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The Influence of Parasitic Disease (Intestinal Giardiasis) On the Course of Atopic Dermatitis

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Abstract: When characterizing the combined clinical course of atopic dermatitis with intestinal giardiasis, eosinophilia and an increase in the level of total serum Ig E (141±12 IU/ml) were established. The detected increase in the level of immunoglobulin E in patients with intestinal giardiasis served as the basis for prescribing three-time coproscopy to patients with atopic dermatitis to detect and completely eliminate parasitoses, which will increase the effectiveness of specific therapy for atopic dermatitis. It has been established that in case of atopic dermatitis, treatment of intestinal giardiasis is preferably carried out using nifuratel. In patients with atopic dermatitis, the effectiveness of treatment for intestinal giardiasis was established, which was manifested in the disappearance of atopic dermatitis on the 7-8th day of treatment.

Keywords: Intestinal giardiasis, atopic dermatitis.

1.Introduction:

Atopic dermatitis (AD) is a chronic inflammatory skin disorder that affects a significant portion of the global population, severely impacting the quality of life and causing physical and psychological distress of patients [1].

The increase in morbidity over the past decade, the chronic nature with frequent relapses, and the insufficient effectiveness of current treatment and

prevention methods place atopic dermatitis among the most significant problems in modern medicine [2].

Atopic dermatitis is understood as a chronic allergic disease characterized by exudative and lichenified rashes, elevated serum IgE levels, and hypersensitivity to specific irritants.

However, as shown in several studies by domestic and foreign researchers, only some patients exhibit increased levels of total and allergen-specific IgE, which allows only these patients to be classified in the IgE-mediated type of the disease [2].

In some patients, IgE-mediated hypersensitivity in the pathogenesis cannot be identified, but delayed-type hypersensitivity is present. Besides these two groups, there are patients with a mixed type of allergic reactions in the pathogenesis.

Finally, in some patients, the pathogenesis of AD is due to other, non-immune mechanisms.

Atopic dermatitis is a hereditary disease with a chronic-relapsing course with a certain age-related dynamics, characterized by a violation of cellular-membrane activation, hypersensitivity to many immune and non-immune stimuli and dysfunction of the skin vessels [2].

The study of the presence of such an intercurrent disease as intestinal giardiasis in the ability to provoke or aggravate atopic dermatitis is becoming relevant at the present stage. Giardiasis is found worldwide, but is most common in countries in Africa, Asia, and North America. From 2004 to 2010, 70 waterborne giardiasis outbreaks were recorded worldwide [3].

Giardiasis is a protozoan infection characterized by damage primarily to the small intestine, gastrointestinal dysfunction, and can occur as a latent parasite carrier or manifest forms. Asymptomatic forms of giardiasis occur in 25–28% of all infected individuals, subclinical forms occur in 49%, and manifest forms occur in 13–43% of all infected individuals.

Giardiasis is an anthropozoonotic parasitic infection, which often occurs as an asymptomatic parasite carrier; in severe cases, intestinal dysfunction, asthenovegetative syndrome, and sensitization of the body develop [3, 4, 5].

The aim of the present study was to characterize the combined clinical course of atopic dermatitis with intestinal giardiasis.

2. Methods

Methods and materials of research 40 patients with atopic dermatitis aged 18-43 years were examined. The control group consisted of 26 patients with atopic dermatitis without intestinal giardiasis. The level of immunoglobulin E in blood plasma was determined. The level of total serum IgE was studied by a solid-phase enzyme immunoassay method using the appropriate commercial kits from Hema-diagnostics OOO. Normative data for immunoglobulin A and E were established in 12 relatively healthy individuals.

Research method: triple coproscopy with specimen collection in Turdyev's preservative. Reagent Turdyev's medium, which consists of 80,0 ml of water, 10,0 ml of formalin, 2,0 ml of glycerin, 0,16 g of sodium nitrate and 8,0 ml of Lugol's solution.

All 100% of examined patients submitted material after magnesia, which doubled the detection rate of parasites. Because collecting material from the solid fractions of the first portion is not desirable, as this can lead to a false negative result.

Data collection was carried out at the Republican Specialized Scientific and Practical Medical Center for Epidemiology, Microbiology, Infectious and Parasitic Diseases. The presence of intestinal giardiasis was established by performing ovoscopy of feces.

3. Results

Of the 298 examined patients with atopic dermatitis, 40 (13,42%) were found to be infected with intestinal giardiasis (according to coproovoscopy data).

In patients with atopic dermatitis without intestinal giardiasis (n 26), weakness (12/46,15%), decreased appetite (9/22,5%), flatulence (4/15,38%), nausea (81,3%) were observed.

Clinically manifest forms of giardiasis infection are characterized by polymorphism and nonspecific clinical symptoms and typically manifest with varying degrees of gastrointestinal symptoms.

Of the most pronounced clinical manifestations of intestinal giardiasis in patients with atopic dermatitis(n 40,0), we noted the following symptoms: weakness (100%), decreased appetite (100%), pain in the right hypochondrium (34/85,0%) and in the umbilical region (100%), flatulence (36/90,0%), constipation alternating with diarrhea (18/45,0%), nausea (35/87,5%), hypopigmented spots on the face (12/30,0%) were

noted.

Abdominal pain in patients with intestinal giardiasis was most often in the gastroduodenal region or in the right hypochondrium. Sometimes the pain was paroxysmal, occurring and intensifying after meals. We did not observe any significant structural or functional changes in the liver in giardiasis.

100% of patients with atopic dermatitis occurring against the background of intestinal giardiasis also noted astheno-neurotic syndrome.

Astheno-neurotic syndrome is characterized by weakness, increased fatigue, headaches, irritability, tearfulness, and sleep disturbances. In 15% of patients with intestinal giardiasis, a decrease in cognitive functions of the brain was observed.

All patients underwent standard clinical and laboratory examinations. In all patients, a concomitant diagnosis of intestinal giardiasis was established by the detection of Giardia cysts in the stool.

All patients had eosinophilia in the blood and an increase in the level of total serum Ig E 141±12,0 IU/ml (the minimum indicator was 123 ME/ml, and the maximum was 182 ME/ml; in healthy individuals, Ig E was 74±5,1 IU/ml).

While in giardiasis the increase in total serum IgE was more pronounced and was, as a rule, associated with the development of atopic dermatitis in the patient.

In the control group (patients with atopic dermatitis without the presence of intestinal giardiasis), the level of immunoglobulin E was less pronounced and amounted to 123±9,3 IU/ml.

20 (50%) patients of the first group, along with desensitizing and local therapy for atopic dermatitis with tacrolimus (protopic), were prescribed a 7-day course of treatment for intestinal giardiasis with metronidazole, 0,25 g 3 times a day.

Along with desensitizing and local therapy for atopic dermatitis with tacrolimus (protopic), 20 (50%) patients from the second group were prescribed a 7-day course of treatment for intestinal giardiasis with nifuratel, 400 mg x 3 times a day. 2-3 hours after each dose of nifuratel (400 mg x 3 times a day) or metronidazole (0,25 g 3 times a day), patients were prescribed an intestinal adsorbent.

Changes occurring in the humoral (increase in serum IgE, IgA) links of the immune system are described in more detail in the table 1.

Table 1

Immunological parameters in patients with atopic dermatitis

Indicators	Healthy faces (n=12)	Patients with intestinal giardiasis and atopic dermatitis (n=40)	Patients with atopic dermatitis without intestinal giardiasis (n=26)
IgA, мг%	198±15,2	165,2±2,1 (**min** 160; **max** -170)	178,9±2,1 (**min** 175; **max** -186)
IgE, IU/ml	74 **±**5,1	141±12,0 (**min** 123; **max** -182)	123±9,3 (**min** 85; **max** -136)

We carried out therapy for intestinal giardiasis along with the prescription of choleretic drugs with a cholekinetic effect.

In the nifuratel group, a follow-up stool test for Giardia cysts was negative. Furthermore, atopic dermatitis resolved within 7-8 days of treatment.

When treated with metronidazole, this effect was observed in 16 patients. Moreover, 5 patients complained of nausea, noted after taking the drug in the first days of therapy.

Symptoms of atopic dermatitis disappeared on the 7-8th day of treatment. In 40% patients with atopic dermatitis and intestinal giardiasis, after etiologic therapy for giardiasis, a long-term functional disorder of the gastrointestinal tract was observed after the disease (more than three months).

After treatment for intestinal giardiasis, patients also noted the disappearance of dyspeptic symptoms (diarrhea alternating with constipation, flatulence, loss of appetite, nausea).

4. Discussion

This determines the need for early detection of intestinal giardiasis in patients with atopic dermatitis in order to conduct timely antiparasitic therapy.

Among the pathogenetic mechanisms of allergic manifestations in giardiasis, in addition to the direct allergenic action of the pathogen's antigens, is an increase in the permeability of the small intestinal mucosa to food and bacterial allergens, caused by parasitic antigens.

Thus, the etiological link between atopic dermatosis and giardiasis is confirmed by the significantly higher frequency of giardiasis in this category of patients, as well as the effect of antiparasitic treatment on the relief of allergy symptoms in more than 40% of infected individuals.

5. Conclusions

Based on the above, it can be concluded that giardiasis reduces the effectiveness of specific therapy for atopic dermatitis.

Therefore, a pressing task for scientists, doctors and diagnosticians is, in case of atopic dermatitis, treatment of intestinal giardiasis is preferably carried out using nifuratel.

The detected increase in the level of immunoglobulin E in patients with intestinal giardiasis served as the basis for prescribing three-time coproscopy to patients with atopic dermatitis to detect and completely eliminate parasitoses, which will increase the effectiveness of specific therapy for atopic dermatitis.

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