RESEARCH PROGRESS REPORT SUMMARY

Grant 02204: Using Enhanced Imaging to Evaluate Tumor Margins for Canine Mammary Cancer and Soft Tissue Sarcoma

Principal Investigator: Dr. Laura E. Selmic, BVetMed

Research Institution: University of Illinois

Grant Amount: $46,358.00

Start Date: 1/1/2016   **End Date:** 12/31/2017

Progress Report: Mid-Year 1

Report Due: 6/30/2016   **Report Received:** 6/28/2016

Recommended for Approval:

(Content of this report is not confidential. A grant sponsor's CHF Health Liaison may request the confidential scientific report submitted by the investigator by contacting the CHF office. The below Report to Grant Sponsors from Investigator can be used in communications with your club members.)

Original Project Description:

Surgery is the primary treatment for many common tumors affecting dogs including mammary tumors and soft tissue sarcomas (STS). For these tumors, the best chance of cure is offered if the surgeon can fully remove both visible and microscopic traces of the tumor. Unfortunately, to do this, surgeons must rely on indirect and crude methods to assess the extent of the tumor during surgery. The success of the procedure will not be known until several days later, following sample assessment by the pathologist. After surgery, decisions regarding the necessity of further treatment and ultimately the prognosis for the patient are often based off the histopathology results. For malignant tumors, if the disease is minimally or incompletely removed, further surgery or radiation therapy is often required. Additional treatments such as these can result in further risk and discomfort for the patient as well as be an emotional and financial cost for owners. Optical coherence tomography is an emerging diagnostic imaging tool that uses light waves to generate real-time, high-resolution images of tissue at a microscopic level. These images can be used to evaluate for residual disease at the time of surgery giving immediate feedback to the surgeon. This study will focus on validating this technology for the imaging of surgical margins of canine mammary tumors and STS. If successful, this technology could be used to assess for residual cancer in surgery to benefit patients by guiding accurate treatment recommendations and attempting to reduce the need for other additional treatments.

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Publications:

None at this time

Report to Grant Sponsor from Investigator:

Thank you for supporting our project titled "Using Enhanced Imaging to Evaluation Tumor Margins for Canine Mammary Cancer and Soft Tissue Sarcoma". This project is investigating an emerging diagnostic imaging tool, optical coherence tomography that uses light waves to generate real time high-resolution images of tissues for detection of residual cancer cells immediately following surgical removal. Our team involves collaboration between veterinary medicine and engineering at University of Illinois. We have almost completed enrollment in the first phase of this project where we are looking at imaging soft tissue sarcomas and mammary tumors after surgical removal in dogs. In this first phase we have been performing initial comparisons between the images from optical coherence tomography with biopsy slides of these areas. This phase will allow us to identify features of the tissues and train our imaging operators for the second phase of the project. To date, our assessments have been encouraging and we are seeing correlation between optical coherence tomography imaging features seen and biopsy results. We have also just started the second phase of the project where dogs are scanned with the imaging tool in surgery to assess for residual cancer. So far the imaging has been going well and accrual has been progressing well.

We are very grateful for your support. Our team will continue to work hard to perform the evaluation of this cutting-edge and promising technology for detection of residual cancer cells following surgery. Advancement of our knowledge of residual cancer cells at the time of surgery will help to improve options and outcome for dogs.

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