality was rare which shows that even in non-endemic areas, the surgical results for HHC are satisfactory (7, 15, 19).

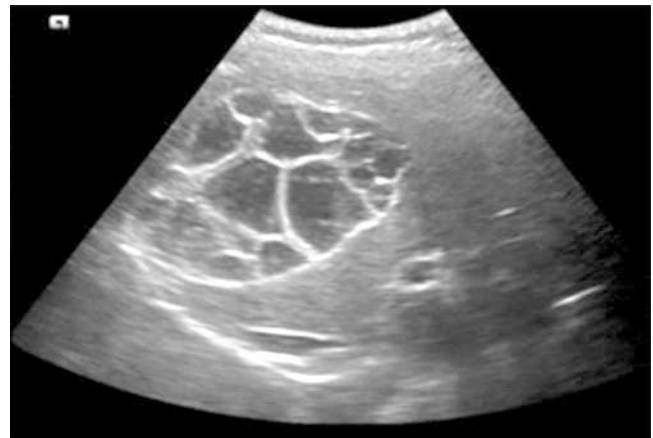


Fig. 8. Multiple hepatic hidatic cyst (28)



Fig. 9. Multiple hepatic hidatic cyst, with daughter bladders (28)



Fig. 10. Multiple hepatic hidatic cyst, with prolific membrane and three daughter vesicles (28)

The present study had several limitations. Firstly, it

was a retrospective study, thereby increasing the risk of data collection bias and, secondly, in that the study was performed in a single center. Also, for the patients with peri-cystectomy there was no follow-up after the surgery, thus we couldn't assess the recurrence rate in this group (3, 14, 17, 24, 25, 30, 32, 37).

CONCLUSIONS

The hydatid cyst disease in Western Romania in Banat region is infrequent. After diagnosing it with liver ultrasonography, surgical intervention is undoubtedly the reasonable treatment, with respect to morbidity, recurrence, and mortality.

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