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General Diagnostics and Surgical Treatment of Complicated Forms of Liver Echinococcosis

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Abstract: To evaluate approaches to surgical treatment of complicated forms of liver echinococcosis. From 2018 to 2021, surgical treatment of liver echinococcosis was performed in 197 patients, of which 157 (79.7%) had primary echinococcosis, and 40 (20.3%) had recurrent echinococcosis. ... The data on the treatment of 46 (22.8%) patients with complicated echinococcosis are analyzed. 4 patients had associated complications. Among the complicated forms of liver echinococcosis, cyst suppuration is most common. Among the complicated forms of liver echinococcosis, cyst suppuration is most common. Patients with complicated liver echinococcosis should be operated in a specialized institution with modern diagnostic and therapeutic equipment, highly qualified specialists.

Keywords: complicated echinococcosis, surgical treatment, diagnostics, devastation measures

An echinococcal cyst of internal organs (liver, kidneys, spleen, etc.) is usually recognized when a tight-elastic tumor is felt, and damage to the lungs and bones is determined on X-ray images in the form of cystic formations. An echinococcal cyst of internal organs (liver, kidneys, spleen, etc.) is usually recognized when a tight-elastic tumor is felt, and damage to the lungs and bones is determined on X-ray images in the form of cystic formations. Echinococcosis is a parasitic disease endemic to many regions. Echinococcal invasion can affect any part of the body and manifest itself in different ways depending on the stage of development, associated complications, and the patient's body response. Echinococcal disease is widespread in many countries of the world. [1]. According to some estimates, more than 1 million people are currently affected by echinococcosis in the world, while the incidence in some endemic and non-endemic regions differs by more than 200 times. In the last decade, there has been an increase in the incidence of echinococcosis and the expansion of the geographical boundaries of the disease. According to the WHO, out of 50 million people who die every year in the world, more than 16 million are caused by infectious and parasitic diseases. This class of diseases remains the leading one in the structure of causes of death in the 21st century. WHO is working to approve effective strategies to combat echinococcosis by 2018 [2]. At present, the issues of surgical treatment of complicated forms of liver echinococcosis continue to remain controversial and require further study. The frequency of complicated forms of liver echinococcosis reaches 84.6%, and relapses are observed in 54.0%. This is due to a number of factors, which, first of all, include the increased increased migration of the population, the deterioration of the sanitary and epidemiological situation, primarily in regions endemic for echinococcosis, a low level of medical examination of the population and, to a greater extent, its discontinuation, including in risk groups. Echinococcal cysts, especially large ones, not only cause organ dysfunction, but can cause a number of severe complications. These include ascites with liver damage, cyst suppuration, anaphylactic shock, internal bleeding, peritonitis with rupture of the cyst capsule. [3]. Echinococcosis and its complications are characterized by long-term chronic or recurrent course, severe organ and systemic disorders, extensive lesions leading to disability and often death of the patient [2]. One of the most frequent complications of liver echinococcosis is cyst suppuration in 15–34% of patients. There is no consensus among surgeons-hepatologists regarding the choice of methods and methods of surgical treatment for suppuration of echinococcal cysts of the liver. A number of authors [4, 5] use radical interventions with removal of the

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fibrous capsule as a cause of suppuration and recurrence of the disease. Damage to the bile ducts is the second most frequent among complications of liver echinococcosis and occurs in 15.8–20.1% of patients. [6]. Analysis of literature data shows that the issue of surgical treatment of echinococcosis of the liver, complicated by lesions of the bile ducts, continues to be a serious problem of surgery. This is due to the complexity of the diagnosis of biliary tract lesions, the lack of a unified surgical tactics, which leads to a significant number of postoperative complications with a high mortality rate, which reaches 8%. Therefore, it is very important and relevant to develop indications and contraindications for certain surgical interventions for liver echinococcosis complicated by cystobiliary fistulas (CSF) [7]. The most difficult and unresolved issue of surgical treatment of liver echinococcosis, complicated by a breakthrough into the abdominal cavity, remains antiparasitic sanitation of the free abdominal cavity. ... Breakthrough of cysts into the abdominal cavity is one of the leading factors in the development of postoperative relapse [8]. The chance of developing a relapse with this cyst breakthrough into the abdominal cavity increases by 2.8 times [9]. No less severe, although less common (from 3.8 to 12.6%), complication of liver echinococcosis is the breakthrough of the cyst contents into the pleural cavity. In case of calcified echinococcal cysts of the liver (from 1.9 to 9%), the method of eliminating the residual cavity remains unresolved until now [2]. Aseptic necrosis and calcification of the cyst is not the worst outcome of the course of echinococcosis. But nevertheless, this complication, although it leads to the death of the parasite, does not cure the patient, since the mechanical effect of the calcified cyst on the liver tissue and its tubular structures remains, and when an infection (usually endogenous) enters, suppuration of the cyst often occurs [11]. In connection with the above, the high urgency of the issues of diagnosis and treatment of complicated forms of liver echinococcosis is obvious.

The aim of the work is to evaluate approaches to surgical treatment of complicated forms of liver echinococcosis.

Material and methods. For the period from 2018 to 2021, surgical treatment of liver echinococcosis was performed in 197 patients, of which 157 (79.7%) had primary echinococcosis, and 40 (20.3%) had recurrent echinococcosis. The age of the patients ranged from 19 to 81 years.There were 100 men (49.5%) and 102 women (50.5%). A single liver cyst was detected in 1 patient, multiple cysts - in 56. Postoperative complications were noted in 7 patients, 2 of which underwent relaparotomy due to bleeding and suppuration of the residual cavity.A retrospective analysis of the results of preoperative examination, intraoperative ultrasound (US) and treatment of 46 (22.8%) patients with complicated echinococcosis - with liver damage or in combination with other localizations (in 8 patients - combined complications) was carried out. A single liver cyst was found in 36 patients, and multiple cysts in 10. Breakthrough of the cyst into adjacent organs was in 6 patients, of which 2 - a breakthrough into the pleural cavity, 2 - the cyst broke into the bile ducts, and 2 - into the greater omentum. All patients underwent surgery in our clinic. All patients underwent complex clinical, laboratory and instrumental examinations of the abdominal organs, including ultrasound, computed tomography (CT), multispiral computed tomography (MSCT), magnetic resonance imaging (MRI), endoscopic fibrogastroduodenoscopy (EFGDS). General clinical examination was carried out according to the standard method. Laboratory studies included general blood and urine analysis, determination of the level of total bilirubin and its fractions, total protein and its fractions, amylase, sugar, urea, creatinine, ALT, AST, thymol test, coagulogram.

Instrumental and laboratory diagnostics of parasitic liver disease is often a difficult task, which is associated with its asymptomatic course, especially in the early period of development, when the cyst is located deep in the organ. According to various studies, the sensitivity of ultrasound in detecting echinococcosis is 88–98%, and the specificity is 95–100%. Echinococcal cyst has several characteristic ultrasound signs. This is a hypoechoic (anechoic) formation, surrounded by a "chitinous membrane" - a hyperechoic structure, on the inner surface of which

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multiple hyperechoic inclusions are often determined, the so-called "hydatid sand", represented by the embryonic elements of echinococcus. Several ultrasound signs, pathogenic for an echinococcal cyst, have been identified: 1) the cyst itself is a hypoechoic (anechoic) formation; 2) chitinous membrane - a hyperechoic structure, often having a hypoechoic layer between the cuticular and germinal layers; 3) "hydatid sand" at the bottom of the cyst (embryonic elements of echinococcus); 4) fibrous capsule - hyperechoic ¬ rim, separated from the chitinous membrane by a hypoechoic layer, which is a lymphatic "gap";5) exfoliated chitinous membrane - a tape hyperechoic structure in the lumen of the cyst; daughter cysts are additional cystic inclusions [1].

Primary echinococcosis of the liver with complications was in 37 (80.4%) of 46 patients, with recurrent and residual echinococcal cyst of the liver - in 9 (19.6%). The most frequent complication was suppuration of the echinococcal cyst - in 17 (37%) cases, destruction of the fibrous capsule with the opening of bile fistulas in its lumen - in 16 (34.8%), calcification of the fibrous capsule - in 3 (6.5%), breakthrough into the free abdominal cavity - in 4.3%, combined complications - in 8 (17.4%), of which echinococcal cyst breakthrough into the biliary tract - in 2 patients and a breakthrough into the pleural cavity - in 2 patients.

Results. Traditional operations were performed on 46 patients. Of these, 26 (56.5%) underwent closed echinococcectomy, and 12 - with the use of pericystectomy. In 14 (30.4%) cases, a semi-closed echinococcectomy was performed, of which 2 - with the use of pericystectomy. In 6 patients the operation was radical, including in 1 - complete pericystectomy, in 4 - marginal liver resection and in 1 - complete removal of the cyst together with the fibrous capsule without opening it. In 2 patients there was a breakthrough of an echinococcal cyst into the bile ducts with the development of obstructive jaundice, cholangitis and fever. He performed echinococcectomy in combination with choledochotomy and drainage of the common bile duct along the Keru. Two patients had a cyst breakthrough into the right pleural cavity; they underwent lower lobectomy. 7 patients underwent simultaneous cholecystectomy, 1 - echinococcectomy from the ovary. According to the intraoperative assessment, the sizes of complicated echinococcal cysts varied from 1 to 20 cm (on average, 7 cm). Patients with multiple liver cysts during surgery used intraoperative ultrasound, comparing its data with the preoperative results of MSCT, especially with the intrahepatic location of echinococcal cysts, which were localized in the right lobe of the liver and had a diameter of less than 5 cm All patients with the aim of eliminating the remaining protoscolexes and acephalocysts carried out devastation measures. The residual cavity was treated with 70% alcohol and 5% iodine tincture. In 14 patients, a PVC drainage tube was inserted into the residual cavity through a counteropening. Detected bile fistulas with sizes from 0.1 to 0.5 cm were sutured with capron thread. Residual cavities were washed through drainage tubes with Dekasan solution with an exposure of 3-5 min. The drains were removed 15–20 days after the control USS. In the postoperative period, 8 patients showed intoxication phenomena in the form of hyperthermia, leukocytosis, which were stopped by symptomatic therapy. Three patients had exudative pleurisy, they underwent pleural puncture with the administration of antibiotics and breathing exercises with a positive effect. One patient, due to suppuration of the residual cavity, underwent relaparotomy, sanitation of the residual cavity with drainage. Subsequently, fistulography was performed, the drainage was removed. , drainage is removed. 34 (74.5%) of 46 patients underwent operations with the maximum possible removal of the free part of the fibrous capsule. During the removal of the echinococcal cyst, 8 patients underwent various options for the marginal resection of the liver. In 1 of them, typical liver resection was combined with partial pericystectomy from the other lobe of the liver; in 1, complete removal of the cyst together with the fibrous capsule without opening it. 34 (74.5%) of 46 patients underwent operations with the maximum possible removal of the free part of the fibrous capsule. During the removal of the echinococcal cyst, 8 patients underwent various options for the marginal resection of the liver. In 1 of them, typical liver resection was

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Volume: 03 Issue: 9 |Sep 2021

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In order to eliminate the remaining protoscolexes and acephalocysts, all patients underwent de-vastation measures. The residual cavity was treated with 70% alcohol and 5% iodine tincture. In 14 patients, a PVC drainage tube was inserted into the residual cavity through a counteropening. Detected bile fistulas with sizes from 0.1 to 0.5 cm were sutured with capron thread. Residual cavities were washed through drainage tubes with Dekasan solution with an exposure of 3-5 min. The drains were removed 15–20 days after the control USS.

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Discussion. Reoperations for patients who had previously been operated on in other institutions, according to the basic principles of surgical approaches, were similar to the primary ones, but differed in technical difficulties, which was associated with the adhesive process in the liver, abdominal cavity and pelvic cavity. Surgical treatment for most of them consisted in echinococcectomy from the liver

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Volume: 03 Issue: 9 |Sep 2021

and, if possible, by the method of ideal echinococcectomy from the abdominal cavity. The majority of patients had an uncomplicated postoperative course. The most common suppuration of echinococcal cysts, and breakthroughs of the cyst into the bile ducts, abdominal and pleural cavities were less common. In those patients, in whom the operation was performed in specialized regional institutions, complications were rare. Generally, patients with complicated recurrent echinococcosis of the liver were operated on in regional hospitals. Moreover, most of these patients practically did not undergo full-fledged devastation therapy.Sometimes several members from the same family turned to us about echinococcosis, which indicates the need for dispensary examination of all family members Moreover, most of these patients practically did not undergo full-fledged devastation therapy.Sometimes several members from the same family turned to us about echinococcosis, which indicates the need for dispensary examination of all family members.

Conclusions.

1. Among the complicated forms of echinococcosis of the liver, the most common is suppuration of the cyst. Much less often, there is a breakthrough of the cyst into the bile ducts, abdominal and pleural cavities.

2. Patients with complicated liver echinococcosis should be operated in a specialized institution with modern diagnostic and therapeutic equipment, highly qualified specialists. With multiple cysts and small cysts, intraoperative instrumental diagnostics using ultrasound sensors is required.

3. In order to prevent the recurrence of the disease, a full-fledged devastation therapy is required.

4. It is advisable to conduct a dispensary examination of family members of patients operated on for echinococcosis.

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Volume: 03 Issue: 9 |Sep 2021

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