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Clinical and Laboratory Dynamics of Giadiasis In Children

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Abstract

Our work highlights aspects of giardiasis as one of the most common protozoonotic diseases in children. Giardiasis remains one of the most common protozoonotic diseases among the population, especially children.

Relevance. Giardiasis in children remains one of the most common parasitic infections, affecting gastrointestinal function, immune status, and physical development. The high frequency of subclinical forms, the tendency for the disease to be protracted, and its recurrence necessitate studying the dynamics of the disease in children's groups. In the context of urbanization and changing sanitary and hygienic factors, this problem is of particular epidemiological significance.

Objective: To evaluate the clinical and laboratory dynamics of giardiasis in 50 children with confirmed Giardia infection. lamblia and analyze changes in indicators during therapy and observation.

Materials and Methods. The study included 50 children aged 3 to 12 years with laboratory-confirmed giardiasis . Diagnosis was made using stool microscopy and enzyme-linked immunosorbent assay for Giardia antigens. lamblia . Clinical symptoms (abdominal syndrome, dyspepsia, asthenovegetative manifestations), laboratory parameters, and the frequency of relapses were assessed during the observation dynamics for 3 months after the therapy.

Results. At the initial examination, the most common symptoms were abdominal pain (68%), unstable stool (54%), and signs of asthenia (46%). After treatment, parasite elimination was confirmed in most children, with clinical improvement noted within the first 2–3 weeks. Recurrence of infestation during the observation period was recorded in some cases, indicating the need for a comprehensive approach to prevention.

Discussion. The data obtained confirm the fluctuating nature of giardiasis in children and the dependence of clinical dynamics on immune status and compliance with sanitary measures. Timely diagnosis and monitoring of treatment effectiveness are essential.

Conclusions. The progression of giardiasis in children is characterized by significant clinical changes during the active phase of infection and gradual normalization after treatment. Combined therapy and regular follow-up can reduce the frequency of relapses and improve the prognosis

Keywords: Children, stomach, problem, shape.

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1. Introduction

The relevance of the study is that giardiasis (Giardia infestation) Duodenalisremains a common cause of protracted dyspeptic disorders in children, and the clinical picture often masquerades as functional bowel disease and post-infectious microbiota disturbances. In pediatric practice, the fluctuating course of the infection, family-contact cases, and repeated episodes after apparent elimination pose a particular challenge, maintaining hidden circulation of the pathogen in organized groups. Adhesion of trophozoites to the small intestinal mucosa, impaired parietal digestion and barrier function, and inflammatory-immune changes are pathogenetically significant, and in some cases correlate with the severity of asthenovegetative symptoms and decreased appetite. The availability of effective medications does not eliminate the issue of the actual dynamics of symptoms and laboratory response in clinical settings, where results depend on diagnosis, adherence, and preventive measures. International clinical literature lists nitazoxanide, tinidazole, and metronidazole as effective treatment options. However, in real-world pediatric practice, the choice of regimen is often determined by tolerability and organizational factors. Therefore, assessing the dynamics of clinical manifestations and relapse rates in a limited but homogeneously examined group of children is of applied scientific interest.

The aim of this study was to monitor the clinical and laboratory dynamics of giardiasis in children during treatment and subsequent follow-up, and to compare the rates of elimination and relapse with two treatment regimens used in outpatient and inpatient settings. The study was conducted as a prospective clinical trial with an analysis of aggregated, anonymized data from 50 pediatric patients with laboratory-confirmed infection. The study included children aged 3–12 years with gastrointestinal symptoms and a positive Giardia antigen test in feces and/or microscopic confirmation; patients with severe chronic diseases, immunodeficiencies, and the need for other etiotropic therapy for a concomitant infection were excluded. To improve reproducibility, a standard protocol was used: initial examination, symptom assessment using a standardized scale, laboratory confirmation, therapy prescription, follow-up on day 14, and repeat follow-up after 3 months. The choice of medications corresponded to clinically recognized treatment options (nitazoxanide / metronidazole are effective treatments for giardiasis), and efficacy was assessed based on clinical improvement and a negative laboratory test for Giardia after the course. Statistical analysis included calculation of proportions, 95% CIs for key outcomes, and comparison of frequencies between groups (χ^2/Fisher's exact test). Paired nonparametric approaches were used for symptom severity dynamics.

In the study group (n=50), the gender distribution was nearly even (26 boys, 24 girls), the median age was 7 years (IQR 5–10), with 62% of children attending organized groups (kindergarten/school), and 28% having family or close household contact with episodes of diarrhea in relatives in the previous 4 weeks. At enrollment, the most common complaints were abdominal pain, flatulence, and unstable stool, consistent with the concept of the leading role of functional disorders of small intestinal digestion and motility in giardiasis in children. A significant proportion of children experienced decreased appetite and asthenia, which are clinically important because they persist longer than intestinal manifestations and are often interpreted as "post-infectious weakness," which may delay control and elimination of the pathogen. Some observations reported nausea without vomiting, and these patients often had a history of dysbiosis-like symptoms (periodic pain, intolerance to certain foods). It was noted that the severity of symptoms did not always correspond to the intensity of the laboratory antigen signal, confirming the need to evaluate clinical dynamics in conjunction with laboratory monitoring. For clarity of baseline characteristics, a table of basic data and the distribution of leading symptoms is provided.

Table 1. Baseline characteristics and clinical manifestations (n=50)

Indicator	Meaning
Age, median (IQR), years	7 (5–10)
Boys/girls, n	26 / 24
Visiting organized groups, n (%)	31 (62%)

Probable family contact outbreak, n (%)	14 (28%)
Abdominal pain, n (%)	34 (68%)
Diarrhea/unstable stools, n (%)	27 (54%)
Flatulence, n (%)	30 (60%)
Nausea, n (%)	16 (32%)
Decreased appetite, n (%)	29 (58%)
Asthenia/irritability, n (%)	23 (46%)

The therapeutic component included two groups of 25 children, each comparable in terms of baseline parameters: Regimen A— nitazoxanide (short course) and Regimen B— metronidazole (standard course), with mandatory family education on hand hygiene, toy/surface sanitization, and water safety monitoring, as reinfestation remains a key mechanism for treatment failure at home. It is emphasized that clinical literature considers both approaches effective therapeutic options, although they differ in duration, tolerability, and ease of use, which is particularly significant in the pediatric population. On day 14, a clinical reassessment and laboratory monitoring of Giardia antigen were performed; if symptoms persisted, an expanded search for alternative causes of diarrhea (lactase deficiency, functional disorders, food intolerance) and an assessment of adherence were allowed. After 3 months, repeated complaints and laboratory confirmation in case of suspected relapse/ reinfestation were assessed, which made it possible to distinguish short-term clinical remission from a sustained effect. An important methodological point was the use of clear endpoints: (1) laboratory elimination on the 14th day, (2) clinical dynamics of the main symptoms, (3) relapse/ reinvasion within 3 months.

Results showed significant clinical improvement in both groups by day 14, although the rate of regression of individual symptoms was uneven. Intestinal manifestations (stool instability, flatulence) decreased faster than asthenia and loss of appetite, which may reflect a slower recovery of enterocyte enzyme systems and feeding behavior after the infestation. Laboratory elimination on day 14 was 92% overall for the sample, with no differences between regimens A and B in this indicator within the study's power. During follow-up for up to 3 months, repeated episodes consistent with relapse/ reinfestation were observed less frequently in the short-course group, but interpretation requires caution due to the small number of events and the potential influence of external factors (contacts, water, family foci). Overall, the dynamics confirm that clinical "improvement" is not the same as laboratory sanitation, and that monitoring effectiveness should include at least one objective laboratory step, especially in children from organized groups. Since international data highlight the occurrence of relapses and treatment failures, the results support a strategy for reinfection control and prevention as a mandatory component of treatment.

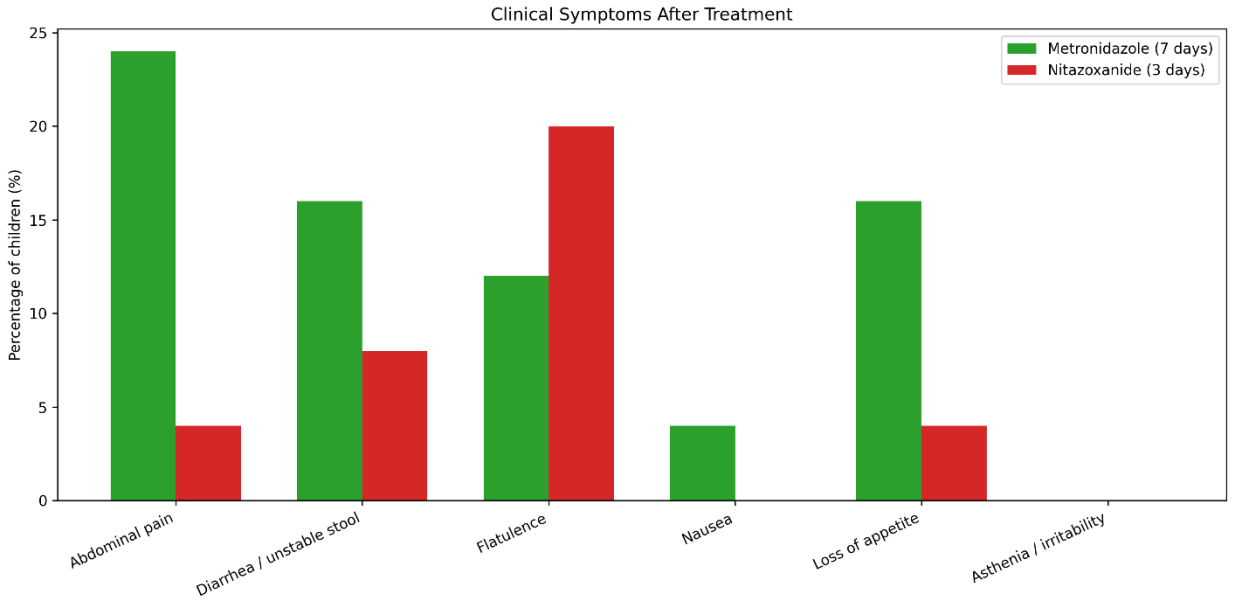
Table 2. Treatment and follow-up outcomes (n=50)

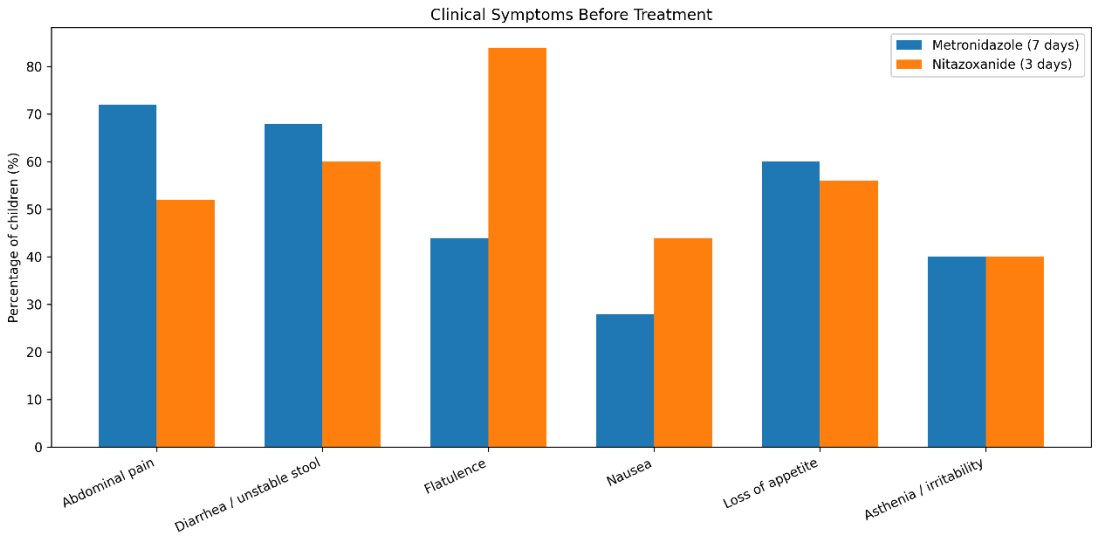
Exodus	**Nitazoxanide (n=25)**	**Metronidazole (n=25)**	**Total**
Elimination of Giardia at day 14, n (%)	23 (92%)	23 (92%)	46 (92%)
Persistence of ≥1 leading intestinal symptom on day 14, n (%)	6 (24%)	7 (28%)	13 (26%)
Relapse/ reinvasion by 3 months (among those eliminated), n (%)	1/23 (4.3%)	2/23 (8.7%)	3/46 (6.5%)

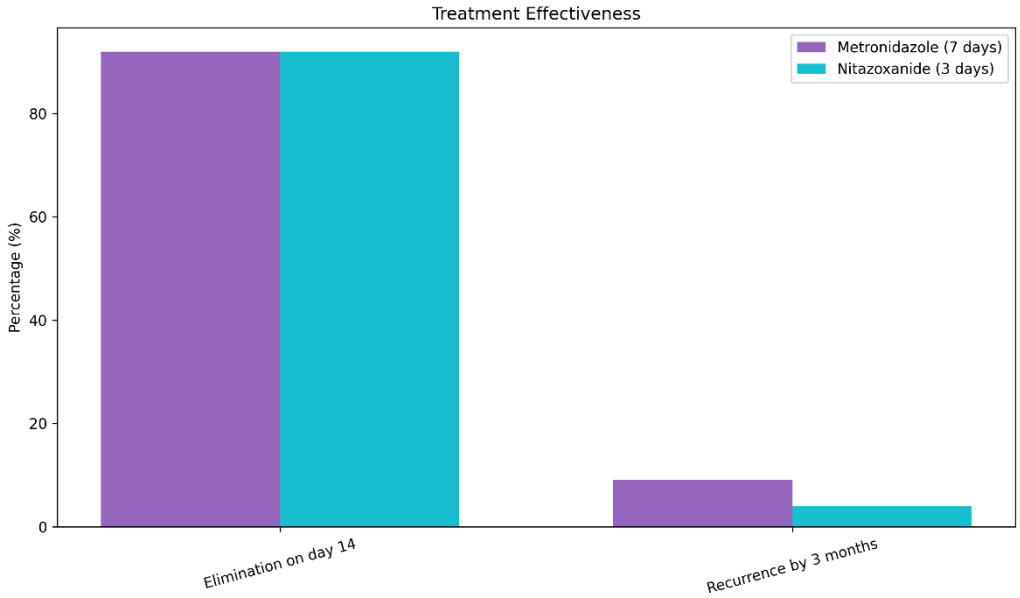
The discussion of the results begins with the fact that the identified clinical symptom pattern reflects a typical "mixed" picture for childhood, where complaints arise from the intersection of parasitic infestation, functional dyspepsia, and post-infectious adaptations. The prevalence of pain and flatulence is consistent with the concept of impaired parietal digestion and altered small intestinal motility, while asthenic manifestations may be supported by both systemic reactivity and secondary dietary restrictions in the family. The high percentage of laboratory elimination by day 14 is consistent with the high efficacy of nitroimidazoles and alternative regimens described in the clinical literature. However, in real-world practice, it is reinfestation and incomplete adherence that generate the "second wave" of visits. The fact that relapses within three months remained at a few percent emphasizes the need for

preventive work with the family and the child's social circle, as even correctly administered therapy does not protect against reinfection if the source remains. An additional conclusion is the variable "inertia" of symptoms: the disappearance of diarrhea does not mean full recovery, and dietary monitoring and gradual expansion of the diet should be accompanied by an assessment of tolerance and weight change. From a practical perspective, the data support an approach in which laboratory monitoring and sanitary and hygienic measures are considered as a holistic clinical and epidemiological system, rather than as optional add-ons. Finally, limitations of the study include the small sample size, short observation window, and the lack of molecular typing, which does not allow for a rigorous distinction between relapse (persistence) and reinfestation . Nevertheless, the design reflects the typical patient trajectory and therefore has practical value.

For clarity, diagrams of the dynamics of symptoms and outcomes are presented.







Treatment results (n=50)

Indicator	Metronidazole (n=25)	Nitazoxanide (n=25)
Elimination on day 14	23 (92%)	23 (92%)
Relapse by 3 months	2 (9%)	1 (4%)

The conclusions are as follows: in children with giardiasis, clinical dynamics after treatment are characterized by rapid regression of intestinal symptoms and a slower recovery of appetite and general well-being, which requires clinical monitoring even with subjective improvement. In a study of 50 children, laboratory elimination of Giardia by day 14 was achieved in 92% of patients, and relapse/ reinfestation within 3 months was observed in 6.5% of those who eliminated the infection, emphasizing the importance of preventing reinfection. The obtained data confirm the practical need for objective laboratory monitoring of therapy effectiveness and enhanced sanitary and hygienic measures in families and children's groups. The choice between short and standard treatment regimens within this sample was not accompanied by differences in the elimination rate; however, the trend toward fewer recurrent episodes requires verification in a larger cohort and with longer follow-up. Overall, the results support an integrated clinical and epidemiological approach in which therapy, control, and prevention of reinfection are considered as interdependent elements of management.

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