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Impressions intrastromal implantation of amniotic membrane in the treatment of patients with endothelial - epithelial dystrophy of the cornea.

Summary

Results of treatment of patients with endothelial - epithelial dystrophy of the cornea by intrastromal implantation of amniotic membrane. The method can cut corneal syndrome, reduce the risk of disease recurrence.

Key words: amniotic membrane, cornea, intrastromal implantation.

Treatment of secondary endothelial - epithelial dystrophy (EED) of the cornea continues to be one of the most difficult problems in modern ophthalmology. This disease is a consequence of inflammation, injury of the eyeball. A large group of secondary dystrophies constitute postoperative dystrophy. According to some authors, the frequency of EED as a complication of ophthalmic interventions in general ranges from 0.6 to 13% [7,9,11,12]. Despite the experience of surgery small incisions, the improvement of microsurgical techniques, the advent of flexible intraocular lenses (IOL) and the new viscoelastic, with cataract extraction with implantation of posterior chamber intraocular lens corneal dystrophy develops in 0,1-11,3% of cases, and with the implantation of IOL to anterior chamber 14% [7].

Trigger the development of this pathology is damage to the corneal endothelial layer of it. In damaged cells, impaired production of cytokines responsible for collagenogenesis, which leads to a progressively increasing hydration of the corneal stroma with degeneration keratotsitov, detachment of the corneal epithelium and the appearance of symptoms. The latter fact makes the painful lives of patients, due to continued and in no way removed pain in the eye, tearing, and blepharospasm [7]. In this regard, the issue of prevention and treatment of

EED is very important.

Existing treatments for EED can be divided into conservative and surgical. Conservative therapy, despite the use of modern drugs, physical therapy effects (helium-neon laser stimulation, magnetic therapy), provides a temporary effect, because it does not eliminate the cause of pathological transformation of the cornea [11].

Much more effective are surgical methods, among which are essentially divided into two groups: transplantation and not transplantation [2,6,12]. In recent years, increasingly for the treatment of EED was used amniotic membrane. Some authors propose to cover the surface of the cornea to protect the epithelium and its regeneration as soon as possible. Other implanted under the conjunctiva of the amnion to suppress excessive inflammatory response in the treatment of EED [1,3,4,5,6,8].

As is known, the mechanism of therapeutic action of the amnion is based on improving and maintaining the normal epithelialization of epithelial morphotype, inhibiting the formation of rough scar tissue. The advantage of amniotic membrane is its biological inertness of antigen [10,13]. In this regard, it is justified is the use of intrastromal implantation of amnion in the treatment of stage dalekozashedshih keratopathy.

Objective: To evaluate the effectiveness of intrastromal implantation technique of amniotic membrane in the treatment of patients with severe endothelial - epithelial corneal dystrophy.

Materials and methods.

In the clinical study included 28 patients (28 eyes) with a diagnosis of endothelial - epithelial corneal dystrophy. The patients' age $65,6 \pm 3$ years. Of these, 13 men (13 eyes) and 15 women (15 eyes). All patients developed EED after cataract extraction with IOL implantation. The severity of degeneration corresponded to 3.4 on the classification of the stages Gorgiladze T.W., Ivanovo, E.V. (1992). At the time of admission, all patients had marked pain and corneal syndrome, hydration layers of the cornea, bullous changes in the epithelium, extensive erosion of the cornea. The initial visual acuity of the patients was $0,01 \pm 0,005$. The thickness of the cornea according to pachymetry was within $768,6 \pm 30,87$ m. Indicators of the intraocular pressure- $20,34 \pm 0,2$ mm Hg. of Art. All patients underwent a standard ophthalmologic examination: visometry, biomicroscopy, pachymetry, tonometry. Studies were performed before surgery and after surgery. Follow-up was 12 months.

All patients completed the operation of the ball intrastromal implantation of amniotic membrane application for the invention № 2011140131. "The method of operation intrastromal implantation of native amniotic membrane in the treatment of epithelial - endothelial dystrophy", priority of 03.10.2011.

We used the amniotic membrane, obtained from seronegative for hepatitis B and C, syphilis, TORCH-infections and women - donors during scheduled cesarean section.

After the standard treatment the patient made the operative field epibulbarnuyu anesthesia 0.4% solution oksibuprokainom, retrobulbar anesthesia 2% lidocaine.

The first stage of surgery was removed mechanically loose and altered corneal epithelium. In the upper half of the corneal incision is carried out not through the tunnel to the back of the plate boundary along the limb, 1-2 mm from it. The length of the notch corresponded to the diameter of the disc implanted amnion. Then stratify corneal stroma within the area of the implanted disc amnion. Graft implanted membrane is uniformly distributed in the pocket. The implant is pre-treated with an antibiotic solution - gentamicin and forceps for implantation in the corneal wound up his pocket. After performing surgery until complete epithelialization of the cornea in the operated eye superimposed therapeutic soft contact lens soaked actovegin stimulator of regeneration. In addition, postoperative conjunctival cavity 6 times a day, ciprofloxacin instilled solution and the solution of diclofenac, laid korneregel.

A favorable outcome of the operation was considered the absence of recurrent corneal syndrome, both in early and late in the postoperative period. Unfavorable - a relapse of corneal syndrome, implant. Despite the fact that this type of treatment is aimed at improving the quality of life of the patient, take into account the transparency of the cornea, affecting visual acuity.

Results of the study

In the course of surgery and postoperative specific complications were observed. Obtained in the course of the study data showed a slight, statistically significant increase in visual acuity in the operated patients. On admission the patients visual acuity averaged $0,01 \pm 0,005$, 12 months after implantation of intrastromal amniotic membrane $0,03 \pm 0,01$ ($p < 0,05$). After opertsi all 28 patients (28 eyes) was complete epithelialization, treatment of corneal syndrome. At 9 days, 82% of patients after implantation of intrastromal amniotic epithelialization was completed and 68% were stopped corneal syndrome. The transparency of the cornea throughout the observation period continued to rise. On the seventh day after surgery occurred a slight decrease in stromal hydration, shown a reduction of turbidity of the stroma, clearly contoured amnion due to edema of the corneal tissue. The structures of the anterior chamber (iris, pupil, etc.) are poorly visualized. On examination a month later reported greater transparency of the cornea. Continued to decrease hydration of the stroma, amniotic membrane clearly visualized in its layers. More clearly detailed the structure of the anterior chamber. After 3 months of the cornea is brilliant, mirror-like, covered with high-grade epithelium with no signs of over-hydration. Amniotic membrane is becoming more transparent. After 6 months of follow-up of patients significantly decreased hydration of the cornea and partially razvoloknilas amniotic membrane, leading to greater transparency of all



layers of the cornea. The degree of transparency of the cornea at one year corresponded to a six-month-old data.

7 days after implantation of intrastromal amniotic membrane corneal thickness was $744 \pm 32,15$ mm, 1 month - $716 \pm 31,77$ mm, 3 months - $681 \pm 32,84$ mm, 6 months - $650 \pm 35,18$. By 12 months of performance pachymetry was statistically decreased to $628 \pm 34,03$ m by an average of 18% (140 mm; $p < 0,05$).

After surgery, we found no statistically significant change in intraocular pressure. On admission, patients had IOP within $20,34 \pm 0,2$ mm Hg. of Art., seven days after surgery $20,54 \pm 0,2$ mm Hg. of Art. In conclusion, our study intraocular Dalen rates ranged from $20,64 \pm 0,2$ mm Hg. of Art.

The results of these studies have confirmed the ability of the amniotic membranes during implantation of intrastromal corneal regenerative processes to stimulate and act as a semipermeable membrane.

Conclusion

To date, treatment of endothelial-epithelial dystrophy of the cornea is one of the most urgent problems of modern ophthalmology, as there is no universal method of treating disease. [7,9,11,12].

With intensification of eye surgery has increased the number of patients with stage dalekozashedshimi endothelial epithelial dystrophy of the cornea. That requires the development of alternative, organ, less expensive treatments, which aim to create biological barrier between the moisture and the anterior chamber of corneal stroma. By creating a barrier that can be done fast enough to reduce swelling of the cornea, removing corneal syndrome, as well as prepare the tissue of the cornea to the optic keratoplasty or keratoprosthesis. Our proposed method - intrastromal implantation of amniotic membrane in the cornea - is aimed at creating layers of the cornea in a biological membrane that performs multiple functions. This is a semi-permeable membrane in the way of moisture in the anterior chamber of corneal tissue and also a powerful biological stimulant that activates the regenerative processes in the cornea, which suppresses excessive inflammatory response.

Thus, the dynamic observation of patients showed that there is a gradual increase in the transparency of the cornea due to the decrease of hydration and partial razvolokneniya amniotic membrane, statistically significant increase in visual acuity by an average of 0,02 ($p < 0,05$) and a decrease in the thickness of the cornea at 18 % from 768 microns to 628 microns ($p < 0,05$). Based on the analysis of changes occurring in the cornea after intrastromal implantation of amnion, we propose to use this method as a preparatory to penetrating keratoplasty.



Findings

The use of intrastromal implantation technique of amniotic membrane in patients with stage dalekozashedshey endothelial epithelial corneal dystrophy in the early postoperative period leads to permanent relief of corneal syndrome, improve visual acuity, bullous changes of the epithelium removal, reduced rates pachymetry, and cornealedema.

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