RESEARCH PROGRESS REPORT SUMMARY

Grant 02107: Landmark Clinical Trial to Establish the Evidence-Based Use of Regenerative Medicine to Treat Tendon Injury in Dogs

Principal Investigator: Jennifer Barrett, DVM, PhD

Research Institution: Virginia-Maryland Regional College of Veterinary Medicine

Grant Amount: $254,509

Grant Period: 7/1/2014-6/30/2018; 12/1/2019-11/30/2021

Progress Report: Mid-Year 1

Report Due: 5/31/2020 **Report Received:** 8/27/2020

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Original Project Description:

This study will evaluate the effectiveness of Platelet-Rich Plasma (PRP) and stem cells in the treatment of the most common sporting injury in dogs: supraspinatus tendinopathy (similar to the rotator cuff injury in humans). Tendon injuries in dogs often progress undiagnosed and result in chronic lameness and pain. Ultimately, unassisted tendon healing results in scar formation and reduced function of the joint and surrounding muscle tissue. PRP and stem cell therapies aim to accelerate and promote healing through tissue regeneration and reduced scarring. The investigators will conduct a randomized, placebo-controlled clinical trial evaluating the effectiveness of PRP, adipose-derived, cultured stem cells (ASC) and commonly used stromal vascular fraction (SVF) cells to directly compare efficacy of intratendinous injection of ASC versus SVF, both of which are currently commercially available despite having limited scientific evidence of efficacy. The investigators hope to identify an effective treatment to supraspinatus tendon injury.

Publications: None at this time.

Presentations: None at this time.

Report to Grant Sponsor from Investigator:

Tendon injury is common, often progresses undiagnosed, and results in reduced function, lameness and pain in both companion dogs and canine athletes. Failed healing and recurrence frequently occur because unassisted tendon healing results in scar formation with inferior mechanical properties.

Supraspinatus tendon injury of the shoulder is readily diagnosed, healing can be followed with objective measurements to evaluate efficacy, and the injury does not heal without intervention. Thus, it is an excellent tendon to study in a clinical trial. Regenerative therapies aim to accelerate and promote healing through tissue regeneration rather than scarring. There are several types of cells that promote healing, including platelets from blood and stem cells from adipose tissue. Platelets from blood can be concentrated and used as a vehicle for stem cells. Adipose tissue can either be a source of concentrated adipose stem cells (ASC) grown in a cell culture facility or can be used to prepare a mixture of various cells called the stromal vascular fraction (SVF). We propose to conduct the first randomized controlled clinical trial evaluating the effectiveness of stem cell and platelet therapy for the treatment of naturally occurring injury in dogs. Further this will be the first study to directly compare efficacy of intratendinous injection of ASC versus SVF, both of which are currently commercially available despite having limited scientific evidence of efficacy. Demonstrating an effective treatment for supraspinatus tendon injury will have profound impact on the treatment of musculoskeletal conditions as well as other types of injuries affecting dogs.