

A case of corneal ulcer treated with multilayer biological amniotic membrane

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Corneal ulcer is a disease that seriously endangers the eyeball. If the ulcer spreads to the deep part of the cornea, it will lead to prolonged healing time, and it is easy to recur, causing serious damage to corneal cells, and eventually forming corneal ulcer or even perforation, which is very difficult to treat. Traditional treatment methods include drug treatment and surgical treatment, such as corneal debridement and conjunctival flap covering, but these methods have their limitations. The final treatment is corneal transplantation, but this method is expensive, with few donor sources, and more postoperative rejection and complications, which is difficult for patients to bear. In recent years, with the rise of amniotic membrane transplantation technology and the continuous improvement of medical technology, the treatment of corneal ulcer has new hope. Amniotic membrane transplantation can effectively promote the regeneration and repair of corneal epithelium, and can inhibit the inflammatory response and prevent infection. At the same time, amniotic membrane transplantation can also reduce the occurrence of postoperative rejection and complications, and reduce the economic burden of patients. Here is a case of corneal ulcer treated by debridement combined with multilayer biological amniotic membrane transplantation.

Case presentation

1. General Information

The patient, a 76 year old male, was hospitalized for 5 months due to right eye redness, eye pain, tears and blurred vision. The patient had no obvious inducement of right eye redness, eye pain and tears with blurred vision 5 months ago. Without ocular distention, nausea, vomiting and other symptoms, he was treated in a local hospital. Tobramycin eye drops were given to the right eye, 4 times / day, atropine sulfate eye gel was given to the right eye, 3 times / day, gatifloxacin eye gel was given to the right eye, 4 times / day, and the effect was not good. Past health.

2. Examination Information

Ophthalmological conditions: visual acuity: manual in front of the right eye, 0.5 in the left eye; Optometry: the visual acuity of OD plus or minus lenses does not improve, os:+0.75/-1.50*110=0.9-. The intraocular pressure of both eyes was 14mmHg; PH does not increase. Slit lamp examination: the conjunctiva of the right eye is mixed with congestion, the whole cornea is foggy edematous, the epithelium is rough, and gray white ulcer foci can be seen at 2-5 o'clock, the size is about 5*6mm, deep to the stromal layer, deep in the anterior chamber, the iris is faintly visible, the pupil is round, the direct and indirect light reflections disappear, the lens is cloudy, and the vitreous can not be seen clearly; Fundus cannot be seen clearly. Anterior segment of the left eye (-), fundus under slit lamp: the color of the optic disc is faintly

visible, the retinal blood vessels are generally normal, the macular pigment is disordered, and the rest is not clear. B-ultrasound: vitreous opacity (hematocele? Inflammation?) in the right eye and posterior vitreous detachment in the right eye. Vitreous opacity with posterior detachment in the left eye. Optical coherence tomography (macula): drusen scattered in the macula of the left eye. The right eye cannot be seen. Optical coherence tomography (nerve layer): the thickness of the nerve fiber layer around the optic disc of the left eye is generally normal. The right eye cannot be seen.

3. Diagnosis

Corneal ulcer

4. Treatment outcomes, follow-up, and outcomes

After admission, the patient was given drug treatment, the effect was not obvious, and the ulcer surface had no obvious change. Considering that the corneal ulcer lasted for a long time and did not heal, the patient underwent debridement of corneal ulcer in the right eye combined with multilayer biological amniotic membrane transplantation under Intravenous Inhalation Combined Anesthesia on July 27, 2023. The operation was smooth, and the patient was in stable condition after operation. The patient was given symptomatic treatment with drugs locally. At present, his condition is stable.

Discussion

Corneal ulcer is often closely related to the infection of pathogenic bacteria, which is manifested by ocular tingling, foreign body sensation, photophobia, tears and other symptoms. In clinical examination, ulcerated lesions on the cornea can be observed. The type of pathogenic bacteria can be determined by corneal smear, and then targeted drug treatment can be implemented. However, for patients with deep and wide lesions, the effect of drug treatment may not be obvious. At this time, surgical treatment should be considered to avoid corneal perforation or even loss of eyeball.

Corneal transplantation is an effective method for the treatment of corneal ulcer, but the actual clinical application is limited by the limited corneal donors, and the operation cost is high, so it is not commonly used. Conjunctival flap covering is mainly suitable for patients with corneal edge ulcer, but it may aggravate the opacity of the cornea. In recent years, biological amniotic membrane has gradually been widely used in clinical treatment. Amniotic membrane is a tough transparent tissue without blood vessels and nerves, with a thickness of 0.02~0.05mm. After biological treatment, amniotic membrane only retained basement membrane and dense layer, and the thickness was stable. Biological amniotic membrane contains a variety of growth factors, which can promote the differentiation and proliferation of epithelial cells, inhibit apoptosis, and provide a theoretical basis for the repair of corneal epithelium.

The structure of biological amnion is similar to that of cornea. It belongs to type IV collagen, which plays a role of scaffold on cornea and promotes the repair of corneal epithelium. In addition, it can also inhibit the inflammatory response, reduce the activity of fibrin hydrolase, promote the synthesis and reconstruction of collagen and the regeneration of fiber cells, so as to improve the healing and repair effect of cornea. However, the biological amniotic membrane itself is relatively fragile, and it

is prone to wear and fall off if the single-layer transplantation is used to cover the corneal defect.

Multilayer biological amniotic membrane transplantation can enhance the toughness of amniotic membrane, completely cover the corneal lesion site, and has good compatibility with normal corneal tissue. It can release a variety of cell growth factors and block transforming growth factor- β (TGF- β). The signal system can inhibit the inflammatory response, prevent the differentiation and proliferation of fibroblasts, prevent corneal fibrosis, and promote the repair of corneal injury. In addition, wearing bandage contact lenses is also an effective treatment. It can prevent mechanical pressure and traction on corneal epithelium when eyelids blink, and reduce the risk of amniotic membrane detachment. At the same time, bandage contact lenses have good hydrophilicity, can meet the metabolic needs of the cornea, have oxygen permeability, and promote the proliferation and healing of corneal epithelium. In addition, it can also reduce the loss of corneal water and prevent pathogenic bacteria from adhering to the cornea, thus reducing the probability of postoperative infection and improving the quality of recovery.

In conclusion, the effect of multilayer biological amniotic membrane transplantation in the treatment of patients with corneal ulcer is accurate, which is helpful to improve vision, repair cornea, and has low complication rate, which is worthy of popularization and application.

References

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