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Comparative study of clinical efficacy between amniotic membrane transplantation and conjunctival flap covering surgery in the treatment of corneal ulcers about 36 cases in CHN.

Etude Comparative de l'efficacité de la Greffe de membrane amniotique et du recouvrement conjonctival en cas d'ulcère de Cornée à propos de 36 cas au CHN.

Auteurs :
Zhou Rong Kui[1], Sidi Sidi Cheikh[2]

Auteur correspondant : Zhou Rong Kui
Eye Hospital of Heilongjiang, Harbin 150001, Heilongjiang Province. China
Phone: 008613845080643
Email : as8517@hotmail.com

Affiliation des auteurs :
[1] Eye Hospital of Heilongjiang, Harbin 150001, Heilongjiang Province. China
[2] Nouakchott Medical University, Mauritania

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Abstract

AIM :

To provide evidence for Evidence-Based Medicine on clinical treatment of corneal ulcers by analyzing the clinical efficacy between amniotic membrane transplantation and conjunctival flap covering surgery ; in addition, to explore the different surgical adaptabilities for each treatment of corneal ulcers.

METHODS :

This retrospective review comprised 36 cases of corneal ulcers patients (36 eyes) who had had amniotic membrane transplantation or conjunctival flap covering surgery from October 2018 to July 2019. All the patients were treated with removal of the necrotic corneal tissue combined with amniotic membrane transplantation or conjunctival flap covering surgery and then were treated with drugs based on primary disease.

RESULTS :

17 cases (17 eyes)were treated with amniotic membrane transplantation and 19 cases (19 eyes) were treated with conjunctival flap covering surgery. They include 8 cases (8 eyes) with viral corneal ulcer, 9 cases (9 eyes) with fungal corneal ulcer, 3 cases (3 eyes) with bacterial corneal ulcer, 3 cases (3 eyes) with erosion and marginal corneal ulcer, 4 cases (4 eyes) with corneal epithelial bullae and ulcers for corneal endothelial decompensation caused by optical surgery 9 cases (9 eyes with perforation). 13 cases (13 eyes) treated with amniotic membrane transplantation were cured with a cure rate of 76.5% (13/17), 14 cases (14 eyes) treated with conjunctival flap covering surgery were cured with the cure rate at 73.7% (14/19).

Discussion :

Both procedures were easy to do but the clinical cure rates between the 2 procedures were of no significant difference (P>0.05).

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Conclusion :

Amniotic membrane transplantation and conjunctival flap covering surgery in the treatment of corneal ulcers can achieve better surgical treatment if appropriate surgical method is selected according to different types and different ulcer process.

Mots clés : Camniotic membrane transplantation • conjunctival flap covering surgery • corneal ulcers.

Résumé

Objectives :

L'objectif de notre étude est d'évaluer les différences d'efficacité en cas d'ulcère de cornée traité par greffes de membrane amniotique et par recouvrement conjonctival et de définir les modalités thérapeutiques de ces traitements en pratique ophtalmologique.

Moyens et Méthodes :

il s'agit d'une étude rétrospective concernant 36 cas d'ulcères de cornés trainant qui ont été recrutés entre Octobre 2018 et Juillet 2019 et ont concerné des ulcères bactériens, fongiques, viraux de même que des cas de décompensation cornéenne post chirurgie de cataracte et des cas d'érosions cornéennes avec des ulcères marginaux et ont été traités soit par greffe de membrane amniotique ou par greffe autologue de conjonctive après avoir enlevé les tissus nécrotiques avec administration de médicaments usuels en post-opératoire.

Résultats :

08 cas d'ulcères étaient d'origine virale, 09 cas étaient d'origine fongique, 03 étaient d'origine bactérienne, 03 cas avaient une érosion cornéenne, 04 cas avaient une kératopathie bulleuse et 09 cas avaient une perforation cornéenne.

17 cas étaient traités par une membrane amniotique avec un taux de guérison de 76.5 % et 19 étaient traités par greffe de conjonctive autologue avec un taux de guérison de 73.7%.

Discussion :

Les 2 méthodes de traitement sont efficaces dans le traitement des ulcères cornéens si la sélection est faite à temps mais il n'existe pas de différence statistiquement significative entre les taux de guérison des 02 méthodes (P>0.05)

Conclusion :

Le traitement des ulcères cornéens trainants est efficace aussi bien par la greffe de membrane amniotique que par la greffe de conjonctive autologue.

Mots clés : Membrane amniotique • Recouvrement conjonctival • Ulcère cornéen.

Background

John Staige Davis performed the first therapeutically human amniotic membrane transplantation (AMT) as skin substitute for treating open wounds in 1910 [1]. Thirty years later De Rotth described the first clinically use of amniotic membrane (AM) in ophthalmology. He used fresh AM as a biological bandage material for management of conjunctival defects [2].

AM, the inner layer of the placenta, is a thin, semitransparent, resilient, and avascular tissue, which consists histologically of a single epithelial layer, a thick basement membrane, and an avascular stroma. AM contains abundant growth factors, mitogenic factors, anti-angiogenic factors, anti-inflammatory proteins, and natural protease inhibitors and anti-scarring properties [3].

In recent years, many studies have shown clinical efficacy of AMT in stimulating wound healing by promoting epithelialization while suppressing inflammation, angiogenesis and scarring [3,4]. AM may not only facilitate healing but also support regeneration [5].

Deep lamellar keratoplasty and penetrating keratoplasty are surgical treatments of the cornea defects and they was considered the best method for ulcers treatment. But it is hard to obtain cornea. Medicines combined with amniotic membrane transplantation and conjunctival flap covering surgery in the treatment of corneal ulcers is good alternative method. Membrane are more widely used clinically due to the convenience of obtaining materials and easy operation. Good results have been achieved, to compare two methods.

This retrospective review comprised 36 cases of corneal ulcers patients (36 eyes) who had amniotic membrane transplantation or conjunctival flap covering surgery from October 2018 to July 2019 in the National Center Hospital of Mauritania.

Material and Methods

Data from the National Center Hospital of Mauritania, from October 2018 to July 2019 were retrospectively analyzed about 36 cases of corneal ulcers patients (36 eyes) who had amniotic membrane transplantation or conjunctival flap covering surgery. They include 8 cases (8 eyes) with viral corneal ulcer ; 9 cases (9 eyes with fungal corneal ulcer) ; 3 cases (3 eyes) with bacterial corneal ulcer ; 3 cases (3 eyes) with erosion and marginal corneal ulcer ; 4 cases (4 eyes) with corneal epithelial bullae and ulcers for corneal endothelial decompensation caused by optical surgery ; 9 cases (9 eyes) with perforation All the patients were treated with removal of the necrotic corneal tissue combined with amniotic membrane transplantation or conjunctival flap covering surgery and then were treated with drugs based on primary disease

The amniotic membrane (AM) was prepared and preserved as previously reported [6] with minor modifications. All cases were thoroughly cleared under the microscope with an epidermal knife. Depending on the area and size of the corneal ulcer, we make a corresponding size amniotic membrane graft orbridge-shaped conjunctival flaps in different positions (above, below, nose, side). Membranous transplantation was performed in 17 cases, and conjunctival flap covering in 19 cases. Observation performed for a week-two months.

Clinical efficacy judgment :

- Cure : corneal ulcer healing, negative fluorescein staining, anterior chamber empyema disappeared;
- Improvement : Most of the corneal ulcer healing, reduction or disappearance of anterior chamber empyema;
- Ineffective : corneal ulcer enlargement.

Statistical analysis

Statistical analysis of the data was conducted using the Statistical Packages for the Social Science (SPSS 18.0). Quantitative variables were expressed as mean ± standard deviation (SD). A value of $p<0.05$ was considered to be statistically significant. Yearly numbers of AMTs were compared using a Student t-test.

Résults

We found 17 cases (17 eyes) treated with amniotic membrane transplantation, 19 cases

(19 eyes) treated with conjunctival flap covering surgery. 13 cases (13 eyes) treated with amniotic membrane transplantation were cured and the cure rate was 76.5% (13/17), 14 cases (14 eyes) treated with conjunctival flap covering surgery were cure and the cure rate was 73.7% (14/19)

Discussion

The management of nonhealing corneal ulcers is one of the most difficult challenges faced by ophthalmologists because only a few resistant ulcers can be cured solely by medication. Once the nonhealing corneal ulcer tends toward expansion and aggravation, devastating complications can subsequently develop [7]. AMT also helps to maintain a normal conjunctival phenotype and has a cosmetic benefit over buccal or mucosal grafts, which result in a nonconjunctival epithelial morphology [8–10]..

AM provides a rich source of stem cells and has unique features : it supports, facilitates and promotes conjunctival and corneal epithelialization and healing, inhibits and allows a reduction of inflammation, immune rejection, vascularization, scarring and pain.

AMT has brought a major advances in the reconstructive surgery of the ocular surface. It can be used as a permanent graft in the tissue defect, so that epithelium cells will grow over the AM and the membrane will subsequently be integrated into the host tissue, which helps improve the structural quality of the tissue.

This study draws the following findings :

(1) Amniotic membrane transplantation and conjunctival flap covering can achieve better efficacy, in bacteria, fungal, viral and other infectious corneal ulcers and sterile inflammatory corneal ulcers .There is no obvious difference in clinical cure rate between the two.

(2) For large stromal necrosis and dissolution or even ulcers that cause corneal perforation, conjunctival flap covering adjuvant drug treatment can shorten the course of disease and promote ulcer healing. For superficial ulcer, corneal epithelial erosion, corneal stromal dystrophy, amniotic membrane transplantation can effectively protect the corneal implant bed and restore corneal transparency.

CONCLUSION

Amniotic membrane transplantation and conjunctival flap covering surgery in the treatment of corneal ulcers can achieve better surgical treatment if appropriate surgical method is selected according to different types and different ulcer process.

Références

[1] Davis JS. Skin transplantation. Johns Hopkins Hosp Rep. 1910;15:307–96
[2] De Rotth A. Plastic repair of conjunctival defects with fetal membrane. Arch Ophthalmol. 1940;23:522–25.
[3] Mc Quilling JP, Vines JB, Mowry KC. In vitro assessment of a novel, hypothermically stored amniotic membrane for use in a chronic wound environment. Int Wound J. 2017
[4] El hawary A et al. Molecular subtypes of breast cancer in egyptian women clinicopathological features. Pathology-research and practice Tseng SCG, Espana EM, Kawakita T, et al. How does amniotic membrane work? Ocul Surf. 2004;2(3):177–87.
[5] Adzick NS, Lorenz HP. Cells, matrix, growth factors, and the surgeon. The biology of scarless fetal wound repair. Ann Surg. 1994;220(1):10–18.
[6] Lee S.-H., Tseng S. C. G. Amniotic membrane transplantation for persistent epithelial defects with ulceration. American Journal of Ophthalmology. 1997;123(3):303–312. doi: 10.1016/S0002-9394(14)70125-4.
[7] Prabhasawat P., Tesavibul N., Komolsuradej W. Single and multilayer amniotic membrane transplantation for persistent corneal epithelial defect with and without stromal thinning and perforation. British Journal of Ophthalmology. 2001;85(12):1455–1463. doi: 10.1136/bjo.85.12.1455.
[8] Ahmad MS, Frank GS, Hink EM, et al. Amniotic membrane transplants in the pediatric population. J AAPOS. 2017;21(3): 215–18.
[9] Prabhasawat P, Tesavibul N. Preserved amniotic membrane transplantation for conjunctival surface reconstruction. Cell Tissue Bank. 2001;2(1):31–39.
[10] Asoklis RS, Damijonaityte A, Butkiene L, et al. Ocular surface reconstruction using amniotic membrane following excision of conjunctival and limbal tumors. Eur J Ophthalmol. 2011;21(5):552–58.