

Stem Cell Therapy & Feline Asthma

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catsINK

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In the Literature

Trzil JE, Masseau I, Webb TL, et al. Intravenous adipose-derived mesenchymal stem cell therapy for the treatment of feline asthma: a pilot study. *J Feline Med Surg.* 2016;18(12):981-990.

FROM THE PAGE ...

Mesenchymal stem cell (MSC) therapy is being studied in many chronic conditions, including chronic kidney disease¹ and gingivostomatitis,² in humans and animals. In cats, asthma is a common problem that requires ongoing management because of its irreversible nature. Standard therapy includes corticosteroids and bronchodilators, which require frequent administration, involve ongoing costs, and may be problematic for cats with concurrent conditions.

MSC therapy has shown promise in a murine asthma model. Using an experimental feline asthma model, this pilot study investigated the effects of repeated IV infusion of allogeneic, adipose-derived MSCs in treating feline asthma. Allergic asthma was acutely induced in 6 cats; 4 received MSCs and 2 received placebo 5 times over 130 days after asthma induction. Aerosol challenge with allergen continued over 9 months. Throughout this period, bronchoalveolar lavage was performed to quantify airway eosinophilia. Pulmonary mechanics were evaluated on day 133. Thoracic CT images were acquired from the 6 study cats and 6 healthy research cats to assess extent and severity of disease in both asthma groups. In addition, immunoassays were performed to characterize immunologic response to treatment.

By 9 months, significant improvement was seen in the CT indices of remodeling and structural changes in the 4 treated cats. Airway inflammation (eosinophilia) and hyperresponsiveness during bronchoprovocation may have diminished. No effect on immunologic parameters was observed. Treated cats received 5 MSC infusions from different donors without evidence of any adverse events. This is an exciting therapeutic modality with potential benefits.

... TO YOUR PATIENTS

Key pearls to put into practice:

- 1** Safe MSC infusions require extensive, meticulous preparation and careful handling.
- 2** Further studies using larger numbers of cats are necessary for confirming results and establishing optimal protocols.

References

1. Quimby JM, Webb TL, Gibbons DS, Dow SW. Evaluation of intrarenal mesenchymal stem cell injection for treatment of chronic kidney disease in cats: a pilot study. *J Feline Med Surg.* 2011;13(6):418-426.
2. Arzi B, Mills-Ko E, Verstraete FJ, et al. Therapeutic efficacy of fresh, autologous mesenchymal stem cells for severe refractory gingivostomatitis in cats. *Stem Cells Transl Med.* 2016;5(1):75-86.