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ENDOSCOPIC LASER PHOTODYNAMIC THERAPY METHYLENE BLUE HELICOBACTER –ASSOCIATED PATHOLOGY DUODENUM IN CHILDREN

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Abstract.

Inefficiency of established methods of eradication of *Helicobacter pyloridis* (Hp), their side effects, resistance to numerous drugs dictate the search of the alternative methods of treatment. The method of endoscopic laser photodynamic therapy with methylene blue of Hp-associated diseases of the duodenum in children was used in 97 patients with erosions and ulcers of the duodenum. Eradications of HP were achieved in 80,1% of cases. The combination of low-intensive laser light and bactericide effect of the excited methylene blue is alternative method in treatment of HP-associated diseases of the duodenum in children.

Introduction. The eradication of this microorganism from gastric mucosa leads to the healing of ulcers both in children and in adults. On the other hand antibiotics resistance is the main source of failures in treatment. Alternative means of killing Hp are being sought [1]. One approach might be to use a local treatment such as photodynamic therapy (PDT), especially as Hp colonizes only those areas of gastrointestinal tract that are accessible to the endoscope.

Materials and Methods. The method of combination of laser and photodynamic effects of methylene blue was used in 97 children with erosion and ulcers of duodenum (average age $12 \pm 1,8$). Through spray catheter, conducted on the instrumental channel of endoscope, we brought 1-2 ml 0,5% solution of methylene blue to the mucosa of duodenal bulb, and to the antral portion – 8-9 ml. Than through biopsy channel was brought optic fiber and made irradiation of duodenal bulb and antral portion of stomach (60 sek. each).

We use helium-neon laser with length of waves 632,8 nm. The power on the end of optic fiber was 15 mW. The optic fiber was situated 1-2 cm from mucosa of duodenal bulb and 1-10 cm from antral portion of stomach. Procedures were made in a day.

Results and Discussion. The analysis of 17 patients, in which the urease test was made after each session of laser therapy with methylene blue, shows that after 2-4 sessions tests for the detection of Hp become negative. Erosion and ulcers were healed in all patients. The eradication of Hp was 80,1% to the moment of healing of erosion and ulceration. In the observation of 47 patients during 1 year the relapse of ulcer duodenum developed in 3 patients (6,38%), in one patient – two times. Positive reaction on Hp was only in 1 of these patients. What concerns clinical

manifestations, using of laser therapy leads to the rapid disappearing of pain filling (in most cases after 2 sessions). During the analysis of dyspepsia it is necessary to underline the positive effect of laser therapy. In 82,5% patients all manifestations of dyspepsia disappear to the end of the first week of treatment.

The success in treatment of Hp-associated diseases depends on effective eradication of microbe. However percent of effective eradication steadily decrease, increase drug resistance of species, there is the great rate of relapse.

PDT provokes tissue necrosis by the light after using of photosensitizing substances. This method is used in treatment of malignances, but there are some reports about using PDT for killing of microorganisms [2,3].

Conclusions. Thus the combination of antibacterial effect of activated methylene blue with stimulated effect of low insensitive helium-neon laser more rapid healing of erosion and ulcers of the duodenum in children. The potential advantage of such local therapy for Hp infection and the unlikelihood of the development of resistance suggest further investigations of this method.

References.

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