

OUR EXPERIENCE IN THE SURGICAL TREATMENT OF THE MULTIORGAN ECHINOCOCCOSIS

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Summary

Kalinova, K., 2005. Our experience in the surgical treatment of the multiorgan echinococcosis. *Bulg. J. Vet. Med.*, **8**, No 3, 199–204.

The frequency of echinococcosis in Bulgaria has been increasing in the last decade which makes it a serious health problem. Fifty one patients with echinococcosis with more than one organ involved were treated at the department of General and Pediatric Surgery of University Hospital in Stara Zagora between 1989–2004. The lungs and liver were affected in 26 cases, both lungs in 13 cases, the liver and the spleen in 7 cases and the liver, spleen and lungs – in 5 cases.

The individual approach to the treatment of multiorgan echinococcosis was elective. Young patients with good general condition were treated in a single stage, while patients in poor general condition were treated in two stages.

Key words: multiorgan echinococcosis, single-stage procedure, thoracophrenotomy

INTRODUCTION

Echinococcosis is known since the time of Galen. The first literary reports on this subject are those of Thebesins from the 17th century. It is accepted that echinococcosis originated from Iceland and was transmitted in Europe with dogs. The disease is endemic in many regions of the world. Bulgaria is also among the countries with continuously increasing morbidity rates. According to the National Centre of Infectious and Parasitic Diseases, the morbidity rate in 1987 was 3.02 ‰, in 1993 – 5.61 ‰ and in 1998 – 7.67 ‰. Lately, the high morbidity rates are sustained. In numerous patients, the echinococcosis affects several organs at a time. In the past, in patients with lung and liver echinococcosis, the lungs were operated first and afterwards – the liver (Lewis *et*

al., 1975). The extent of the surgical intervention and the interval between the multistage operations of organ-preserving type are yet discutable (Pichori *et al.*, 1998).

In the available literature, there are plenty of reports about rare localizations of echinococcal cysts, but the data about multiorgan associated echinococcosis are few (Inssera *et al.*, 1994; Kir & Baran, 1995). Multiorgan echinococcosis is related to the degree of parasitic infection, and the measures for eliminating new manifestations of the disease after the initial surgery are essential.

Multiorgan echinococcosis is an actual problem as it causes big economical losses because of the necessity of performing multiple operations and the pro-

longed period of disability of affected people.

The aim of the study was to consider various cases of surgical intervention performed in cases of multiorgan echinococcosis and to assess the most sparing surgical treatment according to cyst localization.

MATERIALS AND METHODS

The study was performed on the basis of data about surgical interventions in 317 patients with echinococcosis of the lungs, liver, spleen, kidneys and soft tissues, operated in the Clinic of General and Paediatric Surgery, University Hospital, Stara Zagora for the period 1989–2004. A retrospective analysis of multiorgan involvement – a total of 51 cases (16.09%), was done. The results from the diagnostic imaging studies, made in all patients: ultrasonography, pulmonary and abdominal radiography, computed axial tomography (CT) of the lungs and the abdomen (in 45 patients), were followed out. The serological assays using the reaction of precipitation and haemagglutination, the enzyme-linked immunosorbent assay (ELISA) and immunoglobulin (IgM, IgA, IgE) analyses in 13 patients were assessed. The operative methods were divided into conservative and radical depending on whether the pericyst was left or removed. In pericystic resection of 5 liver echinococci, the change occurring prior to and following the application of the scolicedic agent to the adjacent liver parenchyma was immunohistochemically evaluated.

The obtained data were analysed by the Student's t-test, non-parametric and correlation analysis. The level of significance was 0.05.

RESULTS

It was observed that in 60% of patients, the diagnosis was made according to their subjective complaints whereas in the other 40% – the disease was accidentally detected in a routine prophylactic examination. The patients with multiorgan echinococcosis were at the age of 4 to 74 years, 22 women (43.1%) and 29 men (56.9%). In 13 cases (25.4%) – both lungs were affected, in 7 cases (13.8%) – the liver and the spleen, in 26 cases (51%) – the lungs and the liver were affected, and in 5 cases (9.8%) – the lungs, the liver and the spleen.

The performed diagnostic imaging – ultrasonography and CT of patients exhibited the following diagnostical sensitivity: 92% for ultrasonography and 99% for CT. In 29 patients (56.9%), the serological samples were positive and in 13 (25.5%) – the immunoglobulins showed a motility and correlated to the high values of echinococcal samples.

The patients with bilateral lung echinococcosis (Fig. 1) were operated using a lateral thoracotomy approach in two stages at 1–2 month intervals. First, the complicated or the larger cyst was operated. A method of choice was echinococectomy with suturing bronchial fistules and capitonnage of the residual cavity – in 10 patients. In 3 cases, due to the vanished lung parenchyma and the cyst size, lung resection at a various extent was performed.

Using median laparotomy in the 7 cases with liver and spleen echinococcosis, splenectomy (Fig. 2) and echinococectomy of a liver cyst, located in the left liver lobe were performed.

Out of 26 patients with associated lung and liver echinococcosis (Fig. 3), 11 were operated in one stage. These were cases of



Fig. 1. Bilateral lung echinococcosis.



Fig. 2. Associated echinococcal cyst in the spleen.



Fig. 3. Associated lung and liver echinococcosis.

cysts located in VII–VIII liver segment, where thoracophrenotomy with subsequent removal of the lung and the liver cysts were done. The other 15 cases with lung and liver echinococcosis were operated in two stages – first removing the lung cyst or that showing a bigger likelihood of complications.

In one case with involvement of three organs, the operations was in one stage – first via lateral throtomy and then, via median laparotomy. In the other 4 cases with 3-organ localization, the surgical intervention was done in two stages.

The analysis of the postoperative hospitalization period revealed that the average stay in the hospital in multi-stage interventions was 11 ± 3 days, higher than that of one-stage ones: 10 ± 1 day. This is not valid for children where the performance of one-stage interventions was conformed to the degree of physical immaturity and the degree of immune deficiency.

In cases of liver echinococcosis, echinococectomy with capitonnage after a thorough scolicedic treatment and suturing of small cystic-biliary fistules was performed to 22 patients. In 4 cases with evidence of liver echinococcal cyst complicated with suppuration, an external drainage was placed.

Postoperative complications in multiorgan echinococcosis were observed in 5 patients – suppurations and dehiscence of operative wounds and in another 2 – pleuropulmonary reactions (equal incidence in one- and two-stage operations). In 2 patients with external drainage, a continuous bilirrurgia occurred but it resolved spontaneously after 26 days. No postoperative lethality was present in this study. The immunohistochemical study in pericystic resection of 5 liver echinococci showed a sclerotizing cholangitis prior to the application of the scolicedic agent (Fig. 4). The

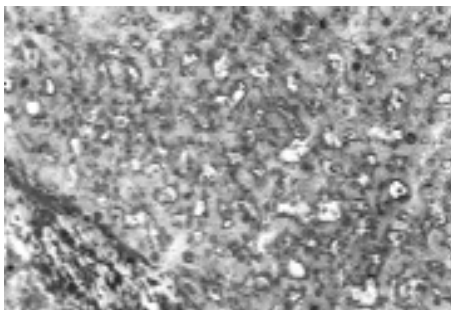


Fig. 4. Sclerotizing cholangitis after pericystic resection of 5 liver echinococci.

ultrasonographic follow-up in these patients revealed recovery (regeneration) of the liver tissue within 6 months to 1 year.

Following the surgical interventions, the patients were directed for postoperative chemotherapy with albendazole and were monitored for 6–60 months. In 3 cases, recurrences (residual echinococcosis) were present.

DISCUSSION

Multiorgan echinococcosis is a challenge in both diagnostic and therapeutical aspect. Moreover, it puts forward numerous questions to preventive epidemiology with regard to its control.

The long asymptomatic course allows overcoming the liver barrier and a free dissemination of the hexant embryo in blood circulation. The better results obtained by CT about the localization, the size and detection of associated forms of echinococcosis are outlined. In children, the examining of multiorgan echinococcosis using ultrasonography was considered more rapid and safer. In most cases, this approach was sufficient for diagnostics, whereas the use of CT gave additional information and was particularly valuable in problematical cases.

The choice of therapy in multiorgan echinococcosis is a challenge to the surgeon. With this regard, several opinions do exist. Some authors are followers of multi-stage operations. According to them, in such interventions the trauma was less and they were easily supported by the patients (Dontigny *et al.*, 1976; Salih *et al.*, 1998). Recently, the supporters of one-stage surgical interventions became more numerous. Petrov *et al.* (2002) and Mihailova (1980) reported good results from one-stage operations in 91 patients, 15 of which with bilateral lung echinococcosis and in 5 cases with multiple echinococcosis of lungs, liver and spleen following sternotomy and sternolaparotomy (Petrov, 1988). According to Kir & Baran (1995) and Kurul *et al.* (2002), the advantage of one-stage operations were lesser expenses and the single intervention.

According to us, the operative strategy and the approach in multiple echinococcosis should be determined in each individual case. We consider that the interventions in echinococcosis of the right lung and the right subphrenical liver echinococcosis should necessarily be in one stage because the most convenient approach for subphrenical echinococcosis is phrenotomy after preliminary thoracotomy.

The one-stage operation that necessitates opening of both pleural and peritoneal cavities is related to a greater intraoperative risk and a more severe postoperative period so it is recommended in young patients in a good general condition. In adult patients with accompanying diseases, the operation should be better done in two stages (Chaouachi *et al.*, 1989).

In literature, there is also a discussion about the type of the surgical intervention. The surgical alternatives are conservative

and radical (resection) approaches (Pichori *et al.*, 1998). Our experience shows that the best results are obtained with echinococcectomy with capitonnage of the residual cavity. In the surgical treatment of lung echinococcosis we agree with the opinion of Burgos *et al.* (1991) about using echinococcectomy with capitonnage as a method of choice. Lung and liver resections are performed when there is no more pericystic parenchyma that was also histologically evidenced (Gulubova & Vodenicharov, 2001). When other abdominal organs are affected by the echinococcus, we prefer the organ-preserving type of surgery.

CONCLUSION

On the basis of analysed data, the associated forms between lung and liver echinococcosis were most commonly encountered and the localizations in more than 2 organs were more rarely seen. The retrospective analysis allowed us to assume that in liver, spleen, right lung and subphrenical liver echinococcosis, it was more convenient to perform an one-stage operation. In bilateral lung echinococcosis, the two-stage intervention at 1–2 month interval is to be preferred.

The prognosis of operated patients was directly related to the complex of health check-ups made by surgeons, paediatricians and parasitologists. The prophylaxis is essential in the control of echinococcosis and its complications and multiorgan localizations. The prophylactic schedule at a national scale should include various activities for public health protection, a task, common for human and veterinary medical specialists. The improvement of the hygienic conditions in meat-processing enterprises and incinerators, systemic treatment against parasites of stray

dogs, strict veterinary and hygienic control on public catering establishments, effective veterinary control on the production, processing and storage of animal foodstuffs are essential in this connection.

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- Paper received 26.01.2004; accepted for publication 15.04.2004
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