VALUATION OF TEAR PRODUCTION DISORDERS IN COMPUTER VISUAL SYNDROME

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Introduction

The modern digital environment has led to a sharp increase in the time people spend in front of computer screens, tablets, and smartphones. According to epidemiological studies, more than 70-80% of users who work at a computer for more than 3-4 hours a day experience signs of computer vision syndrome. One of the leading manifestations of computer vision syndrome is the disruption of tear fluid production and the dysfunction of the tear film, leading to a sensation of dryness, burning, redness of the eyes, and a decrease in visual comfort.

Purpose of the study. The purpose of the study is to assess the state of tear production in computer users with signs of computer vision syndrome.

Materials and Methods

The object of the study was 25 computer users with clinical signs of computer vision syndrome. The control group consisted of 25 healthy individuals.

Comprehensive ophthalmological examination included: determining visual acuity without correction and with correction, sciscopy, autorefractometry, biomicroscopy, study of binocular and accommodation functions, direct and reverse ophthalmoscopy, conducting the Schirmer I test (without anesthesia).

Results and Discussion

During the ophthalmological examination of computer users with computer vision syndrome (CVS) and practically healthy individuals who do not complain of visual discomfort when working with digital devices, a Schirmer I test was conducted. The study was conducted according to the standard method without preliminary anesthesia, the exposure duration of the filter strip was 5 minutes. The indicators are expressed in millimeters of moisture (M ± SD).

In computer users with computer vision syndrome (n = 25), the average Shirmer I test value for the right eye (OD) was 14.3 ± 0.7 mm, for the left eye (OS) - 14.7 ± 1.0 mm. In the control group (n=25), the average values for the right eye were 15.5±1.0 mm and for the left eye 15.5±0.9 mm.

The conducted study showed that in computer users with computer vision syndrome, moderate decrease in tear production is noted compared to the control for both the right and left eyes. Statistical analysis using the t-criterion for independent samples showed that the differences between the groups are significant: for the right eye (OD), a value of $p < 0.001$ was obtained, for the left eye (OS) - $p < 0.01$. Despite the fact that both average values in the computer vision syndrome group remain within the conventional norm (usually ≥10 mm in 5 minutes), the presence of a statistically significant decrease compared to the control group indicates a tendency towards a decrease in basal and reflex secretion of tear fluid in computer users with computer vision syndrome.

The obtained data suggest that in patients with computer vision syndrome, in addition to the known disorders of tear film stability and increased evaporation, there is a moderate decrease in the aqueous component of tears, which can exacerbate the clinical manifestations of visual discomfort when working on a computer.

Conclusion

Prolonged computer use contributes to the development of tear hyposecretion and tear film instability, which are key mechanisms in the formation of computer vision syndrome. These findings highlight the need for early detection of tear production disorders in digital device users and the implementation of preventive measures to reduce the risk of dry eye and visual fatigue.