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Evaluation of osteoprotegerin and tumor necrosis factor-α changes in synovial fluid and serum in dogs with osteoarthritis: An experimental study

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Abstract

Osteoarthritis (OA) is a progressive and degenerative condition of the articular cartilage and other joints' structures. It is essential to diagnose this condition as early as possible.The present study was conducted to measure the Osteoprotegerin (OPG) and Tumor Necrosis Factor-α (TNF-α) levels in synovial fluid and serum samples of dogs with experimental cruciate ligament rupture as a model of OA. In the present study, four adult (~ 20 months), large (weighing ~ 18 kg), mixed breed, male clinically healthy dogs were selected to investigate the effect of experimental OA, on OPG and TNF-α as a way of early detection of OA. OPG and TNF-α were measured in synovial fluid and serum on days 0, 14, 28, 90 and 180 after the surgical transaction of the cranial cruciate ligament in one stifle joint. Statistical analysis of the results showed that there was a significant increase in the concentrations of TNF-α in both synovial fluid and serum. Serum level of OPG showed a reduction before and two weeks after surgery and remained steady for the rest of the study period. Synovial fluid levels of OPG had no wide fluctuation throughout the study. OPG had constant levels at the beginning of experiment and increased at final stage. In conclusion, TNF-α could be used in both synovial fluid and serum as a way of early detection of OA.

Key words: Osteoarthritis, Osteoprotegerin, Tumor necrosis factor α, Synovial fluid

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