

ESTIMATION OF EFFICIENCY OF APPLICATION OF LIQUID SUBSTITUTES WHEN WEARING CONTACT LENSES

Odilova Guljamol Rustamovna

Candidate of Medical Sciences, Senior Lecturer, Department of Otorhinolaryngology
and Ophthalmology, Bukhara State Medical Institute.

Safarov Orif Murodullaevich

Assistant of the Department of Otorhinolaryngology and Ophthalmology, Bukhara State
Medical Institute

ABSTRACT

Mechanical impact of the contact lenses (CL) on a surface of a cornea and conjunctivas, long hypoxemic stress are the factors causing violation of stability of a plaintive film and emergence of symptoms of SSG. Research objective: assessment of efficiency of application of substitute of tears at the symptomatic SSG arising at long carrying contact lenses. Results of application of a therapy of replacement of a tear on the basis of hyaluronic acid were analysed (Oksial) at symptomatic SSG. 20 patients (40 eyes) are examined. Evaluation criteria: results of test of Norn, Shirmera, confocal microscopy of a cornea, impression cytology, extent of coloring of a conjunctiva lissaminovy green. After a course of therapy of replacement of a tear (1 month) when carrying CL the level of a total products of tears increased in comparison with initial by 11.4%, the indicator of test of Norn (VRSP) increased by 65.3%. At confocal microscopy and a cytologic research noted restoration of structure of an epithelium of a cornea and conjunctiva, extent of coloring of a conjunctiva vital dye decreased. Application of substitute of tears on the basis of hyaluronic acid is expedient for knocking over of symptoms and eduction of risk of progressing of "a dry eye" when carrying contact lenses and also for the purpose of its prevention.

Keywords: prekerneal plaintive film; contact lenses; syndrome of "dry eye"; medicamentous correction; hyaluronic acid.

Introduction

Currently, contact lenses (CL) are a recognized form of optical correction of primary and secondary ametropia. Despite the success of keratorefractive surgery, contact lenses remain in demand, and in some cases, only their use makes it possible to obtain a high functional result. Direct contact of the lens with the surface of the cornea provides the effect of maximum emmetropization of the eye.

Hard contact lenses form the correct spherical surface of the optical system "lens + cornea", thereby providing correction of high degrees of corneal astigmatism, and correcting irregularities of its surface - [5]. However direct contact of the lens with the surface of the

cornea and conjunctiva is the reason for its mechanical effect on the structures of the anterior part of the eye - [7]. The adverse effect of CR on the eye is not limited to their mechanical irritating effect. Significant changes in the epithelium of the cornea and conjunctiva, stroma of the cornea occur in response to prolonged hypoxic stress that occurs when wearing CL - [5, 6].

The combined effect of these factors causes a violation of the stability of the tear film and significant changes in the morphology of the epithelium of the cornea and conjunctiva. With prolonged wearing of CL, inhibition of the secretory function of the lacrimal glands is also noted - [1, 3, 4, 8].

A decrease in the stability of the tear film, changes in the structure of the epithelial membrane, and a decrease in the secretion of tears lead to impaired wettability of the ocular surface and the onset of symptoms of the dry eye syndrome (CVH).

Currently, drugs based on hyaluronic acid are successfully used for the medical correction of SSH symptoms, the composition of which allows them to be used when wearing CL, since the toxic effect of the preservative is excluded - [2]. Hyaluronic acid is able to bind and retain large amounts of water due to hydrogen bonds and at the same time is a stimulator of regeneration processes, which helps to improve the condition of the corneal and conjunctival epithelium [9, 10].

Purpose of work Evaluation of the effectiveness of the use of tear substitutes for symptomatic CVH arising from prolonged use of contact lenses.

Material and research methods

We observed 20 patients (40 eyes) with myopia and complex myopic astigmatism. All patients used soft contact lenses (MKL) for 3–8 years.

To assess the effectiveness of tear replacement therapy, patients underwent a study: total tear production yy (Schirmer test) yy stability of the precorneal lacrimal film (Norn test)

- condition of the epithelium of the conjunctiva of the eyeball using staining with vital dye (lissamine green)

- the state of the corneal epithelium using confocal microscopy ("Confoscan-4" company Nidek (Japan)).

To obtain imprints of the surface layer of cells, millipore filter strips of standard sizes (pore diameter 0.25 μm) were used. The prints were transferred onto a specially prepared slide, fixed with methylene alcohol for 1-3 minutes and stained by the Giemsa method. The study and photoregistration of cytological preparations was carried out on a Photomicroscope III (Opton, Germany) with a magnification of .400. All patients were examined using these techniques on the background of prolonged wearing of CL. Then, after the follow-up examination, Oksial (a preparation based on 0.15% sodium hyaluronate) was

prescribed 2-3 times a day when wearing CL. Against the background of the use of the drug, the patients were examined after 1 month.

Results and discussion

After 1 month, during which the patients instilled the lacrimal substitute into the conjunctival cavity without removing the MCL, there was a tendency to increase the total lacrimal production compared to the initial level. The average values of the Schirmer test increased by 11.4%. Norn Sample Indicators

increased by 65.3% (differences are statistically significant, P <0.05), which indicated the stabilization of the precorneal lacrimal film. It should be noted that an increase in tear production and an improvement in the condition of the tear film were observed against the background of wearing contact lenses, that is, with their continued negative impact on the structures of the anterior part of the eye (Table 1)

Table 1 The state of stability of the precorneal tear film, the level of total tear production (M ± m)

Indicators	Against the background of wearing CL	After 1 month of use tear substitute	Confidence level
Schirmer test (mm)	9,78 ± 4,87	11,58 ± 4,75	P > 0,05
Sample Norn (sec)	5.25 ± 3,22	8,68 ± 6,74	P < 0,05

Regular use of the drug Oksial in the form of instillations when wearing MKL has significantly improved the condition of the epithelium of the conjunctiva of the eyeball, reduced the degree of degenerative changes, which was confirmed by staining with lissamine green. The degree of staining in identical sections of the conjunctiva decreased significantly.

The effectiveness of this drug is also confirmed by the results obtained in the study of corneal epithelium using confocal microscopy. Against the background of the use of tear substitute, a decrease in phenomena was noted edema of epithelial cells, the boundaries of cells and nuclei became more clear and distinguishable.

Conclusion

Thus, based on the results of the studies, the following conclusions can be drawn:

1. The main signs of the effectiveness of tear replacement drugs are an increase in the time of rupture of the precorneal lacrimal film, a tendency to an increase in the level of tear production, a decrease in the degree of degenerative changes in the epithelium of the cornea

and conjunctiva (restoration of a continuous layer of conjunctival epithelium, the appearance or increase in the density of goblet cells).

2. The use of tear substitutes based on hyaluronic acid is advisable to relieve symptoms and reduce the risk of dry eye progression when wearing contact lenses, as well as to prevent it.

Bibliography

1. Abramov M.V., Guseva M.G., Koltsov A.A., Novikov S.A. Dry eye syndrome and contact lenses. Section II. Contact vision correction. Chapter 8 // *Ophthalmic Contact*. - SPb., 2010. - P. 176–189.

2. Belevitin A.B. ed. *Ophthalmology*. - SPb., 2010. -- 516 p.

3. Brzhesky V.V., Sadovnikova N.N., Prozornaya L.P. A new preparation of artificial tears OXIAL in the treatment of patients with dry eye syndrome // *Clinical Ophthalmology*. - 2006. - T. 7, No. 4. - S. 151–154.

4. Egorova G.B., Fedorov A.A., Bobrovskikh N.V. The effect of many years of wearing contact lenses on the condition of the cornea according to confocal microscopy // *Bulletin of Ophthalmology*. - 2008. - T. 124, No. 6. - S. 25–29.

5. Emelina V.G., Linnik E.A., Kolentintsev M.N., Maychuk N.V. Possibilities of early diagnosis and prognosis of the development of "dry eyes" with contact vision correction // *New technologies in treatment*

corneal diseases: Sat. scientific articles conf. "Fedorov readings." - M., 2004. -- S. 679–684.

6. Kivaev A.A., Shapiro E.I. Contact vision correction. - M., 2000. -- S. 224. 7. Efron N. Clinical application of the illustrated classification system for the quantitative description of typical complications caused by wearing contact lenses // *Appendix to the journal "Eye"*. - 1999. - No. 5-6. - S. 8.

8. Efron N. A change in the topography of the cornea caused by wearing contact lenses // *Bulletin of Optometry*. - 2001. —N4. - S. 37–49.

9. Efron N. Dysfunction of the tear film // *Bulletin of optometry*. - 2002. - No. 3. - C. 39–50.

10. Aragona P. et al. Long term treatment with sodium hyaluronatecontaining rtificial tears reduces ocular surface damage in patients with dry eye // *Br. J. Ophthalmology*. - 2002. - Vol. 86, No. 2. - P. 181–184.

11. Nishida T. et al. Hyaluronan Stimulates Corneal Epithelial Migration // *Exp. Eye Res*. - 1991. - Vol. 53. - P. 753–758.