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Comparison of Effect of Hyaluronic Acid and a Combination of Hyaluronic Acid and Autologous Adipose Derived Stem Cell (ADSC) in Lamed Dogs with Degenerative Stifle Joint

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To evaluate the effect of autologous adipose derived stem cell (ADSC) on degenerative stifle joint in dogs was performed. Three lamed dogs (6 stifles) were presented with degenerative joint disease due to patellar luxation, cranial cruciate ligament rupture and unknown etiology. Three stifles were treated with hyaluronic acid (H group) and the rest three stifles treated with a combination of ADSC and hyaluronic acid (SCH group) intraarticularly under fluoroscopy guidance. Up to 8 weeks after treatment, the lameness grade gradually decreased in all dogs of SCH group, while the lameness grade of dogs in H group showed no change in between before and after treatment. The osteoarthrosis score on the radiographic views (OA score) and the cartilage lesion score on the magnetic resonance imaging (CL score) at 8 weeks after treatment in SCH and H group showed lower than those of before treatment in SCH and H group, respectively. The decreased OA and CL score were 3.33, 7.33 in SCH and 1.67, 2.67 in H group, respectively. The decreased level of joint lesions in SCH group was higher than those of H group. The OA and CL score before treatment in SCH group were significantly decreased after treatment ($P<0.05$), respectively. Histopathological evaluation demonstrated that SCH group significantly diminished degenerative chondrocytes in articular cartilage region and also spared chondrocytes compared with H group. H&E staining of articular cartilage from H group increased the number of necrotic chondrocytes with eosinophilic cytoplasm and nuclei, irregular nuclear membrane, and nuclei shrinkage. In conclusion, it is considered that ADSC can be able to reduce the degenerative change in stifle joint of dogs.

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