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METHOD OF ELIMINATION OF GIARDIASIS INVASION IN CHILDREN

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Abstract
Nifuratel, Albendazol and Metronidazol were used in the second step (intervention on parasite and it's elimination from the host) of 3-step therapy of lambliasis at 125 children. Clinical remission was attained in 91.1%, 72.5% and 52.5% cases, and parasitological elimination in 93.3%, 32.5% и 60.0% cases, respectively. It is important to notice, that Trichopol in spite of its relatively high parasitological elimination has attended a high-grade hepatotoxicity, excluding it from recommendation to this category of children. Thus, the first choice drug for the specific treatment of lambliasis of children is Macmiror in consideration of its high effectiveness and safety.

Keywords: Giardian of infection, antiparasitical preparations, treatment, children.

INTRODUCTION

Intestinal parasitosis is known to be an urgent ecological, medical and social problem. According to the WHO, about 2 million patients with parasitic diseases are registered in Russia every year. Currently, more than 60 thousand species of parasites are known, and more than 500 of them may exist in the human body. One of the most common parasitoses among the world's population is giardiasis (up to 20-30%) [11,12,16]. In particular, according to WHO experts, about 200 million people are infected with giardiasis annually in Asia, Africa and Latin America. a person, and 500 thousand patients per year suffer from clinical forms. At the same time, up to 80% is accounted for by children and adolescents, with greater detection in children from 2 to 8 years old (50%), and by the age of 16 it decreases to 7-10% [1,18]. Numerous studies have shown that giardiasis invasion leads to significant changes in the activity of a number of enzymes in the blood serum, including antioxidants. This causes cell membrane disorders and increases the risk of infection of the body with opportunistic infections, including hepatitis, acute diarrheal diseases [13,15,17]. But there is evidence that in a healthy person with a normal intestinal flora, harmful microbes enter the eggs of worms, giardia transit through the intestines. This does not occur in a person with digestive diseases, suppression of gastric secretion, inflammation of the intestinal mucosa, pancreatitis, including chronic hepatitis, and dysbiosis [4,5,14,16].

Recently, the treatment of giardiasis has been complicated by a sharp decrease in immune protection due to certain concomitant pathologies (anemia, rickets, hypotrophy, etc.), limited choice of antiprotozoal drugs due to their hepatotoxicity, high levels of reinfection, and, in some cases, the acquisition of strains of pathogens resistant to drugs [2,6,7,3,8,10]. The above has

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predetermined the need for the selection and pharmacological correction of giardiasis invasion in children, taking into account the hepatotoxicity, bioavailability and effectiveness of the drug.

The aim of the study was to evaluate the effectiveness of antiparasitic drugs from various pharmacological groups against the background of the use of three-stage giardiasis therapy in children with intestinal giardiasis.

Materials and methods. 125 children with intestinal giardiasis (83 boys and 42 girls) aged 3 to 14 years were under observation. Methods of blood/fecal PCR (DNA-G.Lamblia), fecal immunofluorescence (G.Lamblia antigen), and fecal sedimentary component coproscopy were used in the diagnosis of giardiasis. As a result of the examination of specific markers, it was found that the majority (75.2%) of children were at the stage of giardiasis invasion activation (the presence of G. Lamblia DNA and G.Lamblia antigen with a positivity coefficient > 6 in feces) [5]. Giardiasis therapy included three stages: I – preparatory, II – effects on the parasite, III - restorative. At the second stage, as a specific drug, 40 children received –,and Metronidazole at a dose of 20 mg/kg/day for 10 days (group I), 40 children received Albendazole at a dose of 10 mg/kg/day for 7 days (group II) and 45 children received Nifuratel at a dose of 15 mg/kg/day for 10 days (group III). The criteria for evaluating the effectiveness of treatment were the frequency of clinical remission and parasitological elimination. Statistical processing was carried out by the method of variational statistics using the Student's t-test using a special Excel-2000 program. The differences were considered significant at $p<0.05$.

The results and their discussion. The examined children showed conditionally specific clinical symptoms of giardiasis, such as skin lesions, which can be used with a certain degree of reliability for targeted laboratory testing for G.lamblia. In particular, these are depigmented skin areas located mainly on the cheeks and shoulders (100%), hyperkeratosis in the form of brownish-icteric coloring of the skin of the neck, extensor surfaces of the arms, legs, and sides of the abdomen (43.8%), red lip edging in the form of congestion and peeling around the mouth (20.0%). Neurotic manifestations in the form of tics (25.9%) and bruxism (42.2%). Hyperkinesis was detected in 15.1% of children, who manifested themselves in the form of bad habits: biting their nails, sucking their fingers and other objects, biting their lips. Another feature was the development of enuresis (27.0%).

A comparative analysis of the use of various anti–giardiasis drugs showed that the use of the drug Nifuratel had a more effective effect on the body compared with the drugs Albendazole and Metronidazole. In particular, 91.1% of children clinically (versus 52.5% and 72.5%, respectively, in groups I and II, $p<0.05$) responded positively, which was reflected in the improvement of children's well-being, complaints of increased fatigue, weakness, nausea, and abdominal pain stopped. The phenomena of flatulence, rumbling in the stomach and stool disorders were leveled, and appetite was restored. In children who received Nifuratel, manifestations in the form of bruxism, tics and hyperkinesis, such as nail biting, finger sucking and lip biting, were significantly more likely to disappear ($p<0.05$ compared to the comparison groups). Skin manifestations in the form of depigmentation and hyperkeratosis were leveled in 76.6% of children, in other cases (20.0%) they persisted with a tendency to decrease visual visibility. Symptoms in the form of

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congestion and peeling at the corners of the mouth, as well as enuresis, were not observed in any child ($p<0.05$). In the comparison groups, symptoms characteristic of giardiasis were significantly more common, especially among children who received Metronidazole (42.5%).

At the same time, the study of the spectrum of giardiasis markers showed the high effectiveness of Nifuratel in the eradication of G.Lamblia. After the treatment, only 6.7±3.8% ($p<0.05$ compared to the comparison groups) of the patients showed a specific antigen, which in one case (4.4±1.5%) was combined with cystic forms of G.Lamblia in sedimentary components of faeces by microscopy. Metronidazole took the second place in the elimination of G.Lamblia, where the picture after treatment indicated a decrease in the number of patients with positive DNA-G.Lamblia blood to 7.5±4.2% (versus 17.5±7.1% of children who received Albendazole), faeces to 25.0±6.9% (versus 40.0%, $p<0.05$) and antigen in faeces is up to 20.0±6.4% of cases (versus 40.0±7.8%, $p<0.05$).

As for coproscopy, the number of patients with a positive analysis (presence of trophozoites) after treatment was 5.0±3.5% and 10.0±4.8% who received Metronidazole and Albendazole. The results showed different eradication of G.Lamblia depending on the specific drug used, where the first place was occupied by Nifuratel (93.3%), the intermediate Metronidazole (60%) and the last – Albendazole (32.5%).

Conclusion

The use of three–stage treatment of giardiasis in children with the use of Nifuratel, Albendazole and Metronidazole drugs at the second stage - exposure to the parasite and its elimination from the body - allowed achieving clinical remission in 91.1%, 72.5% and 52.5% of cases and parasitological elimination in 93.3%, 32.5% and 60.0% of cases, respectively. At the same time, it is important to note that under the conditions of Trichopol use, despite the relatively high parasitological elimination of G.Lamblia, treatment was accompanied by pronounced hepatotoxicity, which precludes the possibility of recommending it to this category of children. Based on the results, it can be concluded that Nifuratel is the first choice drug as a specific treatment for giardiasis in children, given its high efficacy and safety in use.

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