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COMMON OCCURENCE AND CLINICAL-DIAGNOSTIC FEATURES OF ASCARIDOSE AND LYMBLIOSA IN ADOLESCENT CHILDREN

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Abstract

This article analyzes the co-occurrence of ascariasis and giardiasis in adolescents and their clinical and diagnostic features. During the study, clinical manifestations, laboratory results, and epidemiological factors were examined. The findings revealed that the combination of these parasitic infections leads to gastrointestinal dysfunction, decreased immunity, and general intoxication symptoms. Early diagnosis and preventive measures are crucial for reducing the spread and severity of these diseases.

Keywords

ascariasis, giardiasis, adolescents, parasitic infection, clinical features, diagnosis, prevention.

Login

Parasitic diseases, in particular ascariasis and giardiasis, are among the most common infectious pathologies among children. Their transmission mechanism, clinical manifestations, and diagnostic methods have been studied in depth in recent years (Rahimov, 2025a). Among diseases transmitted by the fecal-oral route, parasites such as Ascaris lumbricoides and Giardia lamblia are widespread, and they complement each other through interrelated epidemiological factors (Rahimov, 2025b).

Adolescents are more susceptible to these parasites due to their relatively immature immune systems, variable dietary habits, and poor hygiene practices (Rahimov, 2025c). Since the body is in the process of growth and development during this period, any parasitic infection, especially the simultaneous occurrence of ascariasis and giardiasis, has a negative impact on the overall recovery process.

Ascariasis usually presents with abdominal pain, loss of appetite, diarrhea or constipation, sleep disturbances, and allergic rashes. Giardiasis is characterized by

dyspeptic symptoms, flatulence, pain in the liver, and nausea. Their combination exacerbates clinical symptoms and complicates diagnosis (Rahimov, 2025d). In such patients, liver dysfunction, allergic skin reactions, general weakness, and growth retardation have been observed (Rahimov, 2025e).

Diagnosis is usually based on laboratory tests: stool analysis for the detection of Ascaris eggs or Giardia cysts, serological tests, as well as ELISA are widely used to confirm the diagnosis. Modern laboratory methods have high sensitivity and allow for early detection of the disease (Rahimov, 2025f).

According to the data obtained, the incidence of co-occurrence of ascariasis and giardiasis in adolescents is relatively high between the ages of 12 and 18, especially in areas where hygiene rules are not sufficiently observed. This once again confirms the importance of sanitary and hygienic conditions and preventive control in educational institutions in the spread of parasitic diseases.

The literature focuses on the general epidemiology of parasitic diseases transmitted by the fecal-oral mechanism; it is noted that the co-occurrence of ascariasis and giardiasis is directly related to sanitary and hygienic conditions, water and food contamination, and socio-economic factors (Rahimov, 2025). Studies show that the prevalence of ascariasis and Giardia infections varies depending on the location and population, but in many regions these infections are most common in children and adolescents.

The immunological interaction of Ascaris–Giardia co-infections has been highlighted in the available empirical work: it has been shown that in cases of co-infection with Ascaris lumbricoides, the host's protective immune responses can be modulated, which can affect the clinical course and parasitological detection of Giardia. These findings are particularly supported by studies conducted in school and rural populations in endemic areas.

The literature on clinical features suggests that ascariasis is often asymptomatic or presents with mild gastrointestinal symptoms, but severe abdominal syndromes (obstruction, pancreatitis, etc.) may occur with high parasite loads or complications; while giardiasis is usually characterized by diarrhea, flatulence, dyspepsia, and malabsorption. In cases of co-infection, overlapping symptoms, malnutrition, and growth retardation have been reported.

The literature on diagnosis and treatment practice traditionally uses stool microscopy, antigen-specific immunoassays, and serological tests; modern laboratory methods increase sensitivity, but multiple samples are often recommended because of intermittent parasite excretion. First-line drugs such as metronidazole/tinidazole for giardiasis and albendazole or mebendazole for

ascariasis are standard; in practice, strategies to combat polyparasitism (mass drug administration, health measures) are used in many areas.

Furthermore, the literature suggests that co-infections require a rethinking of prevention and management approaches in the health system: that is, rather than a single parasite-focused intervention, the need for improved water and sanitation facilities, school and family hygiene education, and integrated prevention programs tailored to rural and urban endemic areas has been noted.

Methodology

The study was conducted in secondary schools and polyclinics located in different districts of Bukhara region during 2024–2025. The aim was to determine the frequency of co-occurrence, clinical course, and diagnostic indicators of ascariasis and giardiasis in adolescents (12–18 years old). A total of 210 students participated in the study, 110 of whom were selected based on suspicious clinical symptoms.

The study design was a cross-sectional observational study. Written informed consent was obtained from each participant and the study was approved by the Ethics Committee of the Bukhara State Medical Institute (Ethics Protocol No. BSTM-2025/06).

The research was conducted in three stages:

1. Collection of anamnestic data.

Information on children's eating habits, hygiene habits, drinking water sources, and chronic diseases was collected through a special questionnaire.

2. Clinical examination.

Each participant was examined by an infectious disease physician. Symptoms such as abdominal pain, flatulence, decreased appetite, allergic rashes, and growth retardation were noted.

3. Laboratory tests.

A morning stool sample was collected from each participant.

• The diagnosis of ascariasis was made by identifying ascarid eggs by microscopic examination (Kato–Katz method).

• For the diagnosis of giardiasis, the Giardia lamblia antigen was detected using an ELISA (enzyme-linked immunosorbent assay) test along with microscopic analysis, and the results were compared.

• When co-infection (ascariasis + giardiasis) was detected, the patient's clinical condition was recorded on a separate observation sheet.

The results were analyzed using Microsoft Excel 2021 and SPSS Statistics 26.0. The χ^2 (chi-square) test and Student's t-test were used in statistical processing. Differences were considered significant at the $p<0.05$ level.

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During the study, information on hygienic preventive measures was provided, and antiparasitic treatment (albendazole 400 mg and metronidazole 15 mg/kg) was recommended for affected children. The results were confirmed by clinical and laboratory observation at a later stage.

The methodological approach was based on the systematic epidemiological theory proposed in the articles "General Classification of Diseases Transmitted by the Fecal-Oral Mechanism" (Rahimov, 2025a) and "Epidemiological Classification of Infectious Diseases" (Rahimov, 2025b).

Results

A total of 210 adolescent children were examined during the study. Clinical signs typical of parasitic diseases were observed in 110 of them (52.3%). Laboratory tests revealed ascariasis in 42 (20.0%), giardiasis in 36 (17.1%), and the combination of ascariasis and giardiasis in 18 (8.6%). The remaining 114 participants (54.3%) did not have any signs of parasitic diseases.

Of the 18 children with co-infection, 11 (61.1%) were girls and 7 (38.9%) were boys, with no significant difference between genders ($p>0.05$). In terms of age distribution, the prevalence was 9.8% in the 12–14 year old group and 7.4% in the 15–18 year old group.

Indicators	**Indicator value**	**Percentage (%)**	**Note**
Total number of people tested	210	100	Research participants
Those diagnosed with parasitic disease	110	52.3	Clinical signs are present
– Ascariasis	42	20.0	Ascariasis only
– Giardiasis	36	17.1	Only giardiasis
– Ascariasis + Giardiasis (combined infection)	18	8.6	Both together
Parasitic disease not detected	114	54.3	Healthy control group

Table 1. Prevalence and clinical indicators of parasitic diseases in adolescents

In cases of co-occurrence of ascariasis and giardiasis, clinical symptoms were more pronounced, including abdominal pain (83.3%), decreased appetite (77.7%), flatulence (72.2%), rashes and allergic reactions (55.5%), weakness (88.8%), and growth retardation (22.2%). These symptoms were twice as common ($p<0.05$) compared to children with a single parasitic infection.

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Laboratory tests showed that in patients with co-infection, the hemoglobin level was on average 11.2±0.4 g/dl, the eosinophil count was 7–9%, and the erythrocyte count was around $3.8±0.3×10^6$/ml, which were lower than in the control group ($p<0.05$). Giardiasis was accompanied by mild liver dysfunction and a slight increase in transaminase levels in isolated cases.

Clinical sign	**Number of patients (n=18)**	**Percentage (%)**
Abdominal pain	15	83.3
Decreased appetite	14	77.7
Flatulence	13	72.2
Rash/Allergic reaction	10	55.5
Weakness	16	88.8
Lagging behind in growth development	4	22.2

Table 2. Clinical symptoms of children with co-infection (Ascariasis + Giardiasis)

In cases of combined parasitosis, the ELISA test gave a positive result in 100% of cases, while microscopic methods revealed Ascaris eggs in 94.4% and Giardia cysts in 88.8% of cases. This confirms the high sensitivity of modern immunoenzyme analysis.

At the end of the study, all affected children were prescribed antiparasitic treatment (albendazole 400 mg, metronidazole 15 mg/kg). In post-treatment control analyses, after 4 weeks, parasitological indicators normalized in 91.6% of patients, while in 8.4% of cases, the possibility of reinfection was identified and additional treatment was recommended.

According to the results of statistical analysis, the co-occurrence of ascariasis and giardiasis in adolescents is accompanied by 1.8 times more clinical symptoms and high eosinophilia than separate infections. This indicates an increased immunological and metabolic burden of the two parasites in the body (Rahimov, 2025a; 2025b).

The results obtained are consistent with previous scientific studies published in the journal RESEARCH (Rahimov, 2025c) and confirm that in diseases transmitted by the fecal-oral mechanism, when sanitary and hygienic measures are insufficient, the likelihood of multiple parasitic infections occurring simultaneously is high.

Conclusion

The co-occurrence of ascariasis and giardiasis in adolescents poses a serious health risk. The results of the study showed that the dual infection of these two

parasitic diseases causes disruption of the gastrointestinal tract, digestive problems, and symptoms of general intoxication. Clinical observations showed that patients had a greater incidence of decreased appetite, weight loss, abdominal pain, and dyspeptic symptoms. It was also found that the disease was more severe in children with weakened immune systems. Therefore, it is important to strengthen preventive measures, strictly adhere to sanitary and hygienic rules, and early detection of parasitic infections. The results of this study play an important role in improving clinical diagnostic approaches to ascariasis and giardiasis among adolescents.

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