Anti-Connexin-43 Therapy for Canine Glioma (FACT-CG)

Purpose

To determine the safety and effectiveness of a new chemotherapy drug and drug delivery method in the treatment of brain tumors (gliomas) in dogs.

Background

Malignant gliomas are aggressive cancers of the brain that affect dogs and humans. Temozolomide (TMZ) chemotherapy and radiation are the current standard-of-care therapies for gliomas. Although TMZ has been demonstrated to slow tumor progression, gliomas tend to become resistant to it over time. One way glioma cells develop TMZ resistance is by producing a protein called connexin-43. To combat resistance, we have developed a chemotherapy drug that inhibits connexin-43 and makes glioma cells more responsive to TMZ treatment. While TMZ is a systemic drug which is taken orally, the anti-connexin-43 infusion is a sustained release formulation delivered directly to the tumor site. Anti-connexin-43 has undergone extensive safety testing and is currently being used in Phase III human clinical trials for wound healing indications.

Eligibility

- Dogs of any age, breed, or sex > 3 and < 45 kg body weight;
- Clinical signs of mild to moderate neurologic dysfunction referable to the brain;
- MRI evidence of a single telencephalic intra-axial mass lesion consistent with a glioma;
- No clinical or other diagnostic evidence of other significant systemic disease.

Eligible dogs will be randomized into two groups at a ratio of 2:1.

**Group 1 dogs** will receive anti-connexin-43 plus TMZ.  
**Group 2 dogs** will receive TMZ only.

In the experimental group, delivery of the investigational drug will be done using Convection Enhanced Delivery, which is designed to allow us to more precisely control the delivery of drugs to the brain. CED is performed by inserting specialized catheters directly into the tumor, and slowly infusing the drugs over a several hour period. Further information about CED can be found here: [http://www.vetmed.vt.edu/clinical-trials/canine-glioma/convection-enhanced-delivery.asp](http://www.vetmed.vt.edu/clinical-trials/canine-glioma/convection-enhanced-delivery.asp)

Exclusion Criteria

- Dogs that are not expected to survive for the length of the study period (6 weeks) based on clinical progression of tumor
- Dogs with underlying health conditions that might affect their ability to tolerate anesthesia or chemotherapy
- Dogs with uncontrolled seizures

Study Design

Eligible dogs will first undergo a biopsy procedure and pre-surgery diagnostic imaging to confirm tumor type and location. Both groups will receive oral TMZ chemotherapy. For dogs in Group 1 (TMZ plus anti-connexin-43) a second procedure will use Convection Enhanced Delivery (CED) to deliver anti-connexin-43 directly to the patient’s brain tumor. This procedure will take place under general anesthesia using MRI-guided CED. Post-treatment monitoring will consist of standard-of-care clinical, hematologic, and biochemical monitoring for canine brain tumor patients. Patients will be hospitalized for approximately 4-10 days. MRI examinations of the brain will be performed approximately every six weeks following treatment for up to six months.

Compensation

Owner is responsible for the cost of obtaining an MRI to confirm diagnosis. Once the diagnosis is confirmed and the dog is enrolled, all treatment and follow-up examinations related to this study will be provided at no cost during the study
period. Owners are responsible for travel-related expenses and medication costs associated with ongoing seizure control, if required.

Contact

To begin the enrollment process, please complete the consultation form online: https://virginiatech.qualtrics.com/SE/?SID=SV_2ct6Cm6EaeqRTga1

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If your query is urgent, please call the Small Animal Hospital on (540) 231-4621 and ask for the neurologist on duty.