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**THE ANALYSIS OF THE EFFICIENCY OF HELICOBACTER PYLORI ERADICATION BY DIFFERENT TRIPLE-THERAPY SCHEMES IN CHILDREN WITH DESTRUCTIVE CHANGES OF DUODENAL MUCOSA**

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**Keys words:** Helicobacter pylori, eradication schemes, children, chronic gastroduodenal pathology, erosion of the mucous membrane, duodenum ulcer disease.

The study was conducted in the gastroenterological department of Donetsk City Children Clinical Hospital No. 1. The study involved 120 children aged 12-17 years old with erosive and ulcerative changes in the duodenal mucosa on the background of *Helicobacter pylori* persistence. All patients were divided into four groups of comparison. Patients of group I received omeprazole + amoxicillin + nifuratel, group II – amoxicillin + clarithromycin + colloidal bismuth subcitrate, group III – omeprazole + clarithromycin + nifuratel, group IV – omeprazole + clarithromycin + amoxicillin. The efficiency of different methods of *Helicobacter pylori* eradication in children with duodenal ulcer and erosive bulbitis has been studied. None of the schemes of anti-HP therapy used allows to achieve *Helicobacter pylori* elimination in 100 % of the cases in children with destructive changes of duodenal mucosa. It has been found that the combination of clarithromycin and amoxicillin with omeprazole or colloidal bismuth subcitrate allows to achieve eradication of *Helicobacter pylori* in 80 % of cases in children with erosive and ulcerative changes in the duodenal mucosa. It is necessary to develop new, combined, more effective schemes for the treatment of erosive-ulcerative changes in the duodenal mucosa, which would be available and safe for application in pediatric practice.

The chronic gastroduodenal pathology (CGDP), despite the continuous improvement of methods of diagnostic and treatment, remains an important problem of modern pediatrics. The most difficult issue of pediatric gastroenterology is the treatment of the patients with erosive and ulcerative changes of the duodenal mucosa. The mechanisms of this pathology at the present stage of development of medicine are not fully understood. The ways of treatment of duodenal ulcer (DU) and erosive bulbitis (EB) in children require medical improvement schemes in order to achieve a stable remission and prevent of complications.

The main etiological factor of CGDP in patients of different age groups is Helicobacter pylori (HP). It`s role in the pathogenesis of peptic ulcer disease in adults and children being generally known. HP is the microorganism responsible for the most frequent and persistent bacterial infection worldwide. HP infection affects nearly half of the world’s population. The prevalence of HP-infection of the adult population in developing countries (including Russia, Ukraine) is about 70-80 %, and the children, depending on age, is – 40-70 %. The HP-infection reaches adult levels to 14-15 years [4]. These organisms are found in 90-95 % of patients with DU [1,3]. According to international recommendations of Maastricht III and Maastricht IV anti-HP therapy is the main standard of care for patients with DU [2]. However, in recent years there have been a number of problems related to the development of HP resistance to antibiotics, which used in eradication therapy in children of all age groups. In some cases ulcers do not heal or they often relapse, although treatment regimens are applied as recommended.

The primary HP infection of human more often occurs in early childhood that cause the high frequency of development of destructive processes in stomach and duodenal mucosa in adolescents. In this regard, it is necessary to choose effective therapy schemes of eradication of HP for the children with destructive changes in gastric and duodenal mucosa. Today, the most aspects of using of anti-HP therapy in pediatric practice remain unresolved. The main ways of improving the effectiveness of HP eradication according to the Maastricht IV is the using of high doses of proton pump inhibitors, lengthening the course of antibiotic therapy to 14 days, sequential scheme antibiotic therapy, the using of fluoroquinolones [5-7]. However, these recommendations in pediatric patients remain very difficult to apply due to the large number of side-effects and the limited experience of the using of some medicines in children. In addition, the frequent prescription of the antibiotics in pediatric practice increases the frequency of antibiotic resistant strains of HP in childhood.

The aim of our study was to make a comparative analysis of efficiency of different types of triple-therapy schemes of HP eradication in the treatment of children with erosive and ulcerative changes of duodenal mucosa.

**Materials and Methods.**

On the basis of gastroenterology department of the Donetsk City Children Clinical Hospital № 1 examined 120 patients aged 12 to 17 years old with erosive and ulcerative changes of duodenal mucosa: 40 children with DU and 80 patients with EB. The criteria for exclusion from the study were: application of antibacterial and antisecretory drugs during the last three months, complicated peptic ulcer disease of the duodenum, the presence of concomitant pathology.

All the patients received schemes of HP eradication in accordance with the decisions of the Maastricht Consensus IV (2010), Recommendations of the European Pediatric Group for the study of HP (2000), IX Congress of Pediatricians of Russia and CIS countries (2001) and the National guidelines of the Ministry of Health of Ukraine, Unified clinical Protocol of medical care to children with digestive diseases (2013).

The diagnoses were set by clinical, endoscopic and morphological investigations. The presence of HP was investigated by both rapid urease test and urease breath test. HP infection was diagnosed in the case of positive results of both methods.

All patients were divided into four groups of comparison by the method of randomization. In each group, there were 10 patients with DU and 20 children with EB. Differences by sex and age among the examined groups were not found (p>0,05). The treatment consists of the administration of the drugs for 7 days. Patients of group I received omeprazole (Om) + amoxicillin (Am) + nifuratel (Nif), group II – Am + clarithromycin (Cl) + colloidal bismuth subcitrate (CBS), group III – Om + Cl + Nif, group IV – Om + Cl + Am.

The tolerability of the drugs and dynamics of the clinical manifestations were evaluated during the eradication therapy by the daily survey of children. The duration of the abdominal pain, pain by palpation the epigastrium, dyspeptic and asthenic syndromes were estimated.

The monitoring the effectiveness of the treatment was performed 4 weeks after completion of therapy by the assessment of the clinical and endoscopic symptoms and the results of the two tests of the HP diagnostic (urease breath test and the rapid urease test).

Statistical analysis of results was performed using of parametric and nonparametric methods Medstat software package.

**Results and discussion.**

Clinical and paraclinical indices in all the surveyed groups before the start of the study, was not different.

The most frequently side effects of anti-HP schemes therapy, such as nausea after using drugs, allergic skin rash, stool liquefaction, increased bowel movements and the abdominal pain were found in all groups. So, most often, these symptoms were determined in groups II and IV. However, statistically significant differences in the frequency of side effects between comparison groups have not been established (p>0,05). The increased frequency and liquefaction of the stool has been found most common in all groups. These changes of bowel movements have been associated with the gut microflora disturbances against the use of antibiotics. These symptoms have been observed in 4 (13,3±6,2 %) children of group I, in 8 (26,7±8,1 %) of group II, 5 (16,7±6,8 %) of group III, and 7 (23,3±7,7 %) of group IV. The nausea of the patients has not been required symptomatic correction by medicine using. The antihistamines have been additionally administrated to the patients with allergic skin rash. The improvement of clinical symptoms has been showed on the background of treatment among all groups, but the dynamics of these symptoms in the groups was different. The disappearance of the pain syndrome in the majority of patients has been held on the IV-V day. Thus in group II, the pain has been disappeared significantly (p<0,05) relative to the groups I and III. The regression this symptom in the group I was occurred on average on 5,1±0,2 day, II – 4,7±0,1, III – 5,1±0,2, IV – 4,5±0,2. The epigastrium painfulness by palpation has been remained a little longer among all groups. Among the patients of groups II, IV, when Am+Cl combination was used, the painfulness by palpation of epigastrium has been disappeared significantly faster (p<0,01) – 5,6±0,1 and 5,7±0,2 days, respectively, relative to the groups I (6,4±0,2) and III (6,3±0,2 day). The disappearance of dyspeptic syndrome has been occurred in group I on 4,5±0,1 day, II – 4,2±0,1, III – 4,3±0,1, IV – 4,7±0,1.

The regression of asthenic syndrome has been occurred most slowly among all groups of patients. The disappearance of asthenic syndrome in the majority of children has been occurred in the end of the first week of therapy. The disappearance of asthenic syndrome has been happen in group I on average at 7,4±0,2 day, II – 6,2±0,2, III – 6,8±0,2, IV – 6,6±0,1. The analysis of the results of the eradication has been showed that the efficiency of the proposed schemes of anti-HP therapy was different. The efficiency of the eradication of the scheme used in I group was lowest. The HP-eradication has been achieved in 21 (70,0±8,4 %) patients of group I. The combination Om+Cl+Nif has been allowed to achieve the HP eradication in 23 (76,7±7,7 %) children. The using a combination Am+Cl in combination with Om or CBS has been achieved HP eradication in 24 (80,0±7,3 %) children with erosive and ulcerative lesions of the duodenal mucosa. These schemes were the most effective among the recommended national and international guidelines triple schemes of HP-eradication.

The control endoscopic examination has been held 4 weeks after completion of therapy. The endoscopy has been established the positive dynamics of endoscopic picture in all patients. However, the degree of improvement of endoscopic signs has been differed from the schemes of HP eradication therapy, and the effectiveness of eradication. The significant improvement of endoscopic picture has been established in all children with effective HP eradication. The epithelization or complete healing of the ulcer, erosion, reduction of congestion and expressiveness hyperplasia of lymphoid follicles has been installed in all patients with HP eradication. The normalization of endoscopic picture has not been fixed in any patient with persistent HP infection, but most of them have been noted positive dynamics on the background of the anti-HP therapy. The signs of gastric and duodenal mucosa inflammation have been kept in all patients with persistent HP infection.

**Conclusions.**

1. None of the used schemes of anti-HP therapy has been allowed to achieve the HP elimination in 100 % cases in children with destructive changes of duodenal mucosa.
2. The combination of Cl and Am with Om or CBS allows to achieve HP-eradication in 80 % cases in children with erosive and ulcerative changes in the duodenal mucosa.
3. The regression of clinical signs of CGDP occurs at different times using different schemes of HP eradication therapy. Most continued passes the pain, dyspeptic and asthenic syndrome when using schemes with Om+Am+Nif.
4. It is necessary to develop new, combined, more effective schemes for the treatment patients of erosive-ulcerative changes in the duodenal mucosa, which would be accessible and safe for the use in pediatric practice.

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