Nd YAG laser

In 1983, as crystal-based neodymium-doped yttrium aluminum garnet (Nd:YAG laser) was introduced for tissue ablation, and some studies followed of laser ablation for brain tumors ^{1) 2) 3) 4)}.

Treatment or multilevel hydrocephalus is a complex problem. Neuroendoscopic interventions, make it possible to combine minimal invasiveness with the possibility of fenestration of several cysts during one procedure and thereby eliminate multi-level occlusion. We present our the experience of using a neodymium YAG laser (Nd-YAG laser) as an additional tool to improve the treatment results of patients with non-communicating hydrocephalus.

MATERIAL AND METHODS: This study included 10 patients aged from 5 months to 8 years who underwent endoscopic interventions with the use of rigid endoscope with frameless navigation. A surgical laser with a radiation wavelength of 1.064 μm was used as the main tool for fenestrating the walls of the cysts.

RESULTS: 13 endoscopic laser interventions were performed in 10 patients with multilevel hydrocephalus. In 3 children, the two-stage treatment was chosen in due to the impossibility of simultaneous fenestration of all cysts. The interval between procedures was 1 month in two cases and 11 months in one case. We managed to compensate for cerebrospinal fluid disturbances in each patient, positive dynamics in the condition was noted. The duration of postoperative stay averaged 8 days (from 4 to 13 days). There were no deaths in the study group. All patients were discharged in good condition. Average follow-up duration was 14 months (from 8 to 25 months). During the observation, the condition of the patients remained stable; there was no need for repeated operations.

Combined use of bypass operations, endoscopic techniques and neural navigation may improve the results of treatment of patients with multilevel hydrocephalus. Data presented in this article demonstrates the safety and effectiveness of the clinical use of laser radiation as an additional tool for interventions in patients with this condition ⁵⁾.

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