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AN INTEGRATED APPROACH TO THE PREVENTION AND TREATMENT OF PROGRESSIVE MYOPIA IN SCLEROMALACIA.

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An integrated approach to the prevention and treatment of scleromalacia, one of the severe complications of myopia, requires various treatment methods. A complete clinical examination for this disease, optical correction, functional and drug therapy. Local and systemic drugs with antioxidant and vasoconstrictive effects were mentioned, which improve the hemodynamics of strong muscles and myopic eyes. Modern methods of targeted optical correction using glasses, optical reflection methods, exercises for the musculoskeletal system and accommodation in children are presented in various physical and hardware techniques. The expediency of general physical activity, physical exercises and sports is indicated by certain limitations associated with the state of the visual organs, especially outdoors, but in conditions of hypoxia. Modern approaches and basic standards of complex treatment are reflected in the "clinical recommendations".

Keywords: myopia, functional treatment, antioxidant.

It is known that myopia is the most common pathology of refraction, with its frequency in the lower grades of school being 6-8%, and by the end of school, i.e., by age 17, it reaches at least 25-30% [1]. In gymnasiums and lyceums, this indicator reaches 50%, which is associated with more intense and prolonged visual loads, long hours of computer work, and frequent use of other electronic devices [2]. The distribution of myopia worldwide is uneven: the maximum figures are observed in Southeast Asia: South Korea — 96.5% [3], China — 80% [4], Singapore — 73.9% [5], Hong Kong — 61.5% [6]. The minimum rates of myopia among young people are observed in African countries — approximately 11% [7]. According to the forecast by B. Holden et al., by 2050, 49.8% of the population will have myopia, of which 9.8% will have high myopia [8]. In an unfavorable course, myopia leads to the development of retinal pathology, which in severe cases leads to an irreversible decrease in corrected visual acuity and visual disability occurring in 2018, issue 271. Early acquired myopia occurring in preschool-aged children usually has a particularly unfavorable prognosis [9]. In recent years, based on data on the role of weakened accommodation in the origin of myopia, methods have been developed to prevent its development by influencing the accommodative apparatus of the eye through physical exercises and medications [10-13]. Methods of medicinal influence in myopia provide a pathogenetic effect on the myopic process through drugs that improve the hemodynamics of the ciliary muscles and the eye. Drugs affecting the ciliary muscles: in foreign literature, instillation of various concentrations of the cholinergic atropine is proposed for medical control of myopia. It is known that M-cholinolytics exert a cycloplegic effect by acting on the circular and meridional parts of the ciliary muscle fibers — the Brücke and Müller muscles. Usually, drug treatment, including trophic agents that improve hemodynamics in myopic eye tissues, is conducted in

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courses at home 2 times a year [35-47]. Vitamin and mineral complexes are widely used in the treatment of myopia. Lutein and zeaxanthin, carotenoids that form the basis of macular pigment, protect the eyes from optical and oxidative stress characteristic of progressive myopia. According to various authors, these substances help improve the rheological properties of blood, as they reduce the tone of the vascular wall and contribute to its strengthening. Beta-carotene protects cells from the effects of reactive oxygen species and free radicals. It should be emphasized that for acquired progressive myopia, the use of the computer bioelectric correction method for the activity of the cortical part of the visual analyzer is not recommended [36, 38, 66]. It is advisable to use this method for the treatment of amblyopia. After such a training course, with progressive myopia, it is possible to increase the level of accommodation and even develop partial spasm of accommodation. For acquired progressive myopia, the use of computer programs for the treatment of amblyopia and other pleoptic methods is not recommended [35, 36, 38]. Such training strengthens the dynamic refraction of the eye, increases habitual accommodation and accommodation, leading to faster progression of myopia. General measures limiting the physical activity of people with myopia, as recently recommended, have been recognized as incorrect. On the contrary, the important role of physical culture in the prevention of myopia and its progression has been shown, as physical exercises contribute to the overall strengthening of the body, activation of its functions, improvement of the performance of the ciliary muscles, and strengthening of the scleral membrane of the eye. Special exercises alternate with exercises to strengthen the back and neck muscles, the anterior abdominal wall, as well as breathing exercises. Outdoor games are an excellent means of training the body and increasing the emotional state of players, as shown in a recent study. Morgan [69] states that such physical activity in fresh air, together with other medical means, makes a significant contribution to preventing the onset and progression of myopia. It is recommended to conduct games with short fast runs (10-15 m), passing and catching the ball, throwing at a wall or target. At the same time, after performing cyclic exercises of significant intensity (pulse 180 beats/min and higher), as well as gymnastics on apparatus, jumping rope, acrobatic exercises, a distinct ischemia of the eye is noted, which lasts a long time and is accompanied by deterioration in the functioning of the ciliary muscles. Currently, the levels of admission to various sports for diseases of the visual organ, in particular refractive errors, have been determined [71], which should be taken into account when giving individual recommendations to children and adolescents with myopia.

Conclusion

In conclusion, as a multifactorial ophthalmopathology, the effective prevention of progressive myopia development requires a comprehensive approach, including various methods of targeted treatment, functional influences, and drug therapy. Modern approaches and standards of complex treatment are reflected in clinical guidelines. When prescribing a sufficient treatment complex, an individual approach is necessary, taking into account the child's health and the functional characteristics of their visual organ, which will stop the progression of myopia and prevent the development of irreversible pathological changes in the fundus of myopic genesis.

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