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STUDYING THE INFLUENCE OF ENVIRONMENTAL FACTORS ON EYE DISEASES

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Abstract:
Eye diseases are one of the leading causes of visual impairment and blindness throughout the world. Environmental factors such as air pollution, ultraviolet (UV) radiation exposure, climate conditions and lifestyle choices play a key role in the development of a number of eye diseases, including cataracts, glaucoma, macular degeneration and dry eye syndrome. This article examines the influence of various environmental factors on the development of eye diseases and emphasizes the importance of prevention and protection of vision. Modern research in this area is also reviewed and measures are proposed to reduce the negative impact of the environment on eye health.

Keywords: Environmental factors, eye diseases, cataracts, glaucoma, macular degeneration, dry eye syndrome, UV radiation, air pollution, prevention. Key words: Environmental factors, eye diseases, cataracts, glaucoma, macular degeneration, dry eye syndrome, UV radiation, air pollution, prevention.

Introduction

Eye diseases that lead to vision impairment and even blindness are becoming an increasingly urgent problem in the world, especially given the changing environment. According to the World Health Organization (WHO), more than 2.2 billion people suffer from visual impairment, and a significant proportion of these cases are due to exposure to environmental factors (WHO, 2019). The environment has a significant impact on eye health, causing or accelerating the development of various diseases.

One of the most common factors is air pollution. Studies show that long-term exposure to airborne pollutant particles can lead to the development of dry eye syndrome, glaucoma, and even age-related macular degeneration (AMD) (Chua et al., 2016). Ultraviolet radiation is also an important contributing factor to the development of cataracts and other degenerative changes in the tissues of the eye (Taylor et al. 1995).

This article is devoted to the study of various environmental factors, their impact on eye health and possible ways to prevent eye diseases in a changing environment.

Body

1. Air pollution and its effects on vision

Air pollution is one of the most serious environmental problems of our time, affecting human health, including eye health. Tiny particulate matter (PM2.5) and other

chemicals found in polluted air enter the body through the respiratory tract and can affect the mucous membranes of the eyes.

Studies show that long-term exposure to air pollution is associated with an increased risk of developing dry eye syndrome, a condition characterized by insufficient tear fluid production and eye discomfort (Galor et al., 2014). In addition, air pollution can worsen the course of pre-existing eye diseases such as glaucoma, accelerating the deterioration of vision (Luo et al., 2019).

To reduce the impact of air pollution on eye health, it is recommended to use special protective glasses and create conditions to minimize contact with pollutants, especially in metropolitan areas and regions with high levels of industrial pollution.

2. Ultraviolet radiation and eye diseases

Ultraviolet (UV) radiation, in particular its UV-A and UV-B spectrum, has a significant effect on the tissues of the eye. Prolonged and intense exposure to sunlight can cause damage to the cornea, lens and retina, which in turn can lead to the development of cataracts and macular degeneration (West et al., 2005).

Cataracts are one of the most common eye diseases among the elderly, and one of the risk factors for its development is exposure to UV radiation. Studies have shown that regions with high solar activity are characterized by a higher incidence of cataracts (Taylor et al., 1995). In order to prevent the development of UV-related eye diseases, it is recommended to use sunglasses with a UV400 filter, which block up to 99% of harmful UV radiation.

3. Climatic conditions and vision

Climatic conditions such as high humidity, cold or very dry climate zones also affect eye health. For example, a dry and windy climate contributes to the development of dry eye syndrome as it increases the evaporation of tear fluid from the surface of the eye (Stapleton et al., 2017). In cold regions, frequent exposure to dry air can also cause eye irritation.

Vision impairment and eye discomfort are often observed in people living in areas with extreme climatic conditions. For prevention, regular humidification of the air in the rooms, the use of eye drops, as well as eye protection when outdoors in adverse weather conditions are recommended.

4. Lifestyle Effects on Eye Health

Modern lifestyles, including prolonged exposure to computer and smartphone screens, also have a negative impact on eye health. Computer vision syndrome (CVS), characterized by eye fatigue, dryness, and irritation, is becoming more common in the digital age (Rosenfield, 2016).

Regular breaks from digital devices, eye exercises, as well as proper lighting of the workplace can reduce the risk of developing this condition. It's also important to eat a healthy diet rich in vitamins and antioxidants that support eye health.

Findings

Environmental factors play a key role in the development of eye diseases. Air pollution, exposure to UV radiation, climatic conditions and lifestyles can all have both positive and negative effects on vision. The importance of preventing and protecting the eyes from harmful environmental factors is becoming increasingly apparent, especially in today's urbanized world.

Regular eye exams, the use of protective equipment, and lifestyle changes can significantly reduce the risk of developing serious eye diseases and improve overall vision. Future research into the impact of ecology on eye health will help identify new ways to prevent and treat eye diseases.

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