Treatment of equine tendonitis with mesenchymal stem cells associated with physical therapy: case report

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Abstract

Tendinitis of the superficial digital flexor tendon (SDFT) is one of the most common injuries in athletic horses. The healing process is long and it has a repair, and not a regenerative nature. This feature results in loss of strength and elasticity, reducing the function of this structure. Despite the variety of therapies, the treatment for tendonitis remains a challenge. Beneficial results are expected in the use of mesenchymal stem cells (MSCs) in the treatment of tendonitis. That happens because MSC have the capacity for self-renewal, chemotactic and immunoregulatory properties, and the ability of cell differentiation.

Our objective is to present a case report of a horse with an important lesion of acute tendonitis submitted to the treatment with intralesional application of autologous mesenchymal stem cells. A 6 years old quarter horse, used for cutting competitions, was attended with lameness at the Large Animal Surgery Service of UNESP, in Botucatu – SP, Brazil. After clinical evaluation, it was noticed a grade 3 (AAEP) lameness of the right forelimb, swelling in the palmar aspect of the metacarpal bone and sensibility to touch in soft tissues, suggesting tendonitis. The ultrasound examination revealed peripheral and intra tendon edema, with 41% hypoechoic area in the 2B zone of the SDFT, thus it was diagnosed acute tendonitis of the SDFT. The treatment was based on the use of nonsteroidal anti-inflammatory for 5 days, single intralesional application of CTM and physical therapy. Treatment with MSC was held after 30 days of cell culture, obtained by aspiration of autologous bone marrow from the sternal bone. The application was done using 3 ml of a solution containing 10^7 MSC resuspended in autologous blood plasma, distributed in three intralesional points. After cell application, the animal was submitted to a 15 days rest period and then physiotherapy was instituted. After 4 months of cellular application, it was noticed a reduction of edema and absence of pain and lameness. In ultrasonography examination, we visualized cell filling of the lesion with improvement of 90% and final phase of cellular organization. The animal was then led to a specific exercise protocol during 60 days. After 6 months of cellular implantation, the ultrasonography examination revealed complete cellular padding and organization of tendon fibers, and the animal was released for normal training and competition. After 30 days of discharge the horse won a prize in an open category competition. In our experience, the use of MSC with physical therapy has provided the best results against isolates treatment protocols. The MSC application was effective, promoting harmonious and consistent tendon repair. This case report is of crucial importance

due to the success of the techniques applied, since the animal returned to its previous level of activity, ranking in first place in a competition of great importance.

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