



COMPANION ANIMAL

Research Award



Comparison of the Effects of Cyclosporine A and Limbal Derived Mesenchymal Stem Cells on Treatment of Dogs with Keratoconjunctivitis sicca, Preliminary Results

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Introduction

Keratoconjunctivitis sicca (KCS) is a common eye disease in dogs. It may be as a result of insufficient secretion of the tear aqueous layer or other components. It causes dryness and inflammation of cornea, pain, progressive corneal damage and consequently loss of vision (1). Conventional treatment consists of cyclosporine A (CsA) and artificial tears. However, daily drug administration by the patient owner, high cost of the drugs, and the temperament of the patient can make the treatment more difficult. In recent years, Mesenchymal stem cells (MSCs) are taken to attention as a treatment option for their capacity of differentiation into other cell types and immunoregulatory effects (2). The aim of this study was to transplant the limbal MSCs (LMSCs) to ocular surface on contact lenses and to evaluate its therapeutic effects by clinical examination findings.

Material and Methods

A total of 10 dogs with KCS having various breed, age and sex were included in the study. Patients were divided into two groups. The first group (n = 5) received LMSCs (at least 2×10^6 cells) cultured on contact lenses. The second group (n = 5) received artificial tears, topical 0.05% CsA and antibiotic eye drops 3 times a day for 4 weeks. Schirmer test, tear break-up time, impression cytology, Rose Bengal staining and tear osmolarity were measured. The findings of the pre-treatment, second weeks and four weeks after the treatment were evaluated statistically.

Results

In both groups, Schirmer test values, tear osmolarity values and goblet cell density showed statistically significant improvement compared to the pre-treatment findings, however there was no significant difference between the LMSC and conventional treatment groups.

Conclusion

KCS treatment using LMSCs produced on contact lenses is promising, with its ease of application, non-immunogenic properties and the potential of eliminating the continual medication usage via single dose administration.

References

1. Williams DL. Canine Keratoconjunctivitis Sicca: Current Concepts in Diagnosis and Treatment. J Clin Ophthalmol 2017; 2: 1, 101.
2. Villatoro AJ, Fernandez V, Claros S, Rico-Llanos GA, Becerra J, Andrades JA. Use of adipose-derived mesenchymal stem cells in keratoconjunctivitis sicca in a canine model. Biomed Res Int 2015; 527926.