



The Algorithm of Actions Determining Surgical Tactics in Disseminated Echinococcosis of the Abdominal Cavity

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Abstract: The relevance of the problem. According to WHO estimates, more than a million people get sick with echinococcosis every year in the world, which in 2015 led to 19,300 deaths worldwide. Every year, the costs of treating patients with echinococcosis, as well as damage to livestock, amount to several billion dollars [8]. To date, echinococcosis is called helminthological cancer of the XXI century, which determined the WHO strategy to include echinococcosis in the list of diseases requiring priority elimination [2;7]. The frequency of disseminated echinococcosis (DE) of the abdominal cavity ranges from 5.9 to 30%, with 90% of all multiple lesions occurring in the abdominal cavity and its organs [3]. Performing radical operations in such conditions is possible only for 25-30% of patients, and postoperative mortality reaches 7-18% [4; 6].

Material and methods of research. The Department of Surgery on the basis of the Department of Surgery of the AndGosMI clinic has experience in the treatment of 714 patients with echinococcosis of various localization operated for the period from 2011 to 2022, including 87 cases with DE of abdominal organs, which are conditionally divided into 2 groups:-

comparison group – 41 (47.1%) patients, from 2011 to 2017 (retrospective study);

➤ the main group - 46 (52.9%) who were subject to surgical treatment adhering to optimized surgical tactics from 2018 to 2022 (prospective study).

Disseminated echinococcosis of the abdominal organs is the most severe form of complication of the disease, manifested by primary, secondary or tertiary contamination of the host organ (mainly liver) and abdominal organs with germ elements of the parasite, as well as manifested by more than three cysts.

The incidence of disseminated echinococcosis of the abdominal cavity was 57 (65.5%) in men and 30 (34.5%) in women, i.e. the ratio was 1:1.9 – (p <0.001). The main contingent of operated patients consisted of persons of the most able-bodied age - 66 (75.9%), which determines the extreme urgency of this problem. Diagnosis in 21 (24.1%) cases in old age also indicates the social significance of this problem.

Among residents of the north-western region of Andijan region, the incidence was 49 (56.3%), which was significantly higher than among residents of the south-eastern regions – 29 (33.3%) – (p <0.01). The analysis of climatic conditions showed that the average climatic indicators in the north-western region was 38.1°, while in the south-eastern region – 36.8°, i.e. the temperature difference of 1.3° also had a statistically significant effect on the prevalence of this disease – (p <0.001).

Morbidity among rural residents was noted in 77 (88.5%), in urban – 10 (11.5%) – (p <0.001). The data obtained confirm the close connection of human living conditions with the peculiarities of the

life cycle of the parasite, where, for a number of reasons, the risk of contact is significantly high. In general, with DE of the abdominal organs, the local form was noted in 29 (33.3%) cases, common - in 34 (39.1%) cases and generalized – in 24 (27.6%) – ($p < 0.01$).

The presence of 2 cysts in the comparison group was found only in 7 (17.1%) patients and in the main group - in 9 (19.6%). The most frequently diagnosed in the compared groups were 3 – 4 – 5 and more EC, which in general amounted to 34 (82.9%) and 37 (80.4%) patients, respectively – ($p < 0.01$).

In the comparison group, uncomplicated course of the disease was diagnosed in 31 (75.6%) patients, and in the main group – 22 (47.8%). At the same time, in the comparison group, a complicated course was found in 10 (24.4%) patients and in the main group – in 24 (52.2%), which indicates the current trend towards an increase in complicated forms of this disease ($p < 0.01$).

In the comparison group, primary disseminated echinococcosis was diagnosed in 20 (48.8%) patients, secondary disseminated - in 10 (24.4%), tertiary disseminated - in 11 (26.8%) patients. In the main group, primary disseminated echinococcosis was diagnosed in 22 (47.8%) patients, secondary disseminated - in 11 (23.9%), tertiary disseminated - in 13 (28.3%) patients. The relatively high frequency of tertiary dissemination is alarming, which in the comparison group was 11 (26.8%) patients and in the main group – 13 (28.3%), i.e. more than $\frac{1}{4}$ of cases – ($p < 0.01$).

DE of abdominal organs was diagnosed in the first 6 months in the comparison group in 16 (39.0%) cases and in the main group – in 25 (54.4%). Within 6 months – 2 years, 16 (39.0%) and 17 (37.0%) cases were diagnosed. It is alarming when patients with disseminated echinococcosis of the abdominal organs continued to suffer for 3-4 years or more, which amounted to 9 (22.0%) and 4 (8.7%), respectively – ($p < 0.01$). The clinic of DE, most often (64.7%) was characterized by further progression of complications.

In the diagnosis, general clinical methods (complaints, anamnesis, objective examination) were used in combination with X-ray, ultrasound (ultrasound) and computed tomography (CT), magnetic resonance imaging (MRI).

Changes in biochemical parameters, in particular, urea nitrogen, ACT and ALT, fibrinogen and bilirubin were detected in the studied patients were statistically significantly higher compared to healthy individuals, which indicated liver functional disorders and a correlation with the size of the parasitic cyst – ($p < 0.01$). At the same time, the study of blood biochemical parameters in the postoperative period showed the restoration of its indicators close to the healthy group, which was one of the criteria for the effectiveness of the treatment – ($p < 0.01$). Serological diagnosis of patients with DE was based on the detection of antibodies (IgG) in the blood serum of the infected, which are specific markers of parasitic infection. In patients with DE, IgG immunoglobulins were elevated in almost all cases in the preoperative period.

In order to determine the statistical significance of the data obtained, χ^2 and p were calculated by the Pearson criterion, as well as by T-Student.

Results and their discussion. We have developed an improved algorithm of actions that made it possible to optimize surgical tactics for DE of abdominal organs [9], according to which, in all cases, chemotherapy, immunotherapy, hepatoprotectors and laser therapy were included in preoperative preparation. This algorithm is used by us in order to optimize the surgical tactics of treating DE of the abdominal organs.

According to this algorithm, upon admission of patients with DE of abdominal organs, depending on the diameter: with a diameter of echinococcal cysts up to 5 cm, therapeutic antiparasitic chemotherapy is performed, with an EC diameter of 6-10, 11-20 cm, surgery is decided, in all cases, preoperative preparation is carried out, including preventive antiparasitic chemotherapy, immunotherapy, hepatoprotectors. Depending on the localization of EC in the liver and on the abdominal organs, the most adequate access is chosen: when the process (or parasite) is localized in the left lobe of the liver (II-III-IV) or the acute angle of the costal arch, we perform an upper median incision with dissection of the round and sickle ligaments of the liver.

With the localization of cysts located closer to the anterior -lower surface of the liver, oblique subcostal access is convenient while preserving the integrity of the right rectus abdominis muscle. If it was impossible to act freely with cysts of the diaphragmatic surface or if all segments of the liver were affected, this incision was widened by Fedorov (oblique right subcostal access) or an upper-median incision with dissection of the round and sickle ligaments of the liver. With simultaneous damage to the segments of the liver and spleen, preference is given to an upper-median incision using a Segal retractor. In case of damage to the segments of the liver and pelvic organs, we perform separate access (upper-lower median, 5 cm of the abdominal wall remains above and below the navel) or separate (oblique right hypochondrium + lower median).

This algorithm in most cases allows you to choose tactics depending on the diameter, as well as choose the most optimal surgical access depending on the affected segment of the liver, neighboring organs and pelvic organs. After performing surgery, preventive postoperative chemotherapy (albendazole, mebendazole, zentel, metronidazole, furazolidone under the control of biochemical blood tests) is performed in all cases, in combination with hepatoprotectors, immunological correction.

Albendazol was given 12 mg / kg per day before surgery, and starting from 3 days after surgery - 10 mg / kg per day for 28 days. With dissemination, 12 mg 2 times a day for 15 days; then 1 time a day for another 15 days in combination with essentielle, 1 capsule 3 times a day. 3 - 4 courses were carried out (28 days of taking the drug and 15 days of a break). To eliminate complications in the form of suppuration of the residual cavity, accumulation of fluid in it due to bile fistulas, blood, abscess,

According to the proposed algorithm, preoperative preparation included chemotherapy, immunotherapy, hepatoprotectors chemotherapy (albendazole, trichopol, furazolidone), immunotherapy – (immunomodulin), hepatoprotectors (Hepamerco, Essentiale).

After laparotomy, revision of the abdominal organs, the localization and size of cysts, their number were determined, and the relationship of the cyst with the liver tissue and neighboring organs was clarified, subsequently, the cyst was separated from adhesions and adhesions with ligation of bleeding vessels by acute and blunt ways. This stage of the operation was performed precisely, taking into account the probability of iatrogenic injury of the cyst shell, and the contamination of the parasite with scolex.

First of all, cysts located in other organs are removed, and then cysts that violate the functions of organs, and subsequently echinococcal cysts located in hard-to-reach places. Cysts located on the mesentery of the small, large intestine and parietal peritoneum, mainly with a diameter of 5-6 cm, were punctured, then the contents were aspirated, the chitin shell was removed, then multicomponent treatment was performed with electrocoagulation of the inner surface of the fibrous capsule. To prevent contamination, the abdominal cavity should be separated from the echinococcal cyst with gauze swabs soaked in a hypertonic solution (20-30%) of sodium chloride.

For uncomplicated cysts with a diameter of 5-7 cm, closed EE and tamponing of OP CP are preferred; for large and complicated ones, external drainage according to the type of "flow system". With EC diameters from 6 to 20 cm, an open echinococectomy was performed with drainage of the OP according to the type of "flow system".

In some cases, with an EC diameter of 6-10 cm, along with an open one, a semi-closed EE was performed with Askerkhanov tamponade of the residual cavity with additional drainage or CP tamponade with localization in the II-III-IV-V segments of the liver with additional drainage. With an EC diameter of 5-10 cm, closed EE and FC invagination were performed with the edges screwed in and capitonage with the imposition of immersion floor seams with catgut into the depths of the cavity.

At the marginal location of the EC, regardless of its diameter, IEE was performed in the form of FC peeling; marginal resection with FC removal and hemihepatectomy with damage to the entire or almost the entire lobe of the liver. OP after EE is processed in the following sequence: 10% sodium

chloride solution, then - a hot solution of furacillin heated to 700, 700 alcohol, 5% iodine tincture. The edge of the excised fibrous capsule was coagulated to completely eliminate scolexes and acephalocytes [1]. In the postoperative period, antiparasitic chemotherapy, immunotherapy, hepatoprotectors were also performed (albendazole 400 mg x 2 times a day, trichopol 1 tab. x 3 times a day, furazolidone 1 tab. x 3 times a day for 28 days of 3 courses with a 15-day break), immunotherapy - immunomodulin 1.0 v/m 15 days, hepatoprotector-HepaMerc–10 mg / 15 days (antiparasitic principle).

Thus, the developed comprehensive approach to the surgical treatment of DE of the abdominal cavity organs, based on the combination of the proposed methods of treatment and elimination of OP, as well as conservative rehabilitation measures, allowed to improve these parameters, as well as to increase the coefficient in relation to the group of healthy individuals from 51.9-74.0% to 67.7-88.8% ($P < 0.05$).

Conclusion. Thus, in the case of DE of the abdominal organs, they adhered to the refined concept of dissemination of echinococcosis of the abdominal organs, as well as the developed algorithm of actions, optimized surgical tactics. As a result, the frequency of general complications decreased from 4 (9.7%) to 1 (2.2%) – an improvement of 7.5%, complications directly related to the EE of the abdominal cavity from 14 (34.1%) to 3 (6.5%), as well as to improve excellent and good results from 9 (22.0%) to 37 (79.4%), to reduce the frequency of satisfactory results from 12 (29.3%) to 6 (13.0%) and poor – from 11 (26.8%) to 2 (4.3%), which, in general, made it possible to achieve the goal of the study.

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