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THE EFFECTIVENESS OF THE USE OF IMMUNOMODULATORS IN THE TREATMENT OF MILD MYOPIA IN ADOLESCENTS WITH TUBERCULOSIS

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Relevance

Myopia is the main cause of vision loss among adolescents, the prevalence of which is currently increasing year after year worldwide. General somatic and infectious diseases are the cause of the progression of myopia in adolescents.

Tuberculosis, which weakens the child's body, may also be the cause of the progression of myopia in adolescents.

The aim of the study was to study the effect of immunomodulators on the course of mild myopia by changing the immunological parameters of tears in adolescents with tuberculosis.

Material and methods. 40 adolescents with mild myopia, suffering from tuberculosis, who were being treated at the Andijan regional tuberculosis dispensary, were examined. The children were between the ages of 10 and 17. All children were divided by age into 2 groups: 10-14 years old and 15-17 years old. There were 10 boys and 10 girls in each age group. As a control, adolescents of the same age groups and gender ratio with tuberculosis, but without any inflammatory eye diseases, were examined.

To identify the peculiarities of changes in local immunological parameters in the composition of lacrimal fluid, an ELISA study of proinflammatory interleukin - tumor necrosis factor (TNF- α) and anti-inflammatory interleukin 10 (IL-10) was performed using the test systems of Vector-Best CJSC, Russia. Also transforming growth factor- β 1 (TGF- β 1) using test systems "DRG" Germany.

The choice of an immunomodulator for treatment was carried out after determining individual sensitivity to immunomodulators. Sensitivity was determined to the drugs most commonly used in the clinical practice of pediatricians: cycloferon, thymalin, immunomodulin, immunal, interferon, polyoxidonium.

The results and their discussion.

TNF- α and IL-10, TGF- β 1 were studied to identify the peculiarities of changes in local immunological parameters in the composition of lacrimal fluid. Each examined patient, taking into account the maximum index of individual sensitivity, was prescribed an appropriate immunomodulator for treatment. Ophthalmoferon was applied topically, daily, instilling 2 drops 3 times a day into the diseased eye for 30 days, until the symptoms of the disease disappeared.

The children were divided by age into 2 groups: 10-14 years old and 15-17 years old, 10 boys and 10 girls each.

A study of boys with tuberculosis with myopia at the age of

10-14 years old with tuberculosis and mild myopia, the study of TGF- β 1 found that the indicator was significantly higher after treatment with immunomodulators compared with the result before treatment of 62% and after treatment of 97%. These changes indicate a significant increase in TGF- β 1 under the influence of immunomodulators in boys aged 10-14 years with mild myopia. Meanwhile, in girls of this group, this indicator after treatment was 93% relative to the control, and before treatment it was 59%. After treatment, the index significantly increased relative to the baseline level ($p < 0.01$). The indicator for girls was not significantly lower in relation to boys. According to the results of the average level of TGF- β 1 in boys and girls after treatment, this indicator was 95% relative to the control, whereas before treatment the ratio was 61%, the increase was statistically significant ($p < 0.01$).

When studying tuberculosis patients with mild myopia in boys aged 15-17, it was found that TNF- α indicators before treatment were significantly higher than similar indicators in boys without myopia and correlated in the amount of 173%. After treatment with immunomodulators, the TNF- α index significantly decreased ($p<0.01$), but remained unreliably above the control level, their ratio was 128%. These results demonstrate a significant decrease in TNF- α in boys from 15 to 17 years of age with tuberculosis with mild myopia under the influence of immunomodulators. In addition, in girls of the same group, the TNF- α value before treatment was significantly and significantly higher compared to a similar indicator without myopia ($p<0.001$), their ratio was 193%. After treatment with immunomodulators, the indicator decreased unreliably, but remained above the level of the control group, amounting to 152% relative to it. These changes show that TNF- α levels decreased significantly in boys compared to girls and the effect of immunomodulators on this indicator was not significantly greater. When analyzing the average TNF- α values of both sexes, the ratio and dynamics of indicators were similar to the results of the boys' group. Thus, the ratio of the indicator before treatment and the control group was 180%, and after treatment - 129%, the decrease in the indicator after treatment with immunomodulators was statistically significant ($p<0.01$).

Along with this, in 15-17-year-old boys with mild myopia from among tuberculosis patients, the average IL-10 index in the group after treatment with immunomodulators significantly increased ($p<0.01$) relative to the baseline level. Relative to the indicator of the control group, i.e. boys with tuberculosis, but without myopia, the level of IL-10 in the study group before treatment was 51%, and after treatment was 82%. These changes indicate that the effect of immunomodulators in 15-17-year-old boys with myopia manifested itself in the form of a significant increase in IL-10 in the composition of lacrimal fluid. In the same group of girls, the level of IL-10 after treatment was 68% relative to the group of girls without myopia and was significantly higher than before treatment – the ratio to control was 42%. Judging by these results, it can be seen that the values in boys are not significantly higher than in girls after the use of immunomodulators. The average IL-10 content in the generalized group of boys and girls after treatment increased to 77% relative to the control group, and before treatment this ratio was 46%.

In boys with tuberculosis and mild myopia aged 15-17 years who received immunomodulators, the level of TGF- β 1 significantly increased compared to the baseline level ($p<0.01$) and amounted to 92% relative to the control group, whereas the indicator before treatment relative to the control was 59%. The results obtained indicate that under the influence of immunomodulators, there is a significant increase in the level of TGF- β 1 in boys with tuberculosis and mild myopia at the age of 15-17 years. On the contrary, in this group of girls, TGF- β 1 after treatment significantly increased compared to the baseline level ($p<0.01$) and amounted to 79% relative to the control, whereas the ratio of the pre-treatment level to the control was 51%, and its increase was not significantly lower than in boys. In the generalized group, the average value of TGF- β 1 after treatment was significantly higher than the initial value ($p<0.01$), and was at the level of 83% relative to the control, which is significantly higher than the result before treatment, which was 55% relative to the control.

Conclusion. The dynamics of interleukins in lacrimal fluid under the influence of immunomodulators in adolescents with tuberculosis with mild myopia is reliable with respect to TNF- α and TGF- β 1. TNF- α indices in girls were higher than in boys in the age group of 10-14 years, and in girls without myopia and with mild myopia both before and after treatment. At the age of 15-17 years, on the contrary: in girls, the level of indicators was lower in comparison with boys, the indicators of IL-10 and TGF- β 1 in all age groups in boys exceeded the levels in girls. Statistically significant changes in the studied parameters after treatment with immunomodulators, taking into account individual sensitivity, allow us to conclude that this approach is advisable in the treatment of adolescents with tuberculosis with mild myopia.