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ИСКУССТВЕННЫЙ ИНТЕЛЛЕКТ В ОФТАЛЬМОЛОГИИ
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80-90 % информации об окружающем мире человек получает с помощью органа зрения. Нагрузка на глаза огромная, а время отдыха глаз очень невелико. По этой причине зрение снижается и приходится прибегать к мерам восстановления и поддержания главного анализатора организма человека.

Ключевые слова: зрение, очки, глаз, имплант, информация.

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ARTIFICIAL INTELLIGENCE IN OPHTHALMOLOGY

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A person receives 80-90% of the information about the world around him with the help of the organ of vision. The load on the eyes is huge, and the rest time of the eyes is very small. For this reason, vision decreases and it is necessary to resort to measures to restore and maintain the main analyzer of the human body [1]

Key words: vision, glasses, eye, implant, information

The problem of the incidence of eye diseases is becoming more and more urgent every year in any society and occupies one of the leading places in the structure of the morbidity of the population. Modern technologies in ophthalmological practice can help restore lost vision to blind and visually impaired patients.

The aim

The purpose of the work is to consider methods of treating eye diseases in order to assess the importance and accessibility of a solution to this problem.

Material and methods

The investigation is based on a review of medical literature, scientific articles in Russian and English. The search for literature and electronic sources was carried out in the electronic medical database PubMed, as well as in articles written by medical practitioners.

Results and discussion

Retinal implants. The principle of operation of the device is based on the replacement of a damaged retina with an artificial one. This method has some difficulties. First, there must be preserved nerve cells between the eye and the brain that can transmit a nerve impulse. Secondly, the patient can only be a person with normal vision in the past, who remembers the appearance of real objects and will be able to determine their outlines. The operation of this technology is quite expensive and it can be assumed that its implementation will take a long time [2]

Virtual OrCam glasses ("smart eye"), which are fixed to the patient's glasses. The camera is able to recognize the written text and voice it to the patient through the speaker. To activate the gadget, you need to point your finger at the object of interest. The camera allows you to read

information from any surface, where it goes in solid text or in columns. This gadget also allows you to find out the necessary food in the store, read the restaurant menu and price tags. Before starting work, it is necessary to take a picture of the necessary object and record its name on audio. When a familiar product appears in the field of view, the "smart eye" will notify you about it. Virtual glasses are also able to recognize faces. It is enough to take a photo of your friends and family and write down their names. When a familiar person appears, the "smart eye" will notify you. If the subject is unfamiliar, the gadget will transmit its exact characteristics [2]

Laser vision correction. This technology is widely used and is used in many of the world's leading clinics. It is aimed at improving vision in myopia. The procedure is completely painless and lasts about 5 minutes. During surgery, a 2 mm incision is made on the cornea of the eye, and all other manipulations are performed with a laser without damaging the upper layer, which makes the procedure minimally invasive and devoid of complications. The uniqueness of the method lies in the fact that such a procedure can be performed even in those patients who have contraindications to other methods of treatment, for example, with "dry eye syndrome"[3]

VR vision diagnostics. The essence of the method is aimed at self-examination and diagnosis of vision. To do this, special glasses are used, which are attached to the smartphone on the one hand, and to the face of the subject on the other. To work, you need to use a special mobile application. The test results are uploaded to the cloud storage by the date of the study. Thanks to this function, you can track the dynamics of visual impairment and visit a doctor on time before irreversible changes develop. The method is very promising, but the accuracy of measurements requires improvements [2]

Corneal printing on a 3D printer. The cornea is the transparent outer shell of the eye through which light rays pass. If it is damaged, the ability to see is lost. To solve this problem, a technology is being developed to create an artificial cornea, which will become an analogue of natural tissue. The essence of the method is that special ink is poured into the 3D printer, which is applied in circles to the prepared surface. After that, the cells grow and form an implant identical to the patient's cornea. This technology is under development and research in animals. New technologies give a chance to restore vision, early diagnosis and hope for a complete cure for each patient [4]

Conclusion

Technological progress has led to the emergence of all kinds of devices. Processing such large amounts of data certainly requires the use of new theoretical approaches, methods and technologies that can expand human intelligence. In ophthalmology, artificial intelligence is one of the tools that contribute to improving the effectiveness of the treatment process through more accurate diagnosis, evaluation of new biomarkers of diseases, automation of decision-making processes and assistance in other aspects of a doctor's daily activities [5]

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