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## **RELATIONSHIP OF INCIDENCE OF INTESTINAL PARASITOSIS WITH THE LEVEL OF IMMUNODEFICIENCY IN PATIENTS WITH HIV INFECTION**

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**Abstract:** To study the relationship between the prevalence of intestinal parasitosis and the level of immunodeficiency in HIV-infected individuals. The material for the study was the results of the detection of intestinal parasitosis in 65 people living with the HIV. In the patients often was found Giardia lamblia and Blastocystis hominis. In patients with intestinal parasites, severe immunosuppression (CD4 <200 c/ml) was more common than in patients without them. The detection of intestinal parasitosis in patients with HIV infection can be used as a marker of immune suppression. Common intestinal parasites among HIV-infected patients are Giardia lamblia, Blastocystis hominis, Entamoeba histolytica, and Ascaris lumbricoides. There is a correlation between the prevalence of intestinal parasitosis and immunodeficiency.

**Key words:** HIV infection, intestinal parasitosis, immunodeficiency, viral load.

**Introduction.** Today, HIV infection is one of the most common in the world [1]. In the developed world, 30-60%, and in developing areas, 90% of people infected with HIV have long-term human diarrheal syndrome - a diarrheal syndrome most often caused by intestinal parasites. In areas with high numbers of HIV-infected people, the risk of contracting intestinal infections and intestinal parasites is higher than in other areas. Most studies on the prevalence and clinical course of intestinal parasites in HIV-infected people were carried out in these regions [2, 6, 8]. Giardiasis, blastocystosis, and other infections are common among HIV-infected people [7, 10]. Immunodeficiency increases the risk of developing opportunistic infections and invasions, which can cause anemia, diarrheal syndrome and even death in HIV-infected people. In HIV-infected patients, it has been shown that intestinal

parasites develop more often when the number of CD4+ T-lymphocytes is <350 cells/ml, but, according to Taye B. et al. [9], there is no correlation between intestinal parasites and CD4+ cells. found. At the same time, contrary to the data of some scientists that antiretroviral therapy reduces the risk of infection with intestinal parasites [3, 4], studies conducted in Cameroon showed a high risk of developing intestinal parasitosis with a decrease in CD4+ T-lymphocytes. <200 cells/ml, regardless of antiretroviral therapy [5].

An analysis of the literature shows that the types and prevalence of intestinal parasites in patients with HIV infection depend on many factors - environmental, social and other factors. The relationship between intestinal parasites and the level of immunodeficiency in the body requires in-depth scientific research.

The aim of the study was the relationship between the prevalence of intestinal parasites in HIV-infected individuals and the level of immunodeficiency.

**Materials and methods of research.** The research was carried out in patients with HIV infection who are being treated at the Samarkand Regional AIDS Center, the Regional Clinical Infectious Diseases Hospital, the Clinic of the Research Institute of Virology. A total of 65 HIV-infected people took part in the study, of which 34 (52.3%) were men and 31 (47.7%) were women. The mean age of the patients was  $39.7 \pm 0.71$  years. It was estimated that the possibility of HIV transmission was sexual in 53.8% of cases and parenteral in 46.2% of cases.

Complaints and data of an objective examination of patients with HIV infection were studied, the anamnesis of the disease and the results of laboratory tests were analyzed. Blood serum (blood plasma) was taken from patients as laboratory material. The patients were divided into 2 groups: HIV-infected with intestinal parasitosis (group 1) and HIV-infected without intestinal parasitosis (group 2 — control).

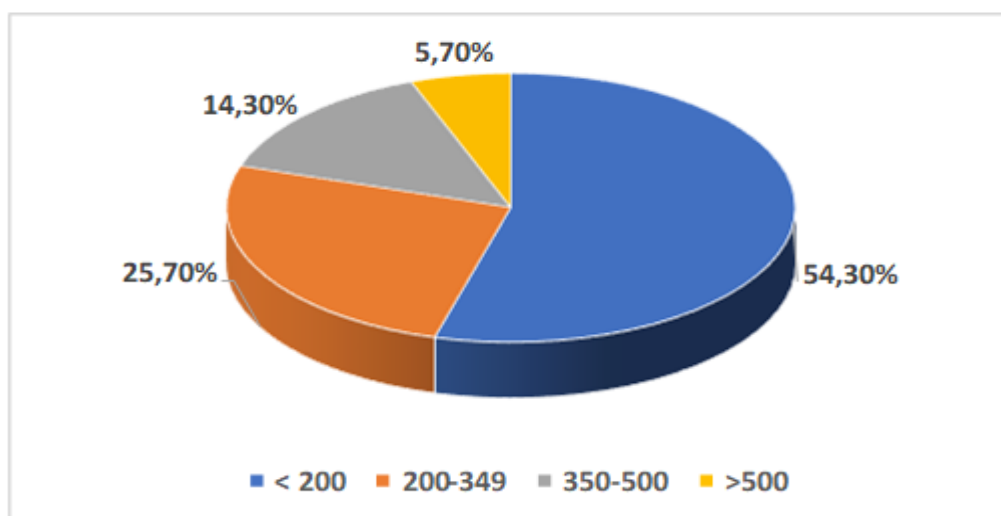
The number of CD4+ cells and HIV load were determined in HIV-infected patients in all study groups. The number of SD4+ cells was analyzed by cytofluorimetry. The HIV load was determined by the polymerase chain reaction method in the "HIV-1 in real time" kits. The stool smear was stained with Lugol's solution. Parasitological examination was carried out according to the existing recommendations for the detection of parasitic invasions. Statistical processing of the data obtained as a result of the study was carried out using a special computer program Microsoft Office Excel.

**Results and discussion.** Among the 65 examined HIV-infected patients, more than 5 parasitic infestations in the field of vision were detected in 30 (46.1%)

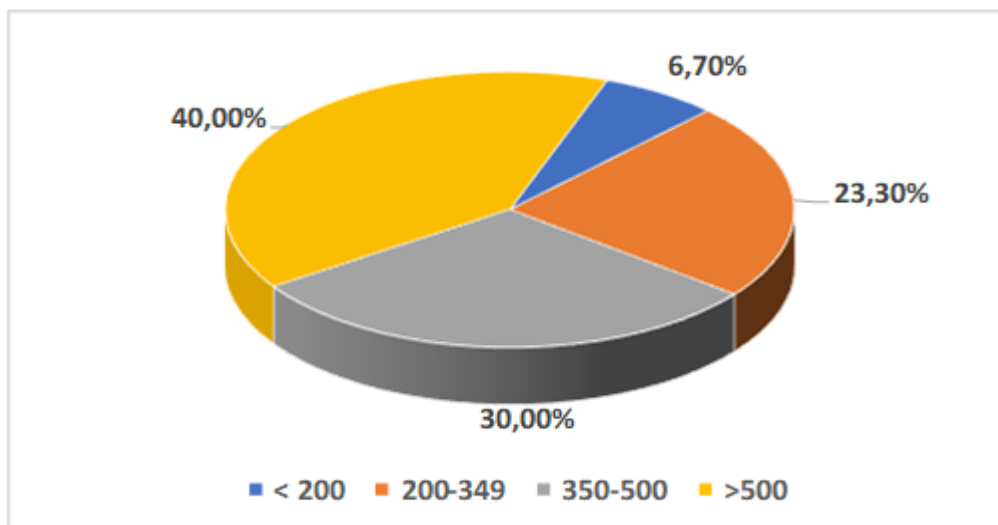
patients. Among 30 HIV-infected patients included in the study groups and had intestinal parasitosis, in 13 (43.3%) patients, intestinal parasitosis was caused mainly by *Giardia lamblia*, in 9 (30.0%) by *Blastocystis hominis*, in 5 (30.0%) - *Entamoeba histolytica*. 16.7%) of patients, and *Ascaris lumbricoides* was found in 3 (10.0%) patients.

Based on the immunological index of CD4+ cells in enzyme immunoassay, HIV-infected patients were divided into the following four groups according to the degree of immunodeficiency: the number of CD4+ cells <200 cells/ml, 200-349 cells/ $\mu$ l, immunosuppression 350-500 cells/ml and >500 cells /ml was divided into groups. In patients diagnosed with giardiasis and blastocystosis, in most cases, there was a level of deep immunodeficiency in the body ( $r < 0.01$ ).

The correlation between the degree of immunodeficiency by the number of CD4+ cells and the prevalence of intestinal parasites among HIV-infected people is shown in Figures 1 and 2:



**Figure 1. Distribution of CD4+ T-lymphocytes in HIV-infected persons without intestinal parasites (%)**



**Figure 2. Distribution of CD4+ T-lymphocytes in HIV-infected with intestinal parasites (%)**

The average number of CD4+ cells in the blood of HIV-infected with intestinal parasites was  $209.1 \pm 41.0$  cells/ $\mu$ l. The CD4+ count in patients diagnosed with *Blastocystis hominis* was  $188.23 \pm 49.6$  cells/ $\mu$ l and was statistically significantly different from that in persons without intestinal parasites ( $332.4 \pm 32.1$ ) ( $r < 0.05$ ).

Among HIV-infected people with intestinal parasites, the HIV viral load was detected in fewer cases - 30.0% (9 out of 30 people) compared with people without intestinal parasites - 51.4% (18 out of 35) ( $p < 0, 01$ ). Comparative characteristics of HIV-infected people included in the study groups are presented in Table. 1.

**Table 1**

**Comparative characteristics of the examined HIV-infected patients**

Indicator	Total		Infected with intestinal parasitosis		not infected with intestinal parasitosis	
	n	% average	n	% average	n	% average
men	34	52,3	16	53,3	21	60,0
women	31	46,2	14	46,7	14	40,0
Average age	$39,1 \pm 0,74$		$40,9 \pm 1,22$		$38,3 \pm 0,81$	
Number of CD4+ T-lymphocytes, cells/ml	$269,8 \pm 19,8$		$205,2 \pm 41,1$		$331,2 \pm 32,5^*$	
Viral load not	35	$53,8 \pm 4,1$	14	$46,7 \pm 5,74$	20	$57,2 \pm 5,1^*$

determined, copy/ml						
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Note: \* - statistical difference between groups

**Conclusion.** Giardia lamblia, Blastocystis hominis, Entamoeba histolytica, and Ascaris lumbricoides are common intestinal parasites among HIV-infected patients. There is a direct relationship between the number of CD4+ T-lymphocytes in the blood of patients and the frequency of intestinal parasites: in patients with intestinal parasites, a state of deep immunosuppression ( $CD4 < 200$  h/ml) is more common than in patients without intestinal parasites.

### References

1. Bayjanov A.K. Analysis of the occurrence of individual clinical manifestations in patients with HIV infection / Materials of the II Congress of Infectious Diseases of Uzbekistan "Priority directions for the diagnosis, treatment and prevention of infectious diseases." - Tashkent, - 2015. - P. 31.
2. Akinbo F.O., Okaka C.E., Omoregie R. Prevalence of intestinal parasites in relation to CD4 counts and anaemia among HIV-infected patients in Benin City, Edo State, Nigeria Tanzan. J. Health Res. – 2011. - №13(1). – C. 8-13.
3. Masoumi-As H., Khanaliha K., Bokharai-Salim F. et al. Enteric Opportunistic Infection and the Impact of Antiretroviral Therapy among HIV/AIDS Patients from Tehran, Iran. J Public Health. - 2019. - № 48(4). – C. 730-739.
4. Missaye A., Dagne M., Alemu A. et al. Prevalence of intestinal parasites and associated risk factors among HIV/AIDS patients with pre-ART and on-ART attending dessie hospital ART clinic, Northeast Ethiopia. AIDS Res Ther. – 2013. - №10(1). – C. 7-15.
5. Nsagha D., Njunda A., Assob N. Intestinal parasitic infections in relation to CD4+ Tcell counts and diarrhea in HIV/AIDS patients with or without antiretroviral therapy in Cameroon. BMC Infectious Diseases. – 2016. - №16(9). – C. 1-10.
6. Roka M., Goñi P., Rubio E. et al. Intestinal parasites in HIV-seropositive patients in the Continental Region of Equatorial Guinea: its relation with socio-demographic, health and immune systems factors / Trans R. Soc. Trop. Med. Hyg. – 2013. - №107(8). – C. 502-510.
7. Shimelis T., Tassachew Ya., Lambiyo T. Cryptosporidium and other intestinal parasitic infections among HIV patients in southern Ethiopia: significance of improved HIV-related care. Parasit Vectors. – 2016. -№9. – C. 270-277.

8. Taye B., Desta K., Ejigu S. et al. The magnitude and risk factors of intestinal parasitic infection in relation to Human Immunodeficiency Virus infection and immune status, at ALERT Hospital, Addis Ababa, Ethiopia. *Parasitol Int.* – 2014. - №63(3). – C. 550-556.

9. Taye B., Desta K., Ejigu S., Dori G.U. The magnitude and risk factors of intestinal parasitic infection in relation to Human Immunodeficiency Virus infection and immune status, at ALERT Hospital, Addis Ababa, Ethiopia // *Parasitol Int.* – 2014. - №63(3). – C. 550-600.

10. Zorbozan O., Quliyeva G., Tunalı V. et al. Intestinal Protozoa in HIV-Infected Patients: A Retrospective Analysis. *Turkiye Parazitol Derg.* - 2018. - №42(3). – C. 187-190.