Available online at www.sciencedirect.com
ScienceDirect
journal homepage: www.elsevier.com/locate/survophthal

Letter

New developments in the management of persistent corneal epithelial defects

Letter to the editor:

We have read with interest the recent review article "New developments in the management of persistent corneal epithelial defects" published by Zhang and coworkers[11]. Their article describes the causes and the approaches developed to manage persistent epithelial defects (PEDs), emphasizing recently developed treatment modalities. We would like to congratulate them for their excellent work.

Our aim here is to further contribute in terms of other current medical treatments and interventions for PED, which have not been considered in this review. First, we would like to point out the reemerging use of topical insulin drops in the management of PED and neurotrophic corneal ulcer. Topical insulin drops have reportedly yielded satisfactory results in several retrospective studies and are becoming part of the essential armamentarium to treat numerous ocular surface diseases. The advantages of this topical approach include high availability, low cost, ease of delivery, no need for blood extractions, excellent tolerance, and therapeutic effectiveness, with no adverse side effects reported.[2–6,9]

Second, regarding platelet-rich plasma (PRP), although Zhang and coworkers described the use of serum derivatives as eye drops, we would like to remark on the possibility of using PRP as a "clot" in a solid formulation (activated). PRP clots have been commonly used in combination with a sutured amniotic membrane (AM) to "tectonically" maintain the solid clot attached to the ocular surface.[1] When patients are not suitable to undergo surgery, or when there is no availability of amniotic membrane tissue, solid-activated PRP can be used in combination with a silicone-hydrogel soft contact lens. This is a new modified procedure easy to perform in an ambulatory setting and economically advantageous.[1] Patients who cannot donate blood or are suffering from systemic diseases or infectious diseases are frequently excluded from autologous serum therapy, Thus, some investigators[8] have used allogeneic solid PRP combined with fibrin glue and soft contact lens. Production of serum eye drops in larger batches reduces biological variability, allows viral inactivation, and leads to better standardization and less variability in the growth factors and fibrinogen concentration.[7]

Last, we would like to mention the pillar tarsoconjunctival flap (PTCF) as a surgical approach for the management of refractory PED or neurotrophic corneal ulcer.[10] After everting the upper lid, a 3–4-mm-wide PTCF hinged in the upper fornix is dissected. The amount of tarsus included in the flap may vary from 2 to 6 mm in height. Then, a double-needled suture is placed in the corners of the flap and passed through a 1×2 mm excised tarsoconjunctival pocket in the lower eyelid and externalized to the skin side of the eyelid 4 mm beneath the eyelash line, where it is tied over a silicone tube, thus avoiding skin damage.[10] PTCF is an alternative option to conventional tarsorrhaphy or conjunctival flaps and shows some advantages that must be considered. On the one hand, the impact on vision is minor, as the flap does not cover the entire cornea. As opposed to tarsorrhaphy. PTCF allows full corneal and ocular surface examination at any time during the healing process. On the other hand, the conjunctival scarring is minimal and well tolerated, not affecting the limbs, eyelid, or palpebral fissure shape. Finally, another potential advantage of the PTCF over conventional tarsorrhaphy is the impact on the blinking phenomena.

Limitations of all these options are mainly their retrospective and noncomparative nature, so further randomized clinical trials are needed comparing them to conventional treatment, both medical and surgical, regarding corneal re-epithelialization time and other parameters. In the case of insulin eye drops, a standardization of the formula (i.e., the most appropriate insulin type and concentration) should be reached in order to achieve an optimization of the therapy.

In conclusion, we really appreciate Zhang and coworkers' efforts in summarizing the wide variety of treatment options for PEDs. We fully agree that the treatment of this pathology remains a challenge, as it is usually caused by multiple underlying etiologies often requiring more than one treatment. We think that more treatments targeting the underlining pathophysiology of PED are needed, as well as more robust randomized controlled trials.

https://doi.org/10.1016/j.survophthal.2023.07.005

Declaration of Competing Interest

None.

REFERENCES

1. Alvarado-Villacorta R, Davila-Alquisiras JH, Hernández-Quintela E, Ramos-Betancourt N. Solid platelet-rich plasma combined with silicone-hydrogel soft contact lens for non-healing corneal ulcers: a case series. Ocul Immunol Inflamm. 2022;30(5):1123–8.
2. Balal S, Din N, Ashton C, Ahmad S. Healing of chemical injury-related persistent corneal epithelial defects with topical insulin. (Aug;Publish Ahead of Print) Cornea. 2022(8):1000–4.
3. Castro Mora MP, Palacio Varona J, Perez Riaño B, Laverde Cubides C, Rey-Rodriguez DV. Effectiveness of topical insulin for the treatment of surface corneal pathologies. (English Ed.) Arch la Soc Española Oftalmol. 2023;98(4):220–32.
4. Diaz-Valle D, Burgos-Blasco B, Gegundez-Fernandez JA, et al. Topical insulin for refractory persistent corneal epithelial defects. (Sep) Eur J Ophthalmol. 2021;31(5):2280–6.
5. Diaz-Valle D, Burgos-Blasco B, Rego-Lorca D, et al. Comparison of the efficacy of topical insulin with autologous serum eye drops in persistent epithelial defects of the cornea. (Jun) Acta Ophthalmol. 2022;100(4):e912–9.
6. Esmail A, Ibrahim M, Nage S. Efficacy of topical insulin for recurrent epithelial corneal erosions. (May) Ir J Med Sci. 2023 Ahead of print.
7. Rodríguez Calvo-de-Mora M, Domínguez-Ruiz C, Barrero-Sojo F, et al. Autologous versus allogeneic versus umbilical cord sera for the treatment of severe dry eye disease: a double-blind randomized clinical trial. (Mar) Acta Ophthalmol. 2022;100(2):e396–408.
8. Romano V, Bignotti S, Forbice E, et al. Allogeneic solid platelet-rich plasma for persistent epithelial neurotrophic defects: a protocol and pilot study. (Apr) Cornea. 2023;42(4):498–506.
9. Soares RJDSM Arêde C, Sousa Neves F, et al. Topical insulin-utility and results in refractory neurotrophic keratopathy in stages 2 and 3. (Aug) Cornea. 2022;41(8):990–4.
10. Zamorano-Martin F, Rocha-de-Lossada C, Rodriguez-Calvo-de-Mora M, et al. Pillar tarsoconjunctival flap: an alternative approach for the management of refractory corneal ulcer. (Nov) Eur J Ophthalmol. 2022;32(6):3383–91.
11. Zhe TZ, To HY, Shih KC, Tong L. New developments in the management of persistent corneal epithelial defects. (Jun) Surv Ophthalmol. 2023 Ahead of print.

María García-Lorente, MD
Department of Ophthalmology, Hospital Quirónsalud Marbella, 29603 Málaga, Spain

Marina Rodríguez-Calvo-de-Mora, MD PhD
Department of Ophthalmology, Hospital Regional Universitario de Málaga, 29010 Málaga, Spain
Department of Ophthalmology (Qvision), Vithas Almería, 04120 Almería, Spain
Department of Ophthalmology, VITHAS Málaga, 29016 Málaga, Spain

José-María Sánchez-González, OD PhD *
Department of Physics of Condensed Matter, Optics Area, University of Seville41004 Seville, Spain

Davide Borroni, MD PhD
Department of Doctoral Studies, Riga Stradins University, LV-1007 Riga, Latvia
Cornea Research Unit, ADVALIA Vision, 20145 Milan, Italy

Francisco Zamorano-Martín, MD
Department of Ophthalmology, Hospital Virgen de la Nieves, 18014 Granada, Spain
Department of Ophthalmology, University of Malaga, 29016 Málaga, Spain
Department of Ophthalmology, Ceuta Medical Center, 51001 Ceuta, Spain

Carlos Rocha-de-Lossada, MD PhD
Department of Ophthalmology, Hospital Regional Universitario de Málaga, 29010 Málaga, Spain
Department of Ophthalmology (Qvision), Vithas Almería, 04120 Almería, Spain
Department of Ophthalmology, VITHAS Málaga, 29016 Málaga, Spain
Departament of Surgery, Ophthalmology Area, University of Seville, 41009 Seville, Spain

*Corresponding author: José-María Sánchez-González, OD PhD, University of Seville, Reina Mercedes Street, 41012 Seville, Spain.
E-mail address: jsanchez80@us.es (J.-M. Sánchez-González)