

Immunoreaction in Chronic Purulent Sinusitis in Girls of Puberty

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Abstract: *This article is written about the problem of immune-correction in chronic purulent sinusitis in girls of puberty. The article analyzes the clinical picture of chronic inflammatory diseases of the paranasal sinuses using puberty girls as an example.*

Keywords: *immune-correction, puberty, girls, sinusitis, chronic purulent sinusitis.*

I. INTRODUCTION

Currently, chronic inflammatory diseases of the paranasal sinuses occupy one of the leading places in the structure of ENT - diseases [2,5,11]. According to the literature, the proportion of this pathology among ENT diseases varies from 15 to 60% of all hospitalized in the ENT department. Inflammatory diseases of the paranasal sinuses are also a social problem. [1,3, 6,9] In recent years, epidemiological studies of chronic diseases of the paranasal sinuses have been conducted in about 30 countries around the world. According to them, over the past decade, the proportion has almost tripled, and the annual proportion of patients hospitalized for chronic diseases of the paranasal sinuses is increasing from 1.5 to 3% of the total mass of patients in hospitals. A similar trend in the growth of sinusitis is recorded in other countries of the world. So, according to the National Center for Statistics in the United States, the incidence of sinusitis has risen sharply, which was determined by an increase in diseases such as arthritis and arterial hypertension. According to their results, almost every eighth person in the USA is sick or sick with sinusitis [2, 10].

In addition to the etiological, anatomical factors leading to the occurrence of chronic inflammation in the paranasal sinuses, the immunological state of the body plays an important role. Lowering local and general immunity contributes to the formation of a chronic focus of infection. Chronic inflammatory processes at puberty in girls adversely affect the formation of secondary sexual characteristics. (Irgasheva S.U. 2008) Based on the foregoing, we set the PURPOSE of the study: To study the immunological status in adolescent girls with chronic purulent sinusitis (CPS) and delayed sexual development (DSD).

Research Objectives:

1. To study the immunological status in adolescent girls with chronic hepatitis C and DSD.
2. To develop a comprehensive treatment of chronic hepatitis C in adolescent girls with DSD, taking into account the immunological status.

II. MATERIALS AND METHODS

A survey was conducted in the Parkent district of Tashkent region. 885 schoolchildren were examined, of which 502 were girls and 383 were boys. In addition to the otorhinolaryngologist, schoolgirls of prepubertal and puberty age (290 girls) were

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examined by a gynecologist. The survey found: 222 (76.2%) girls are healthy, 36 (12.4%) girls have delayed sexual development, 19 (6.5%) have algodismenorrhea, 5 (1.7%) menstrual irregularities, 8 (2.75%) vulvovaginitis.

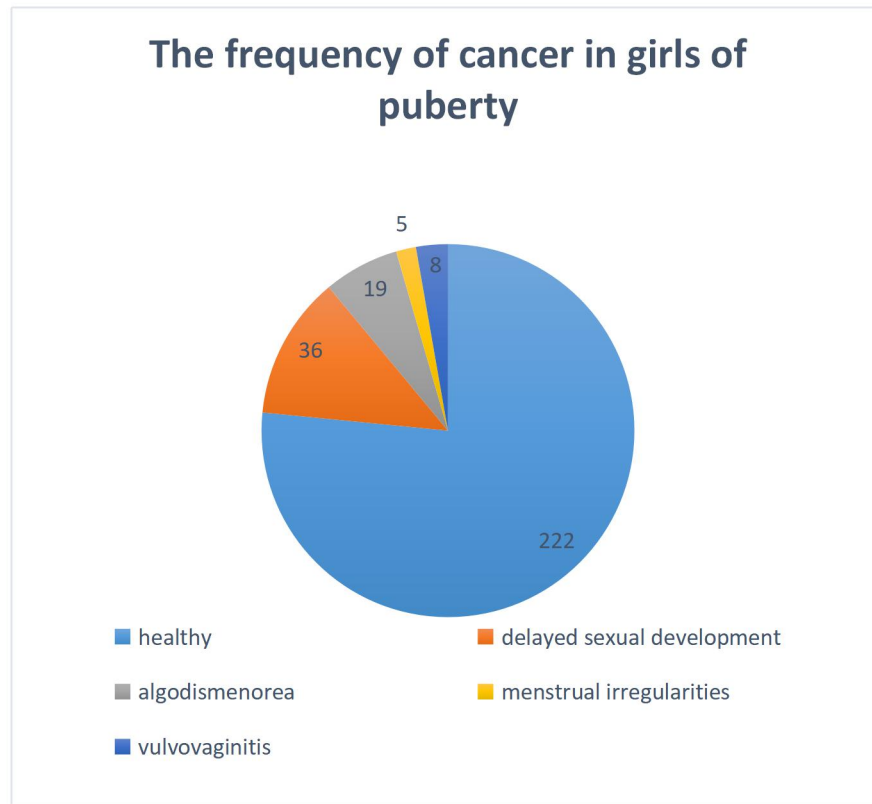


Fig.1. The frequency of cancer in girls of puberty

In 36 girls with sexual retardation, chronic diseases of the paranasal sinuses were also detected, of which 8 (22.2%) girls had pansinusitis, 10 (28.5%) had hemisinusitis, and 5 (14.2%) hymoethmoidofrontitis, in 5 (14.2%) - sinusitis ethmoidosphenoiditis, in 5 (14.2%) - sinusitis ethmoiditis, and 3 (7%) – ethmoidosphenoiditis.

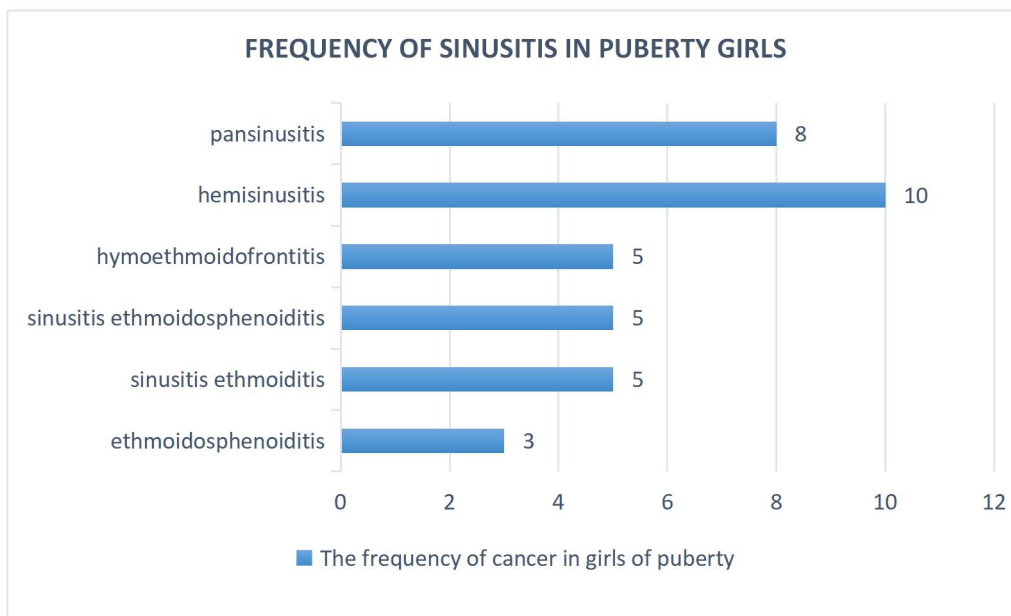


Fig.2. Frequency of sinusitis in puberty girls

In order to identify the characteristics of the immune status in 36 girls of adolescence with chronic hepatitis C and ZPR, the main indicators of cellular and humoral immunity are determined,

The control group consisted of 10 healthy adolescent girls. Groups of examined girls were synchronized by age. Girls underwent immunological studies before and after complex treatment.

Immunological studies were carried out at the Institute of Immunology of the ANRUz (director, academician T.U. Aripova), in the laboratory of immunoregulation (head of the laboratory, professor Salikhova N.N.).

The following methods were used to assess the state of the immune system: the isolation of lymphocytes from peripheral blood (Boyum, 1968) on a ficoll-verographin gradient, the subpopulation composition of lymphocytes was determined using monoclonal antibodies CD3, CD4, CD8, CD16, CD19, CD25 and CD9 (manufactured by Sorbent LLC, Russian Federation, Moscow), the concentration of immunoglobulins A, M, G, was determined by the standard Mancini method - radial immunodiffusion.

We performed conservative therapy for girls with chronic hepatitis C and DSD, which included: etiotropic, pathogenetic, immunostimulating vitamin therapy, and physiotherapeutic procedures. In CPS, secondary adolescent immunodeficiency develops in adolescent girls of puberty. In order to make up for deficiencies in the immune status, we used the immunostimulating drug Timoptin. This preparation contains a complex of polypeptides from the thymus gland of mammalian animals, has the ability to stimulate the immunological reactivity of the body, that is, it regulates the number of T and B lymphocytes, enhances the response of cellular immunity and increases phagocytosis. The drug also stimulates the processes of regeneration and hematopoiesis in cases of inhibition. The girls were injected with Timoptin with an interval of 1 day for 10 days, 100 mg of the drug intramuscularly

III. RESULTS

After the complex treatment of the girl, adolescents of puberty with chronic purulent sinusitis and delayed sexual development underwent a control study of indicators of cellular and humoral immunological status of the blood. For the comparison group, we took indicators of the immune state of adolescent girls of adolescence with chronic hepatitis C and DSD before treatment and a control group. The entire program of immunological studies was exactly repeated.

As a blood test for immunological indicators in adolescent girls with chronic hepatitis C and DSD shows the relative and absolute number of lymphocytes. If before treatment their number was $31.2 \pm 1.34\%$ and 1889.2 ± 168.2 , then after complex treatment it was $36.4 \pm 1.68\%$ and 1976.3 ± 162.1 , respectively ($P < 0.05$). In the control group, it was $40.5 \pm 0.65\%$ and 2130 ± 91 , respectively ($P < 0.05$).

After the complex treatment, a relative and absolute increase in the number of T - lymphocytes was also observed. Before treatment, the relative number of T lymphocytes in adolescent adolescent girls was $46.7 \pm 0.66\%$, and the absolute number was 1071.9 ± 97.1 , respectively ($P < 0.05$). During blood tests after treatment, the relative and absolute number of T-lymphocytes rose to $53.4 \pm 0.84\%$ and 1089.6 ± 63.5 , respectively ($P < 0.05$).

Table 1. Changes in the immune system after complex treatment in adolescent girls with chronic purulent sinusitis in comparison

Immunological indicators	Norm	Before treatment of CPS + DSD	After treatment of CPS + DSD
White blood cells, 1 μ l	4705 \pm 187,2	5461,5 \pm 362,9	5684,4 \pm 196,3

Lymphocytes, %	40,5±0,65	31,2±1,34*	36,4±1,68**
Lymphocytes v11	2130±91	1889,2±168,2	1976,3±162,1
T-lymphocytes, %	60,5±0,85	46,7±0,66*	53,4±0,84**
T-cells in 1 µl	1090,5±0,84	1071,9±97,1	1089,6±63,5
T-helpers (CD 4)%	37,9±0,41	29,4±0,76*	34,5±0,85**
T-suppressors (CD8),%	22,7±0,51	24,1±0,51*	23,3±0,64**
Immunoregulation Index (CD4 / CD8)	2,02±0,04	1,23±0,03*	1,43±0,05**
B-lymphocytes, %	21,6±0,48	17,8±0,89*	20,4±0,98**
B-lymphocytes, B1mkl	632±30,4	401,7±37,01	434,3±27,5
Immunoglobulin G (IgG), mg%	1186±43,6	1091±32,4*	1107,2±43,2**
Immunoglobulin A (IgA), mg%	219,5±8,45	170,6±8,08*	180,8±7,69**
Immunoglobulin M (IgM), mg%	101,8±1,21	121±10,8*	144,7±6,43**
Natural killers (CD16),%	12±0,56	18,6±0,51*	15,2±0,46**

Note: * -P <0.05, the reliability of the results in relation to the norm.

** - P <0.05, the reliability of the results in relation to the data before treatment

Shifts also occurred within the T - lymphocyte subpopulations, so the relative number of T-helpers increased from 29.4 ± 0.76% to 34.5 ± 0.85%, respectively (P <0.05). The relative number of T-helpers in the control group was 37.9 ± 0.41%, respectively (P <0.05).

The relative number of T-suppressors decreased to $23.3 \pm 0.64\%$, while their number before treatment was $24.1 \pm 0.51\%$, in the control group it was $22.7 \pm 0.51\%$. As the higher indicators show, an increase in the relative number of T-helpers and a decrease in the number of T-suppressors was noted, respectively, the immunoregulation index from 1.23 ± 0.03 increased to 1.43 ± 0.05 .

In a woman's body, the functioning of cellular systems that provide specific and nonspecific immunity are cyclical, depending on the phase of the ovulatory cycle. So in the phase of ovulation in girls with normal reproductive function, there is a significant decrease in the level and functional activity of T-lymphocytes. The T-system of immunity is more susceptible to cyclical changes than the B-system (13). Pronounced cyclic changes mainly occur in regulatory subpopulations of T-lymphocytes. I.K. Galanina found that in healthy women during the ovulation phase, the relative and absolute content of T-suppressors significantly increases, and the number of T-helpers decreases, which leads to a change in the balance of regulatory subpopulations (2007). After ovulation in the corpus luteum phase, the level of regulatory T-lymphocytes and their balance are normalized. In the late luteal phase preceding menstruation, the level of T-helpers rises significantly.

In adolescent girls of puberty with CPS and DSD, a significant decrease in the number of lymphocytes was found. The low content of T-lymphocytes, T-helpers and the tendency to lower immunoregulatory index in the blood indicates a decrease in the activation of various effector mechanisms that provide a variety of forms of immune responses.

The relative and absolute amount of B-lymphocytes in the blood of adolescent girls of adolescence with chronic hepatitis C and DSD did not change significantly, that is, from $17.8 \pm 0.89\%$ and 401.7 ± 37.01 to $20.4 \pm 0.98\%$ and 434.3 ± 27.5 , respectively ($P < 0.05$). The relative amount of immunoglobulins G in the blood of girls with chronic hepatitis C and DSD approached the age norm of 1107.2 ± 43.2 mg%, when the norm is equal to 1186 ± 43.6 mg%.

Surface immunoglobulin A form 170.6 ± 8.08 mg% increased to 180.8 ± 7.69 mg% in adolescent girls with chronic hepatitis C and DSD after complex treatment. The number of natural killers decreased from 18.6 ± 0.51 to 15.2 ± 0.46 .

Despite the fact that the quantitative content of B-lymphocytes of patients in the compared groups was practically the same, the functional activity of the B-lymphocytic immunity in adolescent girls with chronic hepatitis C and DSD has some deviations from the norm, as indicated by the imbalance in antibody-producing function (low content of Immunoglobulin M and average levels of immunoglobulins A and G). The data obtained are in good agreement with the available data on the degree of differentiation of B-lymphocytes and the level of secretion of immunoglobulins of various classes (6, 9, 12).

IV. CONCLUSION

1. In girls of puberty with CPS and DSD there is a significant decrease in cellular immunity, which leads to a secondary immunodeficiency state.

2. The use of Timoptin in the complex treatment of chronic hepatitis C and DSD in adolescent girls leads to a significant increase in the indicators of cellular and humoral immunity.

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