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IMPROVING TREATMENT FOR NON-SPECIFIC ULCERATIVE COLITIS: THE EFFECT OF IMMUNOCORRECTION

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ABSTRACT:

The pathogenesis of nonspecific ulcerative colitis, which demonstrates the significance of changes occurring in individual components of the immune system, encompasses the following aspects: a decrease in the total number of T-lymphocytes, a homogenization of their subpopulations, as well as disturbances in the functions of B-lymphocytes and natural killer cells. The effect of immunorestorative agents on the treatment of nonspecific ulcerative colitis has also been evaluated.

INTRODUCTION. Nonspecific ulcerative colitis (NUC) the etiology has not been sufficiently studied. Efforts to identify the causative microbe or virus have been unsuccessful. As a result, the infectious theory has somewhat lost its significance in explaining the disease's origin. Conversely, the allergic process plays an important role in the disease's development. It is known that excluding allergens such as milk and eggs from the diet has positively altered the clinical course of the disease. Additionally, immune processes also have a certain significance in the disease's progression. The presence of specific antibodies against the large intestine's mucous membrane in the patient's blood serum is clear evidence of this. Familial predisposition also plays an important role in the occurrence of nonspecific ulcerative colitis.

Relevance of the research. Nonspecific ulcerative colitis (NUC) is one of the most serious and unresolved problems in gastroenterology. The disease is characterized by a long-lasting chronic course, a tendency for seasonal flare-ups, and severe complications, leading to a high degree of disability. It primarily affects young people and adults of working age [4]. In recent years, the state of the immune system in the pathogenesis of NUC has become increasingly important, which largely determines the outcome of the disease.

Research objective: To study the clinical and immunological features of nonspecific ulcerative colitis depending on the severity and form of the disease, and to develop principles of immunocorrective treatment.

Based on the set goal, the following tasks have been defined:

- determine the characteristics of changes in cellular and humoral immunity in patients with mild, moderate, and severe nonspecific ulcerative colitis, depending on the form of the disease;
- study the functional activity of natural killer cells in patients with various degrees of severity and forms of the disease;
- evaluate the effectiveness of using immunocorrective agents in the treatment of nonspecific ulcerative colitis.

Dependence of immunity on the form of the disease in patients with mild, moderate, and severe nonspecific ulcerative colitis;

- study the state of functional activity of natural killer cells;
- evaluate the effectiveness of nonspecific ulcerative colitis treatment using immunocorrective agents.

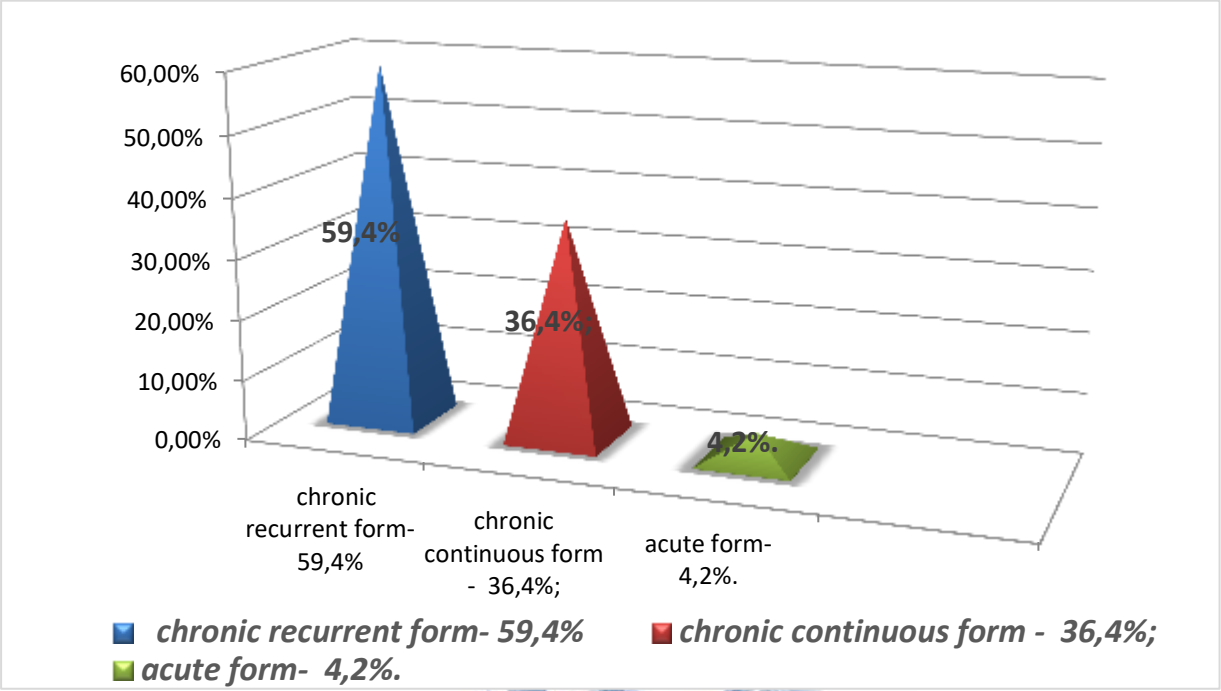
Research materials and methods. 96 patients with nonspecific ulcerative colitis in the acute phase of the disease were under observation in the therapy department of City Hospital No. 1.

The age of the patients ranged from 15 to 67 years, of which 49 were men and 47 were women. All patients underwent the following standard examinations: biochemical, radiological, endoscopic (rectosigmoidoscopy, colonofibroscopy), immunological, bacteriological, and histological studies.

The control group consisted of 25 practically healthy individuals aged 17-56. The distribution of patients according to the severity of the disease, clinical forms, and localization of the process is presented in Table 1 in accordance with the classification of ulcerative colitis. The control group consisted of 25 practically healthy individuals aged 17-56.

Severity of disease	By clinical forms			
	Acute form		Chronic form	
			Chronically recurring	Chronically continuous
Mild course	-		16	-
Moderate course	-		22	21
Severe course	15		12	24
Total	Abs	15	50	45
	%	13,6	45,4	41

In our studies, 59.4% of patients had the chronic recurrent form of NYAK, 36.4% had the chronic continuous form, and 4.2% had the acute form. A mild course of the disease was observed only in 20% of patients with the chronic recurrent form.



A moderately severe course was detected in 56.3% of patients, and a severe course in 22.9% of patients.

The assessment of immune status was conducted in accordance with accepted diagnostic standards. The absolute and relative quantities of T-lymphocytes, as well as subpopulations of theophylline-resistant and sensitive cells, were determined. Additionally, the state of the immune system's

B-cell, the concentration of immunoglobulins of classes A, M, and G, and the quantity and functional activity of natural killer cells were studied. The obtained data were statistically analyzed and processed.

Research results. Clinical and immunological characteristics of patients with mild ulcerative colitis (UC): We observed 10 patients with UC aged 17 to 65 years. Of these, 4 were men and 6 were women. In 6 out of 10 patients, other diseases (chronic hepatitis, chronic cholecystitis, acute appendicitis) were detected. When conducting a complete survey and examination of these patients, signs of ulcerative colitis were also revealed. 7 patients did not associate their illness with any particular cause.

Based on the anamnesis, it was determined that all patients included in the study had a chronic recurrent form of the disease. The duration of the disease ranged from 1 to 14 years. Analysis of the immune status in this group of patients revealed a decrease in the relative

number of lymphocytes, specifically 21.8±0.88% (compared to 25.76±1.0% in the control group). Upon redistribution of their populations, a decrease in the relative number of T-lymphocytes was observed, namely 54.9±2.6%; 0.76±0.06x109/l (compared to 59.7±1.0%; 0.8±0.04x109/l in the control group), and an increase in the relative and absolute number of B-lymphocytes, specifically 24.08±1.5%; 0.33±0.03x109/l (compared to 20.5±1.0%; 0.26±0.02x109/l in the control group), P<0.01. In these patients, the subpopulation of T-lymphocytes did not change significantly. Examination of humoral immunity indicators showed a statistically significant increase in the concentration of IgE and IgA (P<0.01), and the content of IgM was 2.5 times higher than in the control group. The functional activity of natural killer cells showed only a tendency to decrease.

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Thus, changes in the immune system of patients with mild NUC are characterized by a decrease in T-lymphocytes and an increase in B-lymphocytes and immunoglobulins of classes A and M. Changes in the aforementioned indicators can serve as diagnostic criteria for a mild course of chronic recurrent NUC.

Clinical and immunological characteristics of patients with moderate NUC: A moderate course was diagnosed in 27 patients with NUC aged 15-67 years, of whom 39% had a chronic continuous form, and 61% had a chronic recurrent form of the disease.

Thus, changes in the immune system of patients with mild nonspecific ulcerative colitis (NUC) are characterized by a decrease in T-lymphocytes and an increase in B-lymphocytes and immunoglobulins of classes A and M. Changes in the aforementioned indicators can serve as diagnostic criteria for a mild course of the chronic recurrent form of nonspecific ulcerative colitis.

Clinical and immunological characteristics of patients with moderate nonspecific ulcerative colitis: A moderate course was diagnosed in 27 patients with nonspecific ulcerative colitis aged 15-67 years, of which 39% had a chronic continuous form, and 61% had a chronic recurrent form of the disease.

When studying the immune system status of patients, a decrease in the number of T-lymphocytes was observed, specifically 48.3±1.2%; 0.72±0.06x109/l (compared to 59.7±1.0%; 0.8±0.04x109/l in the control group) P<0.001. A proportional decrease was also noted in T-helpers - 25.6±1.3%; 0.36±0.003x109/l (compared to 37.7±1.7%; 0.5±0.04x109/l in the control group) and T-suppressors - 14.4±1.31%; 0.19±0.02x109/l (compared to 19.4±1.3%; 0.25±0.02x109/l in the control group), P<0.01. Analysis of humoral immunity parameters revealed an increase in serum IgA and IgM. The concentration of IgM was 2.3 times higher than in the control group, with some examined individuals showing a 3-7 fold increase in this indicator. IgA levels also demonstrated a tendency to increase by 1.7 times.

In the group of patients with moderate Non-specific Ulcerative Colitis (NUC), a chronic persistent form of the disease was observed in 39% of patients. In these patients, we detected the lowest level of T-cell immunity; in some patients, a 4-fold decrease in the prevalence of T-suppressors was noted compared to the control group. The average IgA values did not differ from those of healthy individuals.

Thus, the above indicators show that compared to the mild course of moderate NUC, a more pronounced clinical presentation of the disease, T-system immunodeficiency, and a decrease in the functional activity of their subpopulations and natural killer cells were observed. An imbalance in T-system subpopulations of immunity, such as a decrease in T-suppressors and an increase in B-lymphocytes, confirms an increase in the concentration of IgA and IgM.

Clinical and immunological characteristics of patients with severe NUC: In our study, a severe course of NUC was observed in 11 patients aged 22-51. Among them, 2 had acute, 7 had chronic continuous, and 2 had chronic recurrent forms of the disease.

When examining the state of the immune system of patients, a sharp decrease in T-lymphocytes was observed despite normal levels of lymphocytes in peripheral blood: 40.5±2.29%; 0.51±0.06x109/l (in the control group - 59.7±1.0%; 0.8±0.08x109/l), P<0.001. The lowest indicators (21-36% and 0.23-0.43x109/l) were recorded in 41% of patients with acute and chronic continuous forms of the disease, who exhibited local and general complications such as prolonged use of chloramphenicol and tetracycline, delayed diagnosis, anemia, cachexia, hepatomegaly, myocardial dystrophy, and decreased total protein levels in blood serum.

In the group of patients with severe nonspecific ulcerative colitis, a decrease in lymphocyte subpopulations was observed against the background of T-lymphocyte deficiency. Specifically, T-helper cells were 29.52±2.49%; 0.37±0.052x109/l (compared to 37.7±1.7%; 0.5±0.04x109/l in the control group) and T-suppressor cells were 12.23±1.26%; 0.15±0.02x109/l (compared to 19.4±1.3%; 0.25±0.02x109/l in the control group), P<0.001. However, the degree of reduction in T-suppressor cells varied. The coefficient reflecting the balance of immunoregulatory cells increased to 2.4 ± 0.2 (compared to 1.94 ± 0.09 in the control group). Minimal values of T-suppressor cells were observed in 68.2% of patients,

with the range of change being 0.04-0.19x109/l (in acute and chronic persistent forms of the disease). Along with the decrease in T-suppressor cells, the number of T-helper cells also decreased.

We assessed the clinical and immunological characteristics for each group of patients with mild, moderate, and severe disease. Despite the high concentration of natural killer cell precursors, their functional activity was the lowest among all patients with nonspecific ulcerative colitis that we examined.

Thus, our study showed that changes in cellular and humoral immunity in nonspecific ulcerative colitis (NUC), as well as the functional activity of the large intestine, depend on the activity of the pathological process in the colon, and the form and severity of the disease. Even with a mild course of the chronic recurrent form, minor changes in the T- and B-immune systems were detected. An increase in disease activity, the prevalence of the pathological process in the colon, the severity of clinical and endoscopic manifestations, a decrease in the functional activity of the large intestine, and a pronounced imbalance in the subpopulation of T-helpers and T-suppressors exacerbate T-system immunodeficiency. A pronounced imbalance of the immune T-system leads to the development of autoimmune reactions and systemic damage to all parts of the gastrointestinal tract, liver, heart, and blood. It was noted that these manifestations were more pronounced in chronic continuous and acute forms of nonspecific ulcerative colitis, with moderate and severe courses. As a result of the study, we noted that irrational, irregular use of antibiotics can lead to a worsening of immunodeficiency, the spread of the inflammatory process, and an unfavorable outcome of the disease.

Conclusion. Impairment of the immune system (cellular and humoral immunity) in patients with nonspecific ulcerative colitis directly correlates with the form of the disease, the severity of its course, and the activity of the pathological process. Low indicators of the functional activity of natural killer cells suggest a severe course of the disease and an unfavorable prognosis, serving as a criterion for assessing the severity of the condition.

Thus, determining the state of the immune system (cellular and humoral immunity) in nonspecific ulcerative colitis can serve as a criterion for identifying the forms and severity of the disease.

As additional immunological criteria for the diagnosis of nonspecific ulcerative colitis, it is recommended to assess the functional activity of natural killer cells. A decrease in the functional activity of natural killer cells reflects the form of the disease and the severity of the pathological process.

The lowest indicators were observed in the severe acute form of the disease. When selecting immunomodulatory drugs for differentiated therapy, it is recommended to determine the individual sensitivity of T-lymphocytes in patients' peripheral blood to immunomodulatory medications.

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