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STATE OF THE IMMUNE SYSTEM OF PATIENTS WITH HEMOPHILIA

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Annotation
The aim of the study is to study the immune status in patients with hemophilia. A complex of immunological studies aimed at determining individual populations and immunoregulatory subpopulations of lymphocytes was carried out in 45 patients with hemophilia, of which 25 suffered from a severe form and 20 were diagnosed with a moderate form of hemophilia. 16 practically healthy men were examined as a control group.
The results of studies show that hemophilia is accompanied by a violation of the immune status in patients, which manifests itself in changes in the cellular link (a sharp decrease in the total pool of T-lymphocytes and its subpopulation - theophylline-resistant cells (TRC), with significantly high values of TSC cells) and humoral immunity (an increase in the content of B-lymphocytes, severe dysimmunoglobulinemia with a decrease in the content of immunoglobulin A and an increase in the level of immunoglobulins M and G). Data from studies of the phagocytic activity of neutrophils (PAN) and circulating immune complexes (CIC) also confirm the fact of impaired immunoreactivity in patients with hemophilia: PAN values are reduced, resulting in an increase in CIC.

Keywords: hemophilia, cellular, humoral immunity, immunoreactivity.

Introduction

Relevance. Hemophilia - the most common form of hereditary coagulopathy - manifests itself in early childhood and is characterized by hemorrhages in the joints, muscles and life-threatening bleeding into internal organs, which leads to a decrease in the ability to work and early disability of patients. It accounts for 68-78% of all cases of hereditary blood coagulation disorders. The birth rate of patients with hemophilia in each country is constant and according to WHO, the prevalence of this pathology in the world is 6-18 patients per 100,000 population
Multiple blood transfusions, inevitable in the treatment of hemophilia, lead to breakdown of immunoregulatory mechanisms, and although, according to the literature, this aspect has a number of developments, the clinical significance of

immunodeficiency in this category of patients remains unestablished. Clarification of this issue is important for choosing the most rational treatment regimens for complications of hemophilia.

In this regard, the aim of the study is to study the immune status of patients with hemophilia.

Materials and methods of research Under our supervision and treatment were 51 patients with hemophilia, of which hemophilia A was diagnosed in 37 and hemophilia B in 14 patients, which respectively amounted to 72.5% and 27.5%. All patients were on Research Institute of Hematology and Blood Transfusion. Among the surveyed - all males aged 10 to 43 years. All subjects underwent immunological studies of cellular and humoral immunity. The data obtained as a result of the study were subjected to statistical processing using Student's t-test. Results of the study A complex of immunological studies aimed at determining individual populations and immunoregulatory subpopulations of lymphocytes was carried out in 45 patients with hemophilia, 25 of them suffered from a severe form and 20 were diagnosed with an average form of hemophilia. 16 practically healthy men were examined as a control group (Table)

As a result of the study of the content of the total pool of T-lymphocytes in the peripheral blood of patients with hemophilia during the period of recurrence of the disease, a decrease in both relative and absolute numbers was revealed (52.8±1.1% and 841.6±36.2 in 1 μl) in comparison with the healthy group (respectively, 61.1±1.2% and 993.7±37.5 in 1 μl, $p<0.001$, in both cases).

At the same time, in terms of the average value of T-lymphocytes in the blood of patients with hemophilia, a certain dependence of the level of cellular immunity on the form of the severity of the disease and, accordingly, on the volume and duration of transfusion-corrective therapy was revealed. Thus, in patients with moderate to severe form with relapses of the disease, a decrease in the content of T-cells (54.2±1.2%) was observed, in comparison with the control group (61.1±1.2% $p<0.001$) and more pronounced - in severe form (48.6±2.0%, $p<0.001$ compared with control. Intergroup differences were also revealed, indicating lower relative content

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Table Indicators of the immune status of patients with hemophilia (M±m)

Indicator		Healthy n=16	Indicator Healthy, n=20	Severe form, n=25
Lymphocytes, 1 µl		1626,4±30,2	1609,6±28,4	1587,2±22,9
T-lymphocyte,	%	61,1±1,2	54,2±1,2	48,6±2,0
	1 µl	993,7±37,5	971,8±34,6	771,4±42,3
T-helpers,	%	44,6±1,4	40,5±1,6	36,4±1,2
	1 µl	725,4±35,9	646,6±37,1	577,7±33,7
T-suppressors	%	14,0±1,2	18,1±1,4	22,5±1,6
	1 µl	227,7±24,1	291,1±27,7	357,1±30,5
B-lymphocytes	%	12,9±1,2	16,8±1,2	18,8±1,4
	1 µl	209,8±23,1	270,2±23,7	298,4±26,5
Ig A, µg %		181,6±1,4	178,3±2,0	170,6±1,6
Ig M, µg %		122,5±1,8	132,8±2,4	139,4± 3,4
Ig G, µg %		1104,0±18,1	1501,7±16,6	2090,5±23,4
FAN, %		59,4±1,4	52,4±1,3	47,3±1,6
CIC, standard units		0,01±0,002	0,043±0,009	0,071±0,02

T-lymphocytes in the group of patients with severe hemophilia ($p<0.05$) compared with moderate hemophilia. The study of immunoregulating subpopulations of T-lymphocytes revealed a significant increase in the number of theophylline-sensitive cells (TSC) in the patients studied by us, amounting to 298.0 ± 25.2 per µl in absolute values and 18.7 ± 1.2% - in relative values, in comparison with a group of healthy people - 227.7±24.1 per µl and 14.0±1.2%, respectively ($p<0.05$ for the first case and $p<0.01$ for the second). A more pronounced increase in TSC was found in patients with severe hemophilia in comparison with the moderate form in relative terms ($p<0.05$). An increase in the level of TSC, which has a suppressive effect, was accompanied by a decrease in the number of theophylline-resistant cells (TRC) that perform a helper function, both in absolute (604.1 ± 37.5 per µl) and in relative terms (37.9 ± 1.2%), compared with healthy (725.4±35.9 per µl and 44.6±1.4%, respectively, $p<0.05$ and $p<0.01$ for each case).

The indicators of the absolute value of TRC in moderate hemophilia were close to the level of the healthy group, but differed significantly ($P<0.05$) in relative terms, amounting to 40.5±1.6%, against 44.6±1.4% in control. Comparison of TRC values in severe hemophilia and a healthy group revealed a difference both in relative values (36.4±1.2% versus 44.6±1.4% in the healthy group, $p<0.001$) and absolute values (557 .7±33.7 per µl versus 725.4±35.9 per µl in healthy people, $p<0.001$). In addition, a significant difference was found between the two forms of hemophilia in terms of the relative TRC of 936.4±1.2% compared to 40.5±1.6%, $p<0.05$).

Analysis of the parameters of humoral immunity in patients also indicates a change in immunoreactivity in the pathology under study. Thus, the content of the number of B-lymphocytes in the peripheral blood of patients was increased: in the general group of patients it was 17.9 ± 1.4% in relative and 285.3 ± 28.5 per μl in absolute values (in healthy patients - 12.9 ±1.22 and 209.8±23.1 per μl, respectively, $p<0.01$ and $p<0.05$). In patients with severe hemophilia, these figures were 18.8±1.4% and 298.4±26.5 per 1 μl compared with healthy people ($p<0.01$ and $p<0.05$, respectively). In the moderate form of the disease, the relative and absolute values of B-lymphocytes were, respectively, equal to 16.8±1.2% and 270.2±23.7 per 1 μl, which is significantly higher when compared with the healthy group in relative values ($p <0.05$).

The level of immunoglobulin A in the blood serum of the studied contingent decreases both in the general group of patients and in various forms of hemophilia. The content of immunoglobulin A in the general group of patients under consideration is 172.2±3.2 mg%, which is significantly lower than in healthy people (181.6±1.4 mg%, $P<0.01$). The decrease in the level of immunoglobulin a occurs mainly due to its significant decrease in patients with severe hemophilia (170.6±1.6 mg%). Differences are significantly significant both when comparing this group of patients with healthy (181.6±1.4 mg%, $p<0.001$), and with indicators in moderate hemophilia (178.3±2.0 mg%, p<0, 01).The content of immunoglobulin M in the blood serum significantly increases in all three groups of patients under consideration - 139.4±3.4 mg% in severe form, 132.8±2.4 mg% in moderate form and 136.0±4.2 mg% - in the general group of patients (in the group of healthy individuals 122.5±1.8 mg%, $p<0.001$ in the first case and $p<0.01$ in the other two, respectively). However, when comparing the two considered forms of hemophilia, the difference between them was statistically insignificant.

The content of immunoglobulin G in the studied patients was determined at a higher level than in healthy ones. So, in the general group, this indicator was 1642.4±28.2 mg%, in the group with a severe form - 2090.5±33.4 mg%, and in the moderate form 1501.7±16.6 mg% (in the group of healthy individuals - 1104.0±18.1 mg%, $p<0.001$ in all cases). Differences in the level of immunoglobulin G in the compared groups of patients with severe and moderate hemophilia were significantly significant ($p<0.001$).

The phagocytic activity of neutrafils (FAN) was reduced in all three groups. Thus, the level of FAN in the moderate form was 52.4±1.8%, in the severe form it was 47.3±1.6%, and in the general group of patients it was 50.6±1.1% (in the healthy group - 59, 4±1.4%, $p<0.01$ in the first case, and $p<0.001$ in the other two). The defectiveness of phagocytosis is an important condition for increasing the content of pathogenic

immune complexes (CIC). This is also confirmed by our research. Thus, an increase in the content of the CIC in patients with hemophilia was established: in a severe form of the disease, it amounted to 0.071 ± 0.011 arb. units with moderate - 0.043±0.009 arb. units and in general for the group - 0.065±0.002 arb. units compared with the healthy group - 0.01±0.002 arb. units ($p<0.001$ in all cases). There is a significant difference in CIC values between groups of patients with severe and moderate hemophilia ($p<0.05$).

Discussion

Thus, the results of studies show that hemophilia is accompanied by a violation of the immune status in patients, which manifests itself in changes in the cellular even (a sharp decrease in the total pool of T-lymphocytes and its subpopulation - TRC cells, with significantly high values of TRC cells) and humoral immunity (increased the content of B-lymphocytes, severe dysimmunoglobulinemia with a decrease in the content of immunoglobulin A and an increase in the level of immunoglobulins M and G). These studies of FAN and CIC also expose the fact of impaired immunoreactivity in patients with hemophilia: FAN values are reduced, resulting in an increase in CIC. It should be especially noted that the most profound changes in all parts of the immune system with a pronounced suppressor activity are observed in severe hemophilia.

Findings

The revealed secondary immunodeficiency state in hemophilia, in turn, affects its clinical variability, creating conditions for the development of autoimmune processes, the manifestations of which are: post-transfusion complications, resistance to specific therapy, the development of secondary rheumatoid syndrome in patients with hemophilia, etc.

Bibliography

1. Волкова Л.И. Клинико-лабораторная характеристика смешанных и дефицитных форм гемофилии А, В и С у детей, проживающих на загрязненных радионуклидами территориях Республики Беларусь //Экологическая антропология: Материалы 9 междунар. науч.-практ. конф. «Экология человека в постчернобыльский период»: Минск, 2002. - С. 219-221.

2. Абдукадирова Н. Б., Раббимова Д. Т., Хаятова З. Б. The role of connective tissue dysplasias in pathology of various body systems //Journal of Siberian Medical Sciences. – 2020. – №. 3. – С. 126-135.
3. Shamsiyev A. M., Rabbimova D. T. Comprehensive approach to the problem of rehabilitation of infants submitted sepsis //Voprosy nauki i obrazovaniya. – 2017. – С. 152.
4. Руденко В. П. Иммунные нарушения у больных гемофилией в процессе трансфузионной терапии: Дис... канд. мед. наук, Львов, 1991
5. Раббимова Д.Т., Юсупов Ф.Т. Рамазанова А.Б.3 , Абдукадирова Н.Б. Мамутова Э.С Особенности распределения HLA-антигенов у младенцев с сепсисом 229 С.// Вопросы науки и образования № 27 (76), 2019
6. Раббимова Д.Т. Оптимизация тактики лечения сепсиса у младенцев // Международный медицинский журнал, 2013. Т. 19. № 1. С. 27-29.