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# Description of Immune Status in People of Different Ages Diagnosed with Parasitic Diseases

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**Abstract** The study of serum immunoglobulin concentrations in adults and children with hymenolipidosis in the article showed that no differences in IgA and IgM were detected in both age groups. Significant differences from the control group were observed mainly for IgG and IgE, while in adults the difference from the control group was 1.73 and 4.53 times, respectively, while in children these values were 1.65 and 3.45 times higher than in the control group, respectively. the tendency to increase the quantity of immunoglobulins was the same in both age groups, only the intensity of changes was higher in adults than in children. In all cases, the serum concentration of the complement C3 component did not differ significantly from the control group, and no age difference was observed in this parameter.

**Keywords** Parasitic diseases, Immunoglobulins, Immune status, Gimenolipedosis, Children

## 1. Introduction

The prevalence of parasitic diseases, their medical and social significance, the economic damage they cause to countries, the deterioration of the quality of life of the adult population, especially children, indicate the need to pay serious attention to these pathologies. However, the allergological and immunological aspects and immunopathogenetic properties of these diseases have not been fully elucidated.

## 2. Literature Analysis and Methodology

Today, more than 15,000 species of parasites living at the expense of humans, animals and plants are known, and more ascarids, oysters, and helminths are found in humans [1,4].

The helminths parasitize the respiratory, digestive, muscular, liver, gallbladder, spleen, mine, brain, eye and other organs of the human body. One of the factors determining the health of the population is socially related diseases, including protozoonosis and helminths, all of which account for 99% of parasitic diseases [5,11].

Scientific sources acknowledge that worms (helminths) that live at the expense of organs and tissues of humans and animals, and the diseases they cause, are called helminthiases. The source of the disease is a sick person and animals infected with vomit [3,5,8].

Parasitism (Greek parasitos - free-spirited, homosexual) is one of the interactions between organisms belonging to different species. In this case, one of the organisms (parasites) harms the other (host) using it as a habitat and food source.) types [6,12].

According to the tenth revised International Classification of Diseases (ICD-ICD-10) (WHO, 2007), parasitic diseases belong to class I. According to the WHO, helminthiasis is the fourth leading cause of damage to the health of the world's population after diarrhea, tuberculosis and ischemic heart disease [14].

The increase in helminthiasis in different countries of the world is the result of environmental pollution by helminth eggs as a result of wastewater flow, population migration, increased human contact with animals, low socio-economic living standards, weakening of the immune system [1,11,13].

Children have been found to be a vulnerable population to parasites. This is due, on the one hand, to the low level of compliance with sanitary-hygienic standards, and, on the other hand, to the rapid growth and decline in development as a result of parasitic invasion. Invasion of parasites in childhood is often caused by factors that lead to chronic eating disorders, gastrointestinal dysfunction, intoxication, sensitization of the body and weakening of the immune system. The helminth larvae migrate and can damage the visceral membranes, brain, eyes, lungs, and nervous system. 5-7% of larval migrants enter the brain, larvae of more than 30 parasitic species affect lung tissue [2,3,9,10].

The above-mentioned problems are also relevant in the Republic of Uzbekistan [7,8], there are few scientific sources on this problem in the literature.

Immune status of 79 adults and children diagnosed with parasitic disease in Bukhara and Khorezm regions was studied. (IgM, IgA, IgG) The concentration of immunoglobulins was determined by the method of radial

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immunodiffusion according to Manchini (1963). The S3 component of complement was assessed by IFA analysis in the serum of the subjects.

## 3. Results and Discussion

A comparative analysis of key indicators of immune status of an adult organism with an allergic background diagnosed with hymenolipedosis showed that IgA did not differ significantly from control group parameters in adults (comparison group) (Table 1).

**Table 1.** The results of a comparative analysis of the main indicators of the immune status of the adult organism with an allergic background diagnosed with hymenolipedosis, M ± m

| Indicators | Control group, n=15 | Adults, n=32 |
|---|---|---|
| IgA, g / l | 1,65±0,07 | 1,57±0,12 ↔ |
| IgM, g / l | 0,85±0,04 | 1,34±0,18* ↑ |
| IgG, g / l | 9,11±0,37 | 15,72±0,74* ↑ |
| IgE, mg / ml | 35,00±1,40 | 158,71±0,89* ↑ |
| C3, mg / ml | 34,60±1,20 | 33,51±1,00 ↔ |

Note: * - a sign of convincing differences with respect to the control group; ↑ - direction of change; ↔ - There is no convincing difference.

This value was 1.57 ± 0.12 g / l in adults and 1.65 ± 0.07 g / l in the control group (R>0.05), but the serum IgM concentration was higher than in the control group. was - 1.34 ± 0.18 g / l and 0.85 ± 0.04 g / l, respectively (difference 1.58 times, R<0.05). The same trend was maintained for IgG, i.e., the indicator was 1.73 times higher than the control group - 15.72 ± 0.74 g / l and 9.11 ± 0.37 g / l (R<0.001), respectively.

We will focus on IgE levels, as we would like to emphasize that our studied patients have not only hymenolipedosis, but also an allergen background. This parameter is 158.71 ± 0.89 g / l in patients with adult hymenolipidosis, which is 4.53 times higher than the control group (35.00 ± 1.40 g / l). This condition not only indicates the presence of a high level of allergic background in the body, but also indicates that it is one of the main causes of this allergic background. This condition should be considered during and during disease diagnosis, and this immunoglobulin concentration can also be used as a prognostic immunological criterion in determining the outcome of the disease under study.

The amount of complement S3 component included in the non-specific protective factors did not differ significantly from each other in the compared groups (R>0.05), which is the main indication that no activation of complement components was observed in hymenolipidosis.

The magnitudes studied above were also studied in children diagnosed with this disease, the figures are given in Table 2.

The trend of changes in immunoglobulin concentration was similar to the parameters of older patients, but we note that the direction of changes was different compared to the control group.

**Table 2.** The results of a comparative analysis of the main indicators of the immune status of children with an allergic background diagnosed with hymenolipedosis, M ± m

| Indicators | Control group, n=15 | Children, n=47 |
|---|---|---|
| IgA, g / l | 1,65±0,07 | 1,19±0,10* ↓ |
| IgM, g / l | 0,85±0,04 | 1,00±0,14 ↔ |
| IgG, g / l | 9,11±0,37 | 15,07±0,51* ↑ |
| IgE, mg / ml | 35,00±1,40 | 120,80±0,73* ↑ |
| C3, mg / ml | 34,60±1,20 | 35,27±0,90 ↔ |

Note: * - a sign of convincing differences with respect to the control group; ↑, ↓ - directions of changes; ↔ - There is no convincing difference.

Against the background of a significant decrease in IgA content (up to 1.19 ± 0.10 g / l), IgM concentration did not differ significantly from the control group (0.85 ± 0.04 g / l) (up to 1.00 ± 0.14 g / l, R>0.05). It is noteworthy that in both cases the numbers being compared did not differ significantly from each other. In serum, these values are practically the same in adults and children, close to the norm, which indicates that gimenolipedosis occurs in the same condition in people of different ages, there is insufficient stress on the immune system, it is practically impossible to diagnose based on IgM and IgA. The diagnostic and prognostic significance of these 2 immunoglobulins in the diagnosis of hymenolipidosis and in the assessment of immune status has been recognized.

A different picture was observed for the other immunoglobulins studied - IgG and IgE, whose concentration in the blood serum of the control group was significantly higher than these values (R<0.001). If the amount of IgG increased 1.65 times in sick children (15.07 ± 0.51 g / l and 9.11 ± 0.37 g / l, respectively, R<0.001), the IgE concentration produced an even higher value (120.80 ± 0.73 g / l and 35.00 ± 1.40 g / l, respectively, a difference of 3.45 times, R<0.001). No convincing differences were found for the S3 component of the complement (R>0.05).

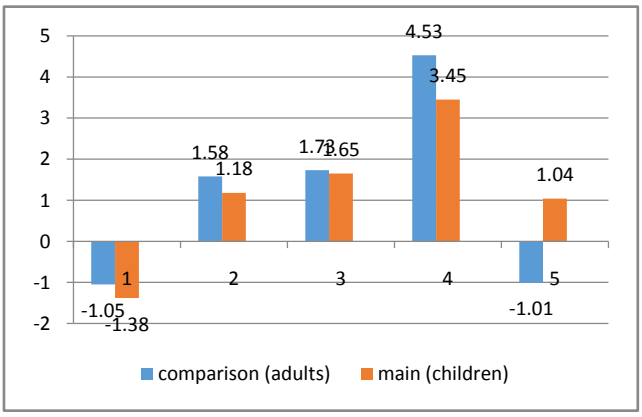


**Figure 1.** Comparisons of hymenolipidosis observed and differences of the main groups in relation to the control group, times (1. IgA, 2. IgM, 3. IgG, 4. IgE, 5. C3)

If we compare the performance of children and adults, we see that a similar trend is observed, only the intensity of the

changes is higher in adults. The changes were similar in both age groups, with no parasitic disease, no specific changes in the immune system, and no age-related changes in the duration and strength of the immune response.

The differences between the groups being compared can be clearly seen in Figure 1.

The rate of change in the parameters of children relative to the control group showed that their intensity varied relative to that of adults.

## 4. Conclusions

Thus, the concentrations of 4 immunoglobulins (IgA, IgM, IgG, IgE), S3 component of complement, anti-inflammatory and anti-inflammatory cytokines (IL-4 and TNFa) in the serum of children and adults diagnosed with hymenolipedosis varied and quantitative imbalance was observed. Two of the indicators informing about the immune status (IgA and C3 component) were not significantly changed in relation to the control group (healthy individuals) (R>0.05), the remaining indicators were significantly increased (R<0.05-R<0.001). including IgM 1.58 and 1.18 times, IgG 1.73 and 1.65 times, and IgE 4.53 and 3.45 times, respectively (R<0.05-R<0.001). Significant increase in serum of all three immunoglobulins was explained by the effect of the pathogen gimenolipedoz on the body, characterized by a sharp increase in the tension of the immune system and the allergic background. The fact that the intensity of changes in adults is higher than in children has been recognized as an age-appropriate feature.

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