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CLINICAL AND MORPHOLOGICAL CHARACTERISTICS OF RECURRENT LIVER ECHINOCOCCOSIS

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Annotation: The article studies the morphological characteristics of recurrent liver echinococcosis.To determine the morphological modifications of echinococcosis, we analyzed the results of instrumental research methods (ultrasound, CT) and studied the surgical material in 252 patients who were operated on in the Surgery Department No. 1 of the multidisciplinary clinic of Samara State Medical University. The analysis of possible causes of recurrent liver echinococcosis is given depending on the morphological modifications of echinococcal cysts and the results of surgical treatment are presented. It was revealed that with multiple echinococcal liver lesions, which were found in 167 (66.2%) patients, in some cases a combination of various modifications of echinococcosis was observed. An association was mainly found between such forms as echinococcus hominis and echinococcus veterinorum.

Abstract: The article studied the morphological characteristics of recurrent liver echinococcosis. To determine the morphological modifications of echinococcosis, we analyzed the results of instrumental research methods (ultrasound, CT) and studied the surgical material in 252 patients who were operated on at the Department of Surgery No. 1 of the multidisciplinary clinic of the Samarkand State Medical University. An analysis of the possible causes of recurrent liver echinococcosis depending on the morphological modifications of echinococcal cysts is given, and the results of surgical treatment are presented. It was revealed that in case of multiple echinococcosis lesions of the liver, which was found in 167 (66.2%) patients, in some cases a combination of various modifications of echinococcosis was observed. The association between such forms as echinococcus hominis and echinococcus veterinorum was predominantly revealed.

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Keywords:echinococcus hominis, echinococcus veterinorum, brood capsule, hydatid fluid, "fish scales", "multi-chamber" echinococcosis.

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Text of the article:

According to the World Health Organization, more than 1 million people worldwide are affected by echinococcosis, and among various organs and tissues, the process is localized in the liver in 44-84% of cases [5, 6, 7]. Due to the lack of a downward trend in the number of patients and the existence of endemic regions where the incidence rate varies from 1.2 to 9.0 per 100,000 population, this parasitic disease continues to be a serious medical and social problem [4]. At the present stage, the diagnosis of liver echinococcosis (LE) does not present significant difficulties, largely due to the emergence of non-invasive visualization methods, the information content of the combined use of which reaches 95-100% [1]. However, the lack of alertness regarding echinococcosis contributes to late diagnosis, and, consequently, an increase in complicated forms of the disease [2, 3]. A fairly high frequency of postoperative complications (34-50%) and numerous cases of postoperative relapses of the disease (15-64%) indicateinsufficient effectiveness and reliability of the widespread surgical tactics [7]. In light of the above, the need forimprovements to known ones and development of new oneseffective measures for the prevention and treatment of this formidable disease.

Purpose of the study. Analysis of possible causes of recurrent liver

echinococcosis depending on morphological modifications of echinococcal cysts.

Material and methods of research.There are three morphological modifications of echinococcal liver damage: echinococcus hominis, echinococcus - veterinorum, echinococcus acephalocystis.To determine the morphological modifications of echinococcosis, we analyzed the results of instrumental research methods (ultrasound, CT) and studied the surgical material in 252 patients with liver echinococcosis.

Before characterizing the morphological structure of echinococcosis modifications, it is necessary to note that they all differed from each other in the presence and degree of expression of dystrophic processes occurring in the germinal membrane, where the main structural unit of the parasite is located - the brood capsule, capable of producing viable protoscolices.

Results and their discussion. The modification of echinococcus hominis was noted in 36.9% of cases of echinococcal cysts. This form of the parasite was distinguished by the fact that inside the cyst, in addition to the hydatid fluid, brood capsules with protoscolices, there were daughter and sometimes granddaughter cysts. Usually, such cysts were large. The mother cysts had a matte rough surface macroscopically and were painted milky-white or whitish-yellow (Fig. 1, 2). The number of daughter cysts varied widely - from one to several dozen. When the mother cyst suppurated or died, the daughter cysts in their lumen underwent the same changes. However, in large echinococcal cysts, the daughter cysts died at different times, due to which, along with the dead ones, live daughter cysts were also found. The pressure of the hydatid fluid in these cysts is usually low, and the color of the fluid is transparent or, more often, cloudy. Cytological examination of the fluid of the maternal cyst and mature daughter cysts revealed protoscolices.

Dystrophic changes were focal. Different parts of the cyst wall may differ from each other in the severity of changes. Swelling and delamination of the germinal membrane indicates a violation of the permeability of the membranes. In dead cysts, early death of the germinal layer is noted. The chitinous membrane is more stable and is subject to disintegration later.

A characteristic ultrasound sign for this form of the parasite was the "fish scale" symptom, which comes in two types - flattened and rounded scales. The former are signs of "multi-chamber" echinococcus, and the latter are symptoms of cyst involution. The ultrasound semiotics of echinococcus hominis is shown in Fig. 3.

The clinical significance of the detection of echinococcus hominis is that, being a stage of early postmortem changes, it is precisely in this form that migration of scolexes beyond the chitinous membrane into the thickness, or even beyond the fibrous capsule, is observed and exogenous budding occurs during the growth of the echinococcal cyst.

Fig. 1. Morphological form of modification of echinococcus hominis in the liver and removed daughter and granddaughter cysts from the mother cyst

Fig. 3. Ultrasound image of daughter vesicles of Echinococcus hominis.

Our analysis of the results of surgical treatment of echinococcosis in the late postoperative period is evidence that it was with this modification that relapses of the disease were observed at the site of previously existing cysts. Thus, out of 47 relapses of the disease, 29 (61.7%) were cases of infection with echinococcus hominis.

Modification of echinococcus veterinorum is noted in 50.8% of cases of parasitic cysts. In this form of the disease, only brood capsules and echinococcal fluid are present inside the laurocysts. The formation of daughter vesicles does not occur. A feature of this type of vesicles is the greatest pressure of echinococcal fluid, compared with other forms. In most cases, such cysts are clinically described as "tense" (Fig. 4).

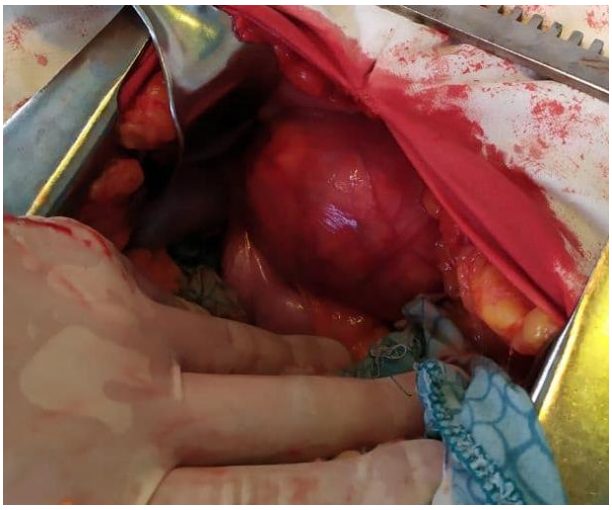

Fig. 4."Tense" echinococcal cystechinococcus veterinorum inliver

During cytological examination of echinococcal fluid, numerous scolices and brood capsules are found floating freely in the echinococcal fluid. Their number in 1 ml of fluid averages up to 1200, microscopically the scolices have an oval shape. During light microscopy, the internal germinal layer is thin, lining the cavity of the bladder from the inside in the form of a membrane. Swelling and stratification of this layer are less pronounced. Almost the entire surface of the germinal membrane is covered with a continuous layer of germinal bubbles, which give the germinal membrane a granularity, like a grain of sand.

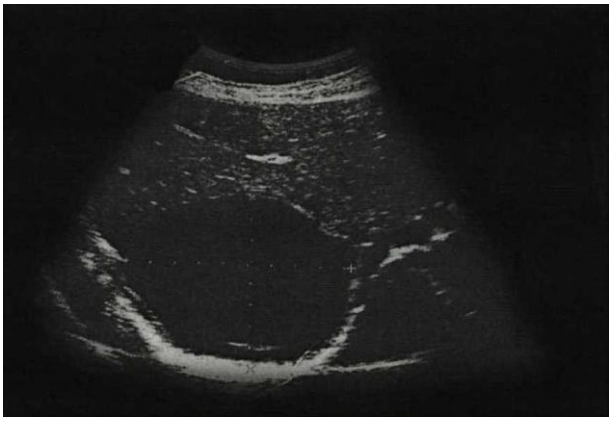

Fig. 5. On ultrasound of the liverEchinococcus veterinorumwith the presence of hyperechoic sediment

Echinococcus veterinorum is also an aggressive form of the parasite, which is caused by the high pressure of the hydatid fluid containing a large number of viable scolexes, which, at the slightest violation of the integrity of the membrane, enter the free abdominal cavity, causing massive damage to the abdominal organs by echinococcosis. Also, a characteristic feature of this type of cyst is a thick fibrous capsule formed around the echinococcal cyst. Therefore, surgical interventions, with this modification, should be performed with careful observance of the rules of aparasiticity and antiparasiticity. Preoperative diagnostics of cysts of this modification is based on a number of indirect signs, on the basis of which one can judge with a greater degree of probability the presence of echinococcus veterinorum. First of all, this is "hydatid sand", which is detected during ultrasound when the position of the body of the subject changes. This echographic picture is caused by multiple scolexes

filling the cavity of the mother cyst and appearing as a hyperechoic sediment (Fig. 5).

Another distinctive feature capable of giving an indirect idea of the cyst modification is the thickness of the fibrous capsule. According to our data, out of 47 patients with relapse of liver echinococcosis, 18 (38.3%) had features corresponding to the morphological structure of echinococcus veterinorum.

Laurocysts of the third modification of echinococcus acephalocystis were noted in 12.3% of parasitic cysts. These types of cysts are characterized by the absence of brood capsules and protoscolexes. They were usually of medium size with a diameter of no more than 6-7 cm, had a yellowish-gray color, were distinguished by a mucous wall, the fibrous capsule was not so pronounced.

Cytological examination of the hydatid fluid of the cysts revealed no scolexes. Histological examination of the germinal membrane using a light microscope showed that its entire surface was subject to dystrophic changes, and brood capsules were absent. Therefore, these cysts are not capable of producing embryonic elements.

The echographic and computed tomographic characteristics of such cysts are very similar to non-parasitic liver cysts, since their contents are homogeneous and the thickness of the fibrous capsule does not reach large sizes.

We have found that echinococcus acephalocystis is the least invasive form of the parasite. The "favorable" course is due to the fact that, having a low degree of aggression due to the absence of viable elements in the echinococcal fluid and possessing a low energy potential, with this modification of cysts, there are no cases of disseminated echinococcosis and relapses of the disease. In addition, these types of cysts do not reach large sizes and morphological changes in the liver are reversible.

It should be noted that in multiple echinococcal liver lesions, which were found in 167 (66.2%) patients, in some cases a combination of different modifications of echinococcosis was observed. The association of echinococcus hominis and echinococcus veterinorum was predominantly observed.

Conclusion. To determine the influence of the morphological form of echinococcal cysts on the incidence of relapse of the disease, we conducted a retrospective analysis of the protocols of operations and determined that in 93 (36.9%) operated patients, the morphological structure of the cysts corresponded to modificationsechinococcushominis, 128 (50.8%) - echinococcus veterinorum and 31 (12.3%) - echinococcus acephalocystis.

Moreover, in 47 patients with a relapse of the disease, 29 (61.7%) showed corresponding morphological signs.echinococcushominis, in 18 (38.3%) echinococcus veterinorum, in those operated on with a morphological structure corresponding to echinococcus acephalocystis, no relapse was detected.

Thus, out of 93 patients operated on for liver echinococcosis with a morphological structure corresponding to the formechinococcushominis in 29, i.e. 31.2%, a relapse of the disease was observed; out of 128 patients operated with morphological modification of cysts, echinococcus veterinorum in 18, i.e. 14.1%, recurrent echinococcosis also developed in the late stages after the operation.