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ADJUVANT THERAPY FOR GIARDIASIS

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Abstract. Giardiasis remains an urgent problem in Russia due to its proximity to endemic foci, insufficient control of the incidence, especially among the adult population, and the low level of hygiene literacy among adolescents. The progression of the disease leads to a wide symptom complex, aggravates the course of comorbid pathology and provokes the development of functional disorders. Used pathogenetic therapy allows to achieve complete elimination of the pathogen. This article provides information on the use of adjuvant therapy, which can reduce the duration of treatment and reduce the number of residual effects.

Key words: giardiasis; protozoal infection; intestinal microbiota; antibiotic therapy; probiotics; adjuvant therapy.

АДЪЮВАНТНАЯ ТЕРАПИЯ ЛЯМБЛИОЗА

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Резюме. Лямблиоз остается актуальной проблемой в России по причине близости к эндемичным очагам, недостаточного контроля заболеваемости, особенно среди взрослого населения, и низкого уровня гигиенической грамотности среди подростков. Прогрессирование заболевания приводит к широкому симптомокомплексу, отягощает течение коморбидной патологии и провоцирует развитие функциональных расстройств. Используемая патогенетическая терапия позволяет добиться полной элиминации возбудителя. В данной статье приводятся сведения о применении адъювантной терапии, которая позволяет уменьшить сроки лечения и снизить количество остаточных явлений.

Ключевые слова: лямблиоз, протозойная инфекция; кишечная микробиота; антибактериальная терапия; пробиотики; адъювантная терапия.

INTRODUCTION

Giardiasis is the most common human protozoal disease in the world. Despite the fact that some scientific sources classify this disease as a "forgotten tropical disease", according to the World Health Organization (WHO), the number of the population infected with *Giardia* is 10–20% [1, 2]. Thus, within the period of 2017–2021, 1,924 cases of the disease were registered in the

Leningrad region, 1,513 of total number of cases (79%) accounted for children [3].

The causative agent of *Giardia intestinalis* (*Giardia lamblia*) is a flagellated protozoan; infection occurs after the ingestion of cysts in the gastrointestinal tract. The source is a sick person — in 1 g of feces there are up to 250 thousand cysts, and inoculation dose is only 10–100 cysts. Cysts are stable in the external environment, they free-

ly cross the gastric barrier and then pass to the stage of trophozoites under the influence of duodenal contents in the small intestine, feeding with the products of membrane digestion. The cycle is completed by spontaneous transition of *Giardia* into the form of cysts and their exit with feces [4]. Clinical recommendations of the Ministry of Health and treatment protocols for giardiasis in Russia are absent. Various options are discussed in the literature: from monotherapy with antiparasitic agents [5–8] to long-term three-stage complex therapy [9–12]. The use of adjuvant therapy is associated with increasing resistance of the parasite to antiprotozoal drugs [13–16] and low efficacy of monotherapy [17, 18].

AIM

To analyze scientific studies evaluating the efficacy of complex therapy for giardiasis compared to monotherapy with antiprotozoal drugs.

MATERIALS AND METHODS

Cyberleninka, UpToDate, PubMed, Medscape, PLOS and e-library databases were used as sources of foreign and domestic literature. The following keywords were used: giardiasis, protozoal infection, intestinal microbiota, antibiotic therapy, probiotics, intestinal adsorbents, immunomodulators, hepatoprotectors, adjuvant therapy. 34 sources were analyzed.

RESULTS

The classical domestic approach to the therapy of giardiasis, outlined in a number of practical guidelines for physicians, requires a step-by-step and complex treatment, reduced to three consecutive actions: elimination of factors contributing to the "failure to thrive" — proper antiparasitic therapy — post-eradication support [4, 19–21]. However, no evidence-based studies on the effectiveness of this approach have been found; the recommendations are based on an empirical approach. There have been found only one study comparing the efficacy of giardiasis treatment in preschool children. The treatment included following variations: antiparasitic agents alone (A), antiparasitic agents combined with a prebiotic with sorption properties (A+S), antiparasitic agent in combination with a prebiotic with sorption properties and a choleric drug (A+C+Ch) and antiparasitic agent in combination with a prebiotic with sorption properties, a choleric drug and a hepatoprotector (A+C+Ch+H) [22, 23]. The authors report that the effectiveness of *Giardia* eradication did not depend on the treatment regimen

used. However, combined regimens (especially A+C+Ch) helped to stabilize stools, abdominal pain, nausea, and normalize the autonomic nervous system according to cardiointervalography [22, 23].

Since the role of the intestinal microbiocenosis in the pathogenesis of giardiasis has been proven [24–27], the most widely studied treatment is the combination of antiprotozoal agents with probiotics.

A recent publication [28] indicated that a constantly maintained normal composition of the intestinal microbiota protects against various microorganisms and protozoa. It is suggested that probiotics may disrupt the cellular architecture of parasites and modulate the immune response in addition to direct effects on the intestinal epithelium (restoration of the mucosal barrier, increase in the number of epithelial and gobletoid cells). A comparative study [29] showed that the use of a complex treatment (*Saccharomyces boulardii* CNCM I-745 were used as probiotics) significantly improved the efficacy of therapy by enhancing the gut microbiota compared to monotherapy. Similar data were obtained by E.A. Kornienko in 2008 [18]. It is worth noting that studies with an experimental model of giardiasis showed that probiotics as monotherapy have anti-*giardia* effect as well, which makes them useful in the treatment of resistant forms of parasitic infestation [31]. The influence of enterosorbents in the therapy of giardiasis is less studied. Foreign sources do not provide such studies. There are single publications in the domestic literature proving the effectiveness of adsorbents, including dietary supplements, in the complex therapy of giardiasis [32, 33].

One of the studies evaluated the efficacy of enterosorbent Zosterin-Ultra in the complex therapy of children with giardiasis. Sixty children aged 3 to 17 years with giardiasis were examined. The patients were divided into 3 groups: the first group — 20 children, with inclusion of Zosterin-Ultra 30% in complex treatment against the background of albendazole treatment; the second group — 20 children, with inclusion of Zosterin-Ultra 60% in complex treatment against the background of albendazole treatment; the third group (comparison group) — 20 children, treated with albendazole only. All children treated with Zosterin-Ultra as part of the complex therapy, were significantly less often suffered from pain syndrome and asthenic complaints compared to monotherapy. The maximum percentage of *Giardia* eradication was observed with adjuvant therapy with Zosterin-

Ultra 60% against the background of albendazole treatment. Inclusion of adsorbents led to complete elimination of meteorism and flatulence, as well as normalization of appetite. Based on the obtained data, the authors recommend including Zosterin-Ultra in the complex treatment of giardiasis in children [33].

Single publications recommend including vitamin and mineral supplements in the treatment regimen of giardiasis [34]. However, there are no studies confirming the efficacy of this approach. There are also no data on the effectiveness of hepatoprotectors, immunomodulators, and antihistamines in giardiasis.

CONCLUSION

The presence of *Giardia* resistance to anti-giardia drugs requires new approaches to the therapy. The study of complex therapy remains the subject of detailed research; more randomized trials are needed to incorporate complex therapy into national programs and clinical guidelines as soon as possible.

ADDITIONAL INFORMATION

Author contribution. Thereby, all authors made a substantial contribution to the conception of the study, acquisition, analysis, interpretation of data for the work, drafting and revising the article, final approval of the version to be published and agree to be accountable for all aspects of the study.

Competing interests. The authors declare that they have no competing interests.

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Вклад авторов. Все авторы внесли существенный вклад в разработку концепции, проведение исследования и подготовку статьи, прочли и одобрили финальную версию перед публикацией.

Конфликт интересов. Авторы декларируют отсутствие явных и потенциальных конфликтов интересов, связанных с публикацией настоящей статьи.

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