DIMETHYLPOLYSILOXANE AS AN OPTION FOR CLINICAL TREATMENT OF CORNEAL EDEMA IN A DOG WITH ENDOTHELIAL DISORDER: CASE REPORT

T. Guimarães[1-4*], K. Cardoso[1,4], F. Botelho[4], M. Laranjo[4], N. Alexandre[2,5]

1| Institute for Advanced Studies and Research (IIFA), University of Évora, Portugal.
2| Institute of Agrarian and Environmental Environmental Sciences (ICAAM), University of Évora, Portugal.
3| Fellowship Holder Researcher, Foundation for Science and Technology (FCT), Portugal.
4| Institute for Clinical and Biomedical Research (iCBR), area of Environment, Genetics and Oncobiology (CIMAGO), Faculty of Medicine, University of Coimbra, Portugal.
5| Department of Veterinary Medicine, University of Évora, Portugal.
tarcisiounifran@yahoo.com.br*

Introduction

Corneal edema manifests as a diffuse blue-gray opacity. These corneal lesion is due to increased water bonds between stromal collagen fibers[4] and may occur secondary to epithelial ulcerations, blood vessel growth and corneal endothelial disorders[4]. The inciting mechanism is due to the loss or functional defect of the corneal endothelium and results in a very diffuse edema[4]. When endothelial disorder is present, treatment with topical medications and surgical procedures may be required. Dimethylpolysiloxane is an ophthalmic lubricating compound[3], which can also be used to treat bullous keratopathy[1] and corneal edema[2].

Objectives

The aim of this study is to report the use of dimethylpolysiloxane in the treatment of a dog with corneal edema secondary to endothelial disorder.

Methodology

A female 5-year-old Pinscher dog was presented to consultation with a history of opaque left eye. The patient was taking topical corticosteroid eye drops without significant improvement. The use of 5% sodium chloride solution was not tolerated by the animal and was discontinued. The ocular evaluation with slit lamp, showed a left eye with diffuse corneal edema. Dazzle rand consensual pupillary reflexes were present. The contralateral eye also presented discret central corneal opacity. Intraocular pressure (IOP) was 17 mmHg and in the contralateral eye IOP was15 mmHg and ocular ultrasound was unremarkable. There was no sign of inflammation or eye discomfort and sodium fluorescein testing confirmed corneal integrity. Hematological and biochemical panel results were within reference values for the specie.

Due to the clinical history and ophtalmological exam findings, it corneal edema was attributed to an endothelial disorder, and the use of dimethylpolysiloxane Was considered for topical treatment. Dimethylpolysiloxane manipulated eye drop

formulation as was prescribed, 4 times daily, until reassessment and dexamethasone eye ointment 3 times daily, for 5 days.

Results

Ten days after starting treatment with dimethylpolysiloxane, the animal responded positively, presenting no complications. No eye discomfort was present, and significant reduction in diffuse corneal edema observed. The edema was restricted to a central / medial area of the cornea, with a slightly axial projection of these structure. It was possible to evaluate the anterior chamber without observing any signs of inflammation. In the contralateral eye no sign of edema was observed. Intraocular pressure was within physiological parameters and ocular reflexes were present in both eyes. As the progression of corneal edema, may result in corneal vascularization, pigmentation and bullous keratitis, additional therapy with rho kinase inhibitor (ripasudil) was indicated in left eye and surgical procedures such as thermokeratoplasty or conjunctival flap was advised; however due to financial constraints the owner rejected. The use of dimethylpolysiloxane eye drops was maintained 4 times daily for further reevaluations at every 90 days.

Conclusion

Dimethylpolysiloxane promoted the reduction of corneal edema in a dog with endothelial disorder, proving to be a good option for symptomatic treatment, especially for animals that do not tolerate the use of hyperosmotic solutions.

References

[1] Tonelli Júnior, E., Pereira, M. V. C., Nery Júnior, F., & Pimentel, A. R. (1998). Hemorragia expulsiva espontânea durante crise hepertensiva: relato de dois casos. Arq Bras oftalmol, 61(3), 266-70.

[2] Macedo, A. C., Ishirara, C., Fairbanks, D., Vitiello Neto, V., & Rehder, J. R. C. L. (2010). Micropuncture with radiofrequency for the treatment of symptomatic bullous keratopathy. Revista Brasileira de Oftalmologia, 69(3), 152-158.

[3] Batistuzzo, J., & Lima Filho, A. (2011). Formulações Magistrais em Oftalmologia. Acta Farmacêutica Portuguesa, 1(1), 65-76.

[4] Maggs, D., Miller, P., & Ofri, R. (2017). Slatter's Fundamentals of Veterinary Ophthalmology E-Book. Elsevier Health Sciences.