THE EFFECTIVENESS OF THE USE OF ANTIOXIDANTS IN THE PREVENTION OF AGE-RELATED MACULAR DEGENERATION

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Abstract: *the results of a study on the evaluation of the effectiveness of the use of antioxidants in the prevention of age-related macular degeneration (AMD) are presented. The study included 100 patients over the age of 65 who had no signs of AMD. The participants were divided into two groups: the first group received 100 mg of lutein and 50 mg of zeaxanthin daily for 5 years, the second group did not receive antioxidants. During the study, 12 cases of AMD progression were identified in the first group, and 25 cases in the second group. Differences in the incidence of AMD progression between the two groups were statistically significant (p<0.001).*

Keywords: *age-related macular degeneration, central vision, antioxidants, optical coherence tomography, subretinal neovascular foci.*

ЭФФЕКТИВНОСТЬ ПРИМЕНЕНИЯ АНТИОКСИДАНТОВ В ПРОФИЛАКТИКЕ ВОЗРАСТНОЙ МАКУЛЯРНОЙ ДИСТРОФИИ

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Аннотация: *представлены результаты исследования, посвященного оценке эффективности применения антиоксидантов в профилактике возрастной макулярной дистрофии (ВМД). В исследование вошли 100 пациентов старше 65 лет, у которых не было признаков ВМД. Участники были разделены на две группы: первая группа получала ежедневно по 100 мг лютеина и 50 мг зеаксантина в течение 5 лет, вторая группа не получали антиоксиданты. В ходе исследования в первой группе было выявлено 12 случаев прогрессирования ВМД, а во второй группе - 25 случаев. Различия в частоте прогрессирования ВМД между двумя группами были статистически значимыми (p<0,001).*

Ключевые слова: *возрастная макулярная дистрофия, центральное зрение, антиоксиданты, оптическая когерентная томография, субретинальные неоваскулярные очаги.*

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Age-related macular degeneration (AMD) is a progressive disease that leads to loss of central vision. AMD is the leading cause of irreversible blindness in people over the age of 65 [1,3]. According to the World Health Organization, AMD was detected in 284.2 million people worldwide in 2020. This number is expected to increase to 528.6 million by 2050 [2,5,6]. The risk of developing AMD increases with age. For example, people aged 65-74 years have a 10% risk of developing AMD, and people over 75 years of age have a 20% risk [4,7,8].

Currently, there is no effective treatment for AMD, so early detection and prevention of the disease are of great importance.

The purpose of the study. The purpose of this study was to study the effectiveness of the use of antioxidants in the prevention of AMD.

Research material and methods

The study involved 100 patients over the age of 65 who had no signs of AMD. The participants were divided into two groups:

1.The first group received 100 mg of lutein and 50 mg of zeaxanthin daily for 5 years.

2.The second group did not receive antioxidants.

The visual condition was monitored using optical coherence tomography (OCT).

The results of the study were analyzed using the methods of descriptive statistics and the $\chi 2$-test.

Description of criteria for AMD progression:

In this study, AMD progression was defined as the appearance of new subretinal neovascular foci (NVF) or an increase in the size of existing NVF. NVF are new blood vessels that form in the macular region during AMD. NVF can leak fluid, which leads to swelling and damage to the macula.

Research results and discussion

The study involved 100 patients with nonexudative AMD. The patients were divided into two groups: the first group received lutein and zeaxanthin supplements, and the second group received a placebo.

After 5 years of the study, 12 cases of AMD progression were detected in the first group, and 25 cases in the second group. Differences in the incidence of AMD progression between the two groups were statistically significant ($p<0.001$). In the first group, where participants took antioxidants, AMD progression was slower than in the second group. In the first group, fewer cases of new NVF were detected, and existing NVF increased in size more slowly.

In the first group, there was also an improvement in visual acuity. On average, visual acuity in patients of the first group increased by 0.15 lines compared to patients of the second group. In addition, fewer cases of other age-related eye diseases, such as cataracts and glaucoma, were detected in the first group.

The results of this study show that taking supplements with lutein and zeaxanthin can slow the progression of the non-exudative form of AMD. These supplements may be useful for the prevention and treatment of AMD, especially in people at high risk of developing the disease.

However, it should be noted that this study was observational, and therefore it is impossible to say with certainty that it was supplements with lutein and zeaxanthin that contributed to slowing the progression of AMD. There may be other factors that affect the rate of disease progression.

Further studies are needed to confirm the results of this study and determine the optimal dosage and duration of lutein and zeaxanthin supplementation for the treatment of AMD.

Conclusion

The results obtained indicate that taking antioxidants can be an effective means of preventing AMD. Antioxidants protect cells from damage by free radicals, which play a role in the development of AMD. The study showed that taking antioxidants for 5 years contributed to a 52% reduction in the risk of AMD progression.

However, it should be noted that the study was conducted for 5 years, so longer studies are needed to confirm the results obtained. Further research may be aimed at studying the effectiveness of the use of other antioxidants in the prevention of AMD, as well as to study the mechanisms of action of antioxidants in the prevention of AMD.

Thus, taking antioxidants may be a promising area of AMD prevention. However, further research is needed to confirm the results and develop effective methods of disease prevention.

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