A NEW METHOD FOR TREATING THE RESIDUAL CAVITY OF LIVER ECHINOCOCCOSIS WITH ANTI-INFLAMMATORY EFFECT

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ABSTRACT

The authors analyze that the method of antiparasitic and anti-inflammatory treatment of the residual cavity of a hydatid cyst in the liver, complicated by suppuration, includes aspiration of the contents of the hydatid cyst, removal of remnants of the maternal membrane, daughter and grandchild bladders

Key words: echinococcosis, laser, residual cavity, treatment, laser irradiation, cyst.

Relevance. Echinococcal disease is endemic in the Mediterranean, South America, the Far East, Central Asia and Eastern Europe. However, it is also commonly observed in non-endemic countries due to increased travel worldwide [5]. About 4000 diagnoses of echinococcosis are registered annually in Turkey [4].

Ilkhamov F.A. et al. analyzed the results of treatment of 34 patients with residual purulent cavities in the liver (RPC) after echinococcectomy. In 31 patients, a new method of eliminating HOCP was used, which consisted of percutaneous puncture and drainage of the infected cavity, followed by transdrainage laser irradiation of its walls with a nitrogen UV laser and a helium-neon laser in the visible spectrum. Transdrainage irradiation was carried out against the background of daily procedures of percutaneous laser irradiation of the liver (gallium arsenide infrared laser). The minimal trauma of percutaneous interventions and the pronounced antibacterial, anti-inflammatory and stimulating effects of low-energy lasers have significantly improved the results of treatment of patients with HOCP [1,2,3].

Aim. Improve the results of surgical treatment by combining an antiseptic drug and laser radiation.

Materials and methods. The objective of the new method is to improve the results of surgical treatment of liver echinococcosis, complicated by suppuration, through combined intraoperative antiparasitic and anti-inflammatory treatment of the residual cavity.

Considering the fact that morphological studies showed the presence of living germinal elements of the parasite not only in the echinococcal fluid, on the surface of the fibrous capsule, but also in its thickness, we decided to enhance the germicidal effect not only through photoactivation of the FarGALS solution, but also by manipulating another option physical impact on the entire surface of the fibrous capsule. The LAKHTA-MILON surgical laser, which was used in our study, provides the ability to use waves of different lengths, and therefore we recommend using this technology twice during treatment of the residual cavity. In this case, additional radiation delays the operation time by only 2-3 minutes.

The proposed method of eliminating an hydatid cyst complicated by suppuration is carried out by removing the remnants of the maternal membrane, as well as daughter and grandchild bladders, suturing biliary fistulas (if any) and treating the residual cavity of the cyst (fibrous capsule) with infrared laser radiation (surgical laser LAKHTA-MILON, Russia) with a wavelength of 910 nm, a power of 20 W in a pulse-periodic mode with a spot area of 1 to 2 cm2 for 2-3 seconds per field, then the cyst cavity is treated with FarGALS solution at a dilution of 1:3 for 3 minutes, after which The residual cavity is irradiated with the same laser in the green spectrum with a wavelength of 520 nm, a power of 0.5-1.0 mW in continuous mode with a spot area of 1 cm2 for 3 seconds per field (for each 1 cm2 of fibrous capsule 3 sec) then, the residual cavity is drained with a tube brought out through the skin.

Advantages of the method:

- laser radiation in the 910 nm spectrum penetrates deeply (up to 7 mm) into the fibrous capsule of the residual cavity of the cyst, especially in a humid environment;

- radiation with a power of 20 W and a duration of 2-3 seconds completely destroys the cellular structure of the parasite, even when located inside the daughter bladder or in the thickness of the fibrous capsule;

- FarGALS has powerful antiparasitic properties and its effect is enhanced after laser treatment of tissues, which provides an additional antiparasitic effect;

- laser irradiation of the fibrous capsule of the residual cavity in the 520 nm spectrum after its treatment with FarGALS solution ensures enhanced local anti-inflammatory effect and microcirculation, as well as acceleration of reparative processes.

The method is carried out as follows. A patient with liver echinococcosis undergoes an upper-median laparotomy; after revision, the area of cavity formation is covered with gauze swabs, after which the hydatid cyst is punctured; if there is thick content and it is impossible to remove it through a puncture needle, the fibrous capsule is opened and the chitinous membrane is removed, and if all daughter parts are present and grandchild cysts in compliance with the recommended principles of aparasiticity. After removing all the contents, the residual cavity is treated with a 3% solution of H2O2 (hydrogen peroxide), after which bile fistulas are inspected and, if identified, sutured. Next, the entire internal surface of the residual cavity (fibrous capsule) is irradiated with the infrared spectrum of the LAKHTA-MILON surgical laser (Russia) with a wavelength of 910 nm, a power of 20 W in a pulse-periodic mode, while the laser spot area is from 1 to 2 cm2, Accordingly, the entire surface of the capsule is irradiated for 2-3 seconds per field (laser spot area), then the residual cyst cavity is treated with FarGALS solution at a dilution of 1:3 for 3 minutes (if the fibrous capsule is widely dissected, it is possible to use a gauze swab soaked in FarGALS solution), after which the remaining solution is removed by suction and the residual cavity is irradiated with a LAKHTA-MILON laser, but in the green spectrum with a wavelength of 520 nm, a power of 0.5-1.0 mW in continuous mode with a spot area of 1 cm2 for 3 sec for each field (3 sec for each 1 cm2 of fibrous capsule), then the residual cavity is drained with a tube brought out through the skin. The surgical wound is sutured in layers.

Conclusions. In case of liver echinococcosis complicated by suppuration, after the traditional stage of removal of the parasite and treatment of the residual cavity according to the proposed method, maximum excision of the fibrous capsule is recommended within acceptable limits in relation to the liver parenchyma, while if wide abdominal dissection is performed, then drainage of the residual cavity and adjacent space is possible with a single drainage.

Thus, the proposed method of treating the residual cavity after surgery for liver echinococcosis with a combination of laser irradiation, complicated by suppuration, will reduce the duration of the postoperative hospital stage, the duration of drainage, and the overall frequency of complications.

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