

Stem Cell Therapy Effective for Tendonitis in Cornell Study

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Horses faced with career-ending tendon injuries might possess the power to heal themselves.

According to Alan J. Nixon, BVSc, MS, Dipl. ACVS, and colleagues from Cornell University, veterinarians might be able to effectively treat horses with injuries to their superficial digital flexor tendons (SDFT) by injecting stem cells directly into the injured tendon using cells that were harvested and expanded from the horse's own bone marrow.

Tendon injuries are an important cause of catastrophic injury in athletic horses, and even minor injuries are often slow to heal and prone to future injury.

"At present, few successful treatment options exist for horses with tendon injuries," explained Nixon. "While stem cell therapy has become a hot topic in equine medicine, there are few controlled studies clearly documenting the safety or efficacy of this treatment modality for tendonitis in horses."

To evaluate the effect of mesenchymal stem cells (the stem cells harvested from bone marrow and capable of transforming to tendon cells) on tendon healing, researchers created tendonitis in the SDFT of both forelimbs. Six days later, stem cells harvested from each horse's own bone marrow were injected into one of the SDFT lesions. The untreated (control) limb was injected with 1 ml saline.

Researchers performed ultrasound examinations of the tendons at 0, 2, 4, 6, and 8 weeks and mechanical, biochemical, and microscopic evaluation of the tendons 8 weeks after treatment.

"The biochemical composition of the treated and untreated tendons were similar 8 weeks after treatment; however, tendons injected with the stem cells had significantly improved histology scores, indicating a more normal microscopic appearance in treated tendons than untreated tendons," summarized Nixon.

These results suggest that injecting mesenchymal stem cell directly into the damaged area of the SDFT is beneficial.

"Nonetheless, more research is needed regarding the optimal dose of stem cells and the use of gene enhancement techniques to augment the observed benefit before making this technology clinically available," cautioned Nixon.

The study, "Mesenchymal stem cells and insulin-like growth factor-1 gene-enhanced mesenchymal stem cells improve structural aspects of healing in equine flexor digitorum superficialis tendons," is scheduled to be published in an upcoming edition of the *Journal of Orthopaedic Research*. **The abstract is currently available online.**



Readers are cautioned to seek the advice of a qualified veterinarian before proceeding with any diagnosis, treatment, or therapy.

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