



The Effect of Laser Photodynamic Therapy on Treatment of Residual Cavities after Liver Echinococcectomy

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ABSTRACT

Objective: To study the effectiveness of laser photodynamic therapy for the treatment of residual cavities after liver echinococcectomy.

Materials and methods: An open prospective and retrospective study of clinical material was conducted using statistical and analytical methods of examination and treatment of 74 patients hospitalized in the Department of Surgery No. 1 of the Samarkand City Medical Association in the period from 2020 to 2021.

Results: As a result, this method made it possible in our clinical studies to maximize the deposition of microorganisms, thereby preventing suppuration of the residual cavity and reducing the frequency of complications and relapses after liver echinococcectomy from 30 to 4.5%.

Conclusions: Thus, the addition of laser photodynamic therapy in the treatment of liver echinococcosis is a highly effective combination of surgical and therapeutic methods of treatment, which provides a complete cure for patients and prevents the development of postoperative complications and relapses of the disease.

KEYWORDS: Photodynamic Therapy, Laser, Echinococcosis, Photosensitizer.

INTRODUCTION

Echinococcosis is a chronic parasitic disease of the larvae of the tapeworm *Echinococcus granulosus* with a predominant lesion of the liver, as well as other organs and tissues.

According to WHO, of the 50 million people who die annually in the world, more than 32% are "carried away" by infectious and parasitic diseases, which in the XXI century are one of the main causes of human mortality (in various states, 2-3, and sometimes occupy the 1st place). [1].

Currently, in many countries, including in our republic, echinococcosis is a serious medical and social problem, the relevance of which is due to the presence of endemic regions, the predominant lesion of people of working age, the high cost of treatment and prolonged disability [2].

The most well-known method of surgical intervention remains echinococcectomy with a variety of methods to eliminate the residual cavity, which is performed in the vast majority of cases.

At the same time, the results of echinococcectomy cannot be considered satisfactory: the frequency of specific postoperative complications, the cause of which is the

persistence of the residual cavity (suppuration, bile discharge, external purulent and biliary fistulas), reaches from 6 to 80%, mortality is from 3 to 8%, recurrent echinococcosis occurs in 3-54% of patients [3].

Recently, a method of treating some benign and malignant tumors by photodynamic therapy using various photosensitizers has been used in world medical practice [4]. To date, it has been proven that some non-tumor cells with a high level of activity, such as bacterial cells, also accumulate photosensitizers [5]. Taking into account this effect, we studied the effectiveness of this method of combined treatment of the walls of the residual cavity of a complicated echinococcal cyst with a carbon dioxide laser followed by a photodynamic therapy session [6].

THE PURPOSE OF THE RESEARCH

To study the effectiveness of laser photodynamic therapy for the treatment of residual cavities after liver echinococcectomy.

MATERIALS AND METHODS OF THE RESEARCH

An open prospective and retrospective study of clinical material was conducted using statistical and analytical methods of examination and treatment of 74 patients hospitalized in the Department of Surgery No. 1 of the Samarkand City Medical Association in the period from 2020 to 2021. There were 43 men and 31 women. The average age of patients was 39.4+ 5.7 years (29-75 years). Of this number of patients, 22 (30%) patients had complicated (infection, relapse and relapse with infection) liver echinococcosis (Table 1).

Table 1. Quantitative composition of patients with complicated liver echinococcosis

Complications	Main group (n=12)	Control group (n=10)	Total (n=22)
Infected echinococcosis	6 (27%)	4 (18%)	10 (45%)
Recurrent echinococcosis	5 (23%)	4 (18%)	9 (41%)
Recurrent echinococcosis with infection	1 (5%)	2 (9%)	3 (14%)

In the control group, 10 (45%) patients underwent traditional echinococcectomy by laparotomic access, puncture and aspiration of the internal contents of the cyst with further dissection of the fibrous membrane and elimination of the chitinous membrane with daughter blisters, using vacuum suction. Then the residual cavity was treated with glycerin solution and its external drainage was performed.

Laser photodynamic therapy of residual cavity treatment was applied in 12 (55%) patients in the main group. This method consisted in the following: after laparotomy, the echinococcectomy stage, laser treatment using “ALT Vostok Model 03” of the residual cavity with a defocused laser beam was applied. In cases where a deep location of the cyst was observed, or its location was difficult to reach in remote segments of the liver, or the possibilities for lasing with a rigid manipulator of a laser device were limited, a photodynamic therapy session was performed with photosensitizer 0.05% methylene blue solution with exposure for 5-7 minutes.

RESEARCH RESULTS AND DISCUSSION.

The comparative result of surgical treatment of complicated liver echinococcosis in both groups was studied in the period from 3 months to 3 years. Long-term results were evaluated on the basis of ultrasound data of abdominal organs 1 time in 3 months.

In the control comparison group, complications in the form of suppuration of the residual cavity were observed

in 2 (20%) patients, relapse of the disease developed in 1 (10%) patient.

In the main group of patients, a complication in the form of suppuration of the residual cavity was found in only one patient (4.5%) 3 months after surgery for recurrent infected echinococcus of the right lobe of the liver. This complication was eliminated by percutaneous drainage of the residual cavity under the supervision of ultrasound. In other cases, no changes on the part of the liver, indicating a relapse of the disease and the formation of abscesses, were detected during the specified period.

CONCLUSIONS

Thus, the addition of laser photodynamic therapy to traditional echinococcectomy in the treatment of liver echinococcosis is a highly effective combination of surgical and therapeutic methods of treatment, which provides a complete cure for patients and prevents the development of postoperative complications and relapses of the disease.

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