EuroSciCon

15th Edition of EuroSciCon Conference on

Advanced Stem Cell & Regenerative Medicine

December 03-04, 2018
Valencia, Spain

J Stem Cell Biol Transplant 2018, Volume 2
DOI: 10.21767/2575-7725-C1-003

Expression of immunological markers in the lacrimal gland and conjunctive palpebral of dogs with keratoconjunctivitis sicca topically treated with mesenchymal stem cells

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Keratoconjunctivitis sicca (KCS) or dry eye syndrome, is predominantly immunomediated and dogs are an excellent model for understanding this disease due to immunomediated origin similar to that in humans. The objective is to compare the expression of immunological markers interleukin (IL), IL-1 and IL-6, tumor necrosis factor alpha (TNFα), and CD4T lymphocytes, before and after topical treatment with mesenchymal stem cells (MSC) in KCS in dogs. Twenty-two dogs, with a bilateral diagnosis of KCS, were treated topically with 50 µl (1x106 MSC) in the conjunctival sac in 4 applications at 7 day intervals, and evaluated monthly for 6 months. For analysis of the expression of IL-1, IL-6, TNFα, and CD4 markers, two collections were performed, one before and another at the end of the study, by fine-needle aspiration of the third eyelid gland and processed by immunocytochemistry and biopsy of the conjunctival palpebral and processed by immunohistochemistry. The results obtained through color density showed that at the pre KCS treatment moment there was a marked expression of all markers (IL-1, IL-6, TNFα, and CD4) and after 6 months there was a significant reduction in the marked area of all markers. These results demonstrated that these markers could be excellent tools for the diagnosis and progression of KCS and topical treatment of KCS with MSC was shown to promote a significant decrease in the expression of these markers after treatment which in future may represent another adjuvant therapy option in the treatment of KCS in dogs and humans.

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