Histotripsy for treatment of canine appendicular osteosarcoma

Purpose
To determine if histotripsy, a novel treatment that can destroy tissue without radiation or heat, can effectively treat canine osteosarcoma.

Background
Osteosarcoma (OS) is the most common bone cancer in dogs. Typically, OS is treated with a combination of surgical removal of the primary tumor and chemotherapy for metastatic disease. Surgical removal of the tumor usually involves limb amputation or limb salvage surgery. Limb salvage surgery can have high complication rates, and not all dogs are suitable for limb amputation. Even though chemotherapy delays metastatic disease development, most dogs with OS ultimately succumb to metastasis.

Histotripsy is a novel treatment that mechanically breaks down tissues and can potentially induce the immune system to attack cancer cells. This study aims to evaluate the efficacy of histotripsy to treat dogs with OS, to ultimately advance the development of histotripsy as a non-surgical limb salvage treatment option for OS and an immunotherapy treatment against metastatic disease for OS.

This study is funded by the American Kennel Club Canine Health Foundation.

Eligibility
- Dogs of any age, weight, sex, or breed diagnosed with appendicular osteosarcoma via cytology or biopsy
- Owners have elected standard-of-care treatment for osteosarcoma – limb amputation and chemotherapy (chemotherapy may be administered at another veterinary facility)
- Free from other systemic illness

Exclusion Criteria
- Dogs who have received any tumor-directed therapy (e.g. radiation) or immunosuppressive drugs prior to study enrollment
- Evidence of metastatic disease

Study Design
Dogs with appendicular osteosarcoma will undergo a non-invasive histotripsy treatment of the tumor one day prior to standard-of-care limb amputation. Tumor samples will be obtained after limb amputation and evaluated by a pathologist at Virginia Tech. Results from this routine evaluation will be provided to you. Enrolled patients will need to return to the Veterinary Teaching Hospital for recheck visits at 2 weeks, and 3, 6, 9 and 12 months after surgery.

Compensation
Histopathological diagnosis of your dog’s tumor will be provided to you at no cost, and there will be no charge for the recheck visits. Up to $2,000 of the cost of surgical limb amputation will be covered by the study. $200 will be applied towards the final visit to owners who complete all four scheduled recheck visits. Total out of pocket costs for owners are estimated to be between $1,200-3,500.

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