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Histopathological evaluation of treatment of superficial digital flexor tendinitis with autologous mesenchymal stem cells in horse

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INTRODUCTION
Injuries to the superficial digital flexor tendon (SDFT) in racing horses are common and a significant cause of wastage. Many treatment modalities have been used to facilitate healing of these lesions, but currently no treatments enhance healing on a consistent basis. Recently, the potential advantages of mesenchymal stem cells has been taken into consideration for the healing of different tissue injuries. The aim of the present study was to evaluate the histopathologic findings after SDFT tendonitis treatment with autologous mesenchymal stem cells in horse.

MATERIALS AND METHODS
Five clinically normal cross bred horses with average age of 4.3 years (2-6) and average weight of 368.5 kg (350-400) were used. Bone marrow was taken from horse’s sternum and their mesenchymal stem cells were isolated and cultured in the lab. Experimental tendinitis was induced with injection of 2000 IU collagenase in the centre of the left and right superficial digital flexor tendons (SDFT) of forelimbs of each horse under ultrasound guide to confirm intratendineous needle placement. Two weeks later 15×10⁶ autologous mesenchymal stem cells with plasma were injected in one limb and the other limb just autologous plasma was injected as a control group. At day 60 after injection, the animals were euthanized and tendon samples obtained for histopathologic evaluation.

RESULTS
Histopathology showed number of fibroblasts and blood vessels in treated group was fewer than control group. Total average of reorganization and arrangement and collagen alignment in experimental group were better than the control group.

CONCLUSION
With regard to the results of this study, it was concluded that mesenchymal stem cell application in acute and subacute stages of tendonitis helps to improve speed and quality of healing of the SDFT lesions.

REFERENCES