Mesenchymal stem cell therapy: Holding promise for feline inflammatory diseases

March 13 2018

Feline patient receiving adipose-derived stem cells intravenously as part of a study to assess the safety and efficacy of this innovative treatment for chronic kidney disease. Credit: Jessica Quimby

Stem cell therapy is acknowledged as having great potential for the treatment of a variety of diseases in both people and animals. The use of bone marrow-derived stem cells is well established in the treatment of human cancer patients, and veterinary applications for bone marrow- and adipose-derived stem cells are being evaluated.

The present and potential clinical applications of mesenchymal stem cell therapy in cats are explored in a state-of-the-art review article published this month in the *Journal of Feline Medicine and Surgery*.

The review's authors, Dr Jessica Quimby, of the Department of Veterinary Clinical Sciences at Ohio State University, and Dr Dori Borjesson, of the Veterinary Institute for Regenerative Cures at the University of California-Davis, consider the emergence of this new therapeutic strategy and the current understanding of the biology and immunology of mesenchymal stem cells.

They also summarise the outcome of clinical trials that have investigated the use of mesenchymal stem cells in the treatment of a number of inflammatory, degenerative and immune-mediated diseases of cats. Management of these conditions conventionally requires lifelong use of medication, with the potential for associated side effects. Some cats may not respond to standard treatment regimens, and the medication may not prevent progression of the underlying disease.

Trials of stem cell therapy for conditions such as feline chronic gingivostomatitis, a severe, painful oral disease estimated to affect up to 12% of cats presenting to veterinary practices, have produced encouraging results. So, too, have trials for enteropathies, such as inflammatory bowel disease, and for asthma. The treatment has been generally well tolerated, with few side effects and, in some cases, has proved curative. The use of stem cells in the treatment of feline chronic kidney disease, however, has been the exception. None of the studies

conducted so far in cats have been able to replicate results seen in experimental models in rodents, where definitive decreases in kidney values were seen.

The authors conclude that mesenchymal stem cell therapy has great potential as a therapeutic option in feline disease, but that many questions about the logistics of its use remain to be answered. What is the ideal source of stem cells? What is the optimal route of administration? And what impact does tissue donor status have on stem cell function? Further research is already underway to investigate these aspects of this promising therapy.

Provided by SAGE Publications