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IMPROVEMENT OF TACTICS AND DIAGNOSTICS IN SURGICAL TREATMENT ECHINOCOCCOSIS OF THE LIVER WITH THE INTRODUCTION OF OUR DEVELOPMENT

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ABSTRACT

Echinococcosis is a serious medical problem in many countries of the world, where large endemic foci remain and an increase in the number of cases is observed. The disease affects almost all organs and systems of the body.

Despite the improvement in the diagnosis of the disease, the frequency of unsatisfactory results of treatment and postoperative complications exceeds 20%, and mortality varies between 1-2%, depending on the nature of the course of the disease. One of the unfavorable moments is the fact that, despite the high antiparasitic efficacy of the agents used for intraoperative treatment of the residual liver cavity (ARC) (in particular, 100% glycerol), the analysis of long-term results shows that the proportion of EP recurrence has not changed much. Echinococcectomy, especially in complicated forms of the disease and giant cysts, is accompanied by suppuration of the residual cavity and the formation of bile-purulent fistulas.

Key words: Echinococcectomy, treatment, sodium hypochlorite, hemostatic therapy, pericystectomy

INTRODUCTION

Echinococcosis is a serious medical problem in many countries of the world, where large endemic foci remain and an increase in the number of cases is observed. The disease affects almost all organs and systems of the body [15]. Despite the improvement in the diagnosis of the disease, the frequency of unsatisfactory treatment results and postoperative complications exceeds 20%, and

the mortality rate ranges from 1-2%, depending on the nature of the course of the disease. One of the unfavorable moments is the fact that, despite the high antiparasitic efficacy of the agents used for intraoperative treatment of the residual liver cavity (RLC) (in particular, 100% glycerol), the analysis of long-term results shows that the proportion of EP recurrence has not changed much [6, 16, 17]. Echinococectomy, especially in complicated forms of the disease and giant cysts, is accompanied by suppuration of the residual cavity and the formation of bile-purulent fistulas [12]. Taking into account the above, the goal of the study was set before us, which was to improve the results of treatment of patients with EP by developing a differentiated approach to surgical treatment and improving the tactical and technical aspects of treatment.

MATERIAL AND RESEARCH METHODS

This work is based on the analysis of the results of examination and treatment of 359 patients with various forms of EP. All patients were divided into two groups: control - 243 patients who were admitted in the period from 2013 to 2016 and the main one - 116 patients who were hospitalized in 2017-2019. Such a division is associated with different approaches to treatment as the treatment and tactical measures are developed and improved.

In the control group, 55 patients had a complicated course of the disease, 188 had an uncomplicated course. 236 patients underwent surgical treatment in a planned manner after preliminary examination and preoperative preparation; 1 patient with a breakthrough of an echinococcal cyst (EC) into the pleural cavity was operated on in an emergency-delayed manner after draining the pleural cavity, 5 patients with a breakthrough into the bile ducts and moderate obstructive jaundice were also operated on an emergency-delayed basis after RPH with EPST; 1 patient underwent emergency surgery for EC breakthrough into the free abdominal cavity.

The overall incidence of postoperative complications is 18.9%. Early surgical complications were noted in 9.9% of them. In 8 (3.3%) cases, seromas of postoperative wounds developed, in 5 (2.1%) patients, suppuration of postoperative wounds was noted, in 4 (1.6%) cases in the postoperative period, bile leakage along the drainage from the abdominal cavity was noted, in 3 (1.2%) patients in the postoperative period developed an external biliary fistula, in 2 (0.8%) cases biliary peritonitis developed (1 patient was fatal), in 1 (0.4%) patient in the postoperative period, a subphrenic abscess, in 1 (0.4%) observation a clinic of early adhesive intestinal obstruction developed.

General complications developed in 5.8% of cases in the postoperative period. Reactive pleurisy developed in 5 (2.1%) cases, pneumonia developed in 7 (2.9%)

patients, acute myocardial infarction was noted in 1 (0.4%) patient, which caused the patient's death, in 1 (0.4%) case, pulmonary embolism occurred, which was fatal.

The incidence of late surgical complications was 3.3%. In 4 (1.6%) patients, residual liver cavity was diagnosed, in 2 (0.8%) cases, residual cavity suppuration was noted, in 1 (0.4%) patient postoperative ventral hernia developed, in 1 (0.4%) the case developed acute adhesive intestinal obstruction.

Thus, the analysis of the clinical results of treatment of patients in the control group showed that the incidence of postoperative complications is quite high (18.9%). The mortality rate was 1.2%.

We carried out a critical analysis of the postoperative complications that developed in the control group, the purpose of which was to identify the existing deficiencies and eliminate them. As the analysis of the results has shown, one of the main reasons for the development of postoperative complications is inadequate preparation of the surgeon for surgery, inadequate intraoperative treatment of EC, low antiparasitic efficacy of the agents used to treat the residual cavity.

To clarify the role of microbial flora on the results of treatment, we carried out bacteriological inoculations. These studies were carried out before (at the time of EC puncture and receiving echinococcal fluid) and after treatment with AKI (after treatment with AKI before capitonage). The analysis of the bacterial contamination showed that after the treatment with the AIP, the level of both aerobic and anaerobic cultures does not particularly decrease from the initial level. The remaining bacterial focus contributes to the development of various infectious complications.

Analysis of a fatal case against the background of the development of biliary peritonitis showed that suturing of large fistulas does not allow achieving adequate tightness, and when the latter is reached, the risk of developing insolvency is high.

The analysis of the results of treatment of patients in the control group showed that it is necessary to continue the scientific search in terms of substantiating a differentiated approach to the choice of a surgical team depending on the severity of the forthcoming operation and the preparedness of the surgeon, it is necessary to improve the technical aspects of surgical interventions for giant cysts located in the posterior segments of the liver. to modernize approaches to the elimination of large biliary fistulas, to develop new ways to achieve intraoperative aparasitism with minimal aggression on the liver tissue.

We have developed a system for assessing the severity of surgical interventions for EP. This scale included 7 main criteria: the number of cysts; the presence of a combined lesion of other organs; localization of cysts in liver

segments; features of the localization of cysts; the presence of EP complications; diameter of cysts; concomitant pathology that affects the technical aspects of surgery. Each criterion was conventionally divided into three grades: light, medium and heavy. Depending on the combination of various grades of severity criteria, all operations for EP were divided into three degrees. A mild degree of surgery was considered if there were "light" criteria of severity or their combination with at least one criterion of "moderate" severity; moderate severity - in the presence of "mild" criteria or their combination with criteria of "moderate" severity or a combination of "light" and "medium" criteria of severity with at least one criterion of "severe" degree; severe severity - with various combinations of "light" and "medium" in combination with at least 2 "severe" criteria of severity.

All this contributed to the fact that, based on a retrospective analysis of the results of the control group, we created a system for quantitative assessment of preparedness - the rating of the surgeon. With an overall rating of up to 3.4 points, the surgeon does not have the right to perform the operation on his own; with a rating from 3.5 to 4.3 points, a surgeon can independently perform operations of a "mild" degree and operations of a "moderate" degree together with a surgeon with a higher rating; with a rating from 4.4 to 10.5 points, a surgeon can independently perform "moderate" operations with a surgeon of lower professional qualifications, and with a surgeon with a higher rating - "heavy" operations, and, finally, a surgeon with a rating of 10.6 points and more can perform any surgical interventions for EP.

With a biliary fistula diameter of 5 mm or more, in the presence of inflammation, infiltration or calcification of tissues around the fistula, with a central localization of the fistula, we proposed a new method for its closure. After the conventional echinococcectomy, a trapezoidal flap was cut from the removed fibrous capsule. On the wall of the fistulous opening, along its circumference, at a distance of 2-3 mm from each other, sutures were applied, to which the top of the flap was sewn. When tightening the sutures, the fistulous opening was closed with a flap in the form of an airtight patch, which ensured sufficient reliability of the sutures.

For intraoperative treatment of the cavity of the removed EC, we proposed to use the EVR of sodium hypochlorite. To study the antiparasitic effect of EVR of sodium hypochlorite, we carried out screening studies in the concentration range from 0.1 to 0.8% with a duration of treatment from 1 to 30 minutes. Studies have shown that the highest antiparasitic effect is possessed by treatment with 0.8% solution for 4 minutes, 0.4 and 0.6% solutions for 5 minutes. Conducted morphological studies of the chitinous and fibrous membranes, liver parenchyma

showed that the safest treatment is 0.4% EVR of sodium hypochlorite for 5 minutes.

Taking into account the above points, we proposed a tactic of surgical treatment of EP, which consisted in a differentiated approach to the choice of a surgical team, the use of our proposed technical development for echinococcectomy, according to the indications, intraoperative treatment of EVR of sodium hypochlorite, which, along with the antiparasitic effect, has a high antimicrobial efficacy, which becomes especially relevant for complicated EC, in particular cysts suppuration.

The proposed treatment tactics were applied in 116 patients of the main group. Of these, 24 had a complicated course of the disease, 92 had an uncomplicated course.

After examination and preoperative preparation, 112 patients underwent surgical treatment in a planned manner; 3 patients with a breakthrough into the bile ducts and symptoms of obstructive jaundice were operated on in an urgent-delayed manner after RPCH with EPST; 1 patient underwent emergency surgery for EC breakthrough into the free abdominal cavity.

According to our proposed system, in 61 ($52.6 \pm 4.6\%$) cases, surgical intervention was assessed as "light", in 36 ($31.0 \pm 4.3\%$) cases - as "moderate" and in 19 ($16.4 \pm 3.4\%$) - as "heavy". In the control group, respectively, there were 131 ($53.9 \pm 3.2\%$; $t = 0.235$), 74 ($30.5 \pm 3.0\%$; $t = 0.112$) and 38 ($15.6 \pm 2.3\%$; $t = 0.179$) observations. The absence of a statistically significant difference in the frequency of surgical interventions in terms of their severity in clinical groups indicates the representativeness of the comparative studies.

The overall incidence of early postoperative surgical complications was 4.3%. The most frequently observed seroma of the postoperative wound, the frequency of which was 1.7% (2 cases), in 1 (0.9%) patient, suppuration of the postoperative wound was noted, in 1 (0.9%) observation, bile leakage was noted. In 1 (0.9%) case, on the 2nd day after echinococcectomy of the liver and dissection of adhesions with recurrent echinococcosis, bleeding from the abdominal cavity was noted. Conservative hemostatic therapy was ineffective. The patient was re-operated. In a comparative aspect, the frequency of early surgical complications in the main group significantly decreased relative to the control group from $9.9 \pm 1.9\%$ to $4.3 \pm 1.9\%$ ($t = 2.072$).

The total incidence of general complications in the postoperative period in the main group was 4.3%. In 4 (3.4%) cases, the development of postoperative congestive pneumonia was noted, in 1 (0.9%) patient against the background of the existing ischemic heart disease in the early postoperative period, the development

of acute myocardial infarction was noted. In a comparative aspect, there were no special differences between the clinical groups, the frequency of general postoperative complications in the main group slightly decreased relative to the control group from $5.8 \pm 1.5\%$ to $4.3 \pm 1.9\%$ ($t = 0.603$).

In the late postoperative period, the complication rate was 1.7%. In 1 (0.9%) patient with giant EP, complicated with a breakthrough into the abdominal cavity, a residual liver cavity developed in the postoperative period, in 1 (0.9%) case, 1 year after the operation, the patient developed a ventral hernia. There were no cases of relapse of the disease. In a comparative aspect, there was a statistically insignificant decrease in late postoperative complications in the main group relative to the control group from $3.3 \pm 1.7\%$ to $1.7 \pm 1.2\%$. There were no lethal cases in the main group, but in the comparative aspect with the control group, where the mortality rate was $1.2 \pm 0.7\%$, there was no statistically significant difference ($t = 1.743$).

DISCUSSION OF THE RESULTS

The analysis of the clinical results of the treatment of patients in the control group showed that the incidence of postoperative complications was 18.9%, the mortality rate was 1.2%. The results of treatment of patients with EPI obtained by us are in good agreement with the data of R.M. Agaev. (2001), Vafina A.Z. (2002), Juravleva V.A. (2004), who indicate that the incidence of postoperative complications ranges from 4.8% to 9.7%, with an overall mortality rate reaching up to 1% [1, 3, 5]. It should be noted that the relatively high incidence of postoperative complications is due to tactical approaches to the treatment of EP. These authors in the treatment of this disease adhere to resection methods of treatment (pericystectomy, economical liver resections, anatomical liver resections). Many domestic researchers (Akhmedov R.M., 2003; Karimov Sh.I., 2006), as well as us, consider echinococcectomy to be the main method of treatment with the implementation of various methods of capitonage of the OPP. The results they obtained are approximately identical to ours (the incidence of postoperative complications ranges from 5.2 to 5.9%, mortality - from 0.6 to 0.9%) [2, 7].

As shown in his research Lebedev N.V. (2007), the high incidence of postoperative complications is due to the difficulties in diagnosing complicated forms of the disease, the lack of objective criteria that determine the severity of the forthcoming operation, the presence of errors and complications in the surgical treatment of EP [10]. Considering this fact, V.S. (1991) believes that improving the results of surgical treatment largely depends on an adequate approach to assessing

the severity of patients' condition, a rating approach to surgical intervention [9, 11].

Gaybatov S.P. (2006), in their studies, proved a direct dependence of the frequency of infectious complications from AKI on the level of microbial contamination. The incidence of suppuration of AKI with bacterial contamination of echinococcal fluid in 103-104 CFU / ml is 5.4%, and with a contamination of 107-108 CFU / ml - 64.8% [4]. In complicated forms of EP, intraoperative treatment of AKI is advisable. In recent years, electrolysis aqueous solutions obtained by electrochemical oxidation, in particular sodium hypochlorite, have found increasing application in medicine. As shown by the research of E.A. Petrosyan. (1991), during the electrolysis of blood, sodium hypochlorite is formed as an intermediate product, which has a pronounced antibacterial effect; a sharp increase in the sensitivity of bacteria to antibiotics; disinfecting action [13].

We have developed quantitative criteria for assessing the rating of a surgeon, adequate methods for assessing the severity of surgical interventions for EP, and by conducting statistical studies, we have determined whether a particular surgical team performs various surgical interventions depending on the severity of the upcoming operation. For the intraoperative treatment of OPP, we have chosen the EVR of sodium hypochlorite, which has a number of properties, which does not satisfy our requirements. Our experimental studies made it possible to reveal the antiparasitic properties of the EVR of sodium hypochlorite, once again prove the high antimicrobial efficacy of this antiseptic, and the morphological studies carried out proved its safety. Of course, our studies do not completely solve the problem of surgical treatment of EP. Currently, it is necessary to continue the search for ways to improve the results of surgical treatment of echinococcosis. It is necessary to improve the methods of early diagnosis of the disease, prevention of recurrence of the disease, reduction of the frequency of complicated forms, the existing accesses to various segments of the liver need technical improvement, it is necessary to search for means that allow to achieve high aparasity and reduce microbial contamination with minimal aggression on liver tissue, need to be developed. medical standards, the use of video endoscopic interventions for EP.

CONCLUSION

1. With traditional treatment of EP, the overall incidence of postoperative complications was 18.9%, mortality - 1.2%. The analysis revealed that the unsatisfactory results of treatment were due to the lack of a differentiated approach to the choice of the surgical team depending on the severity of the forthcoming

operation and the preparedness of the surgeon, the presence of technical shortcomings of surgical interventions with a high risk of developing incompetence of the sutures of sutured large biliary fistulas, the need to develop new ways to achieve intraoperative aseptism. with minimal aggression on liver tissue.

2. Determination of the level of preparedness of the surgeon allows for a differentiated approach to the choice of the surgical team, depending on the severity of the forthcoming operation. With an overall rating of up to 3.4 points, the surgeon does not have the right to perform the operation on his own; with a rating from 3.5 to 4.3 points, a surgeon can independently perform operations of a "mild" degree and operations of a "moderate" degree together with a surgeon with a higher rating; with a rating from 4.4 to 10.5 points, a surgeon can independently perform "moderate" operations with a surgeon of lower professional qualifications, and with a surgeon with a higher rating - "heavy" operations, and, finally, a surgeon with a rating of 10.6 points and more can perform any surgical interventions for EP.

3. The proposed complex of therapeutic measures for EP allows a differentiated approach to the choice of the surgical team depending on the severity of the surgical intervention, to increase the efficiency of intraoperative treatment of the residual cavity, to improve the technical aspects of the surgical intervention and to reduce the incidence of postoperative complications from 18.9% to 10.3% , postoperative mortality - from 1.2% to 0%.

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