

**Funded Study:** Investigation of canine epilepsy

**Study Title:** Magnetic Resonance Spectroscopic Imaging (MRSI) in the evaluation of dogs with idiopathic epilepsy

**Purpose of Study/Background/Objectives:** The purpose of this study is to utilize a very novel MRI technique known as SPectroscopic Imaging by exploiting spatiospectral CorElation (SPICE) to noninvasively measure brain metabolites in dogs with idiopathic epilepsy. SPICE is a form of magnetic resonance spectroscopy (MRS) that allows whole brain measurement of brain metabolites. MRS has been used in people to allow the detection of the origin of the seizure activity within the brain as well as assisting with guiding therapeutic interventions, such as surgical intervention and potential responses to antiseizure medications (ASMs)

**Inclusion Criteria:** History of 2 or more generalized tonic clonic seizures, occurring at least 24 hours apart. Dogs presented for cluster seizure activity or status epilepticus are INELIGIBLE.

- Age of seizure onset between 6 months and 6 years of age
- Unremarkable physical and neurologic examinations
- Patients **can still** be enrolled if currently on antiseizure medications (ASMs)

**Exclusion Criteria:** History of other neurologic disease, abnormal neurologic exam suggestive of structural brain disease, concurrent systemic or metabolic diseases

**Eligibility Diagnostics:** In order to be enrolled in the study, all dogs will have to have normal lab work, including a CBC, serum chemistry, urinalysis, and pre- and post-prandial serum bile acids. Dogs with normal examinations and lab work will then undergo routine MRI of the brain and cerebrospinal fluid (CSF) collection and analysis. If the brain MRI and CSF analysis are normal, patients are fully enrolled.

**Treatment/Protocol:** Following routine brain MRI to exclude any potential structural abnormalities, SPICE image acquisition will be performed under the same general anesthesia.

**Owner Commitments:** Two separate visits to the Veterinary Teaching Hospital. The first visit will include the initial exams as well as performing the required bloodwork. A second visit will then be scheduled for the MRI and SPICE acquisition. Patients will be released at the end of the day following recovery from anesthesia.

**Compensation:** The cost of the entire workup (bloodwork, MRI, general anesthesia, CSF collection and analysis) totaling approximately \$3500-4000 will be covered by the study.

**Contact Information:** Please feel free to contact the Neurology & Neurosurgery Service at [VTHNeurology@vetmed.illinois.edu](mailto:VTHNeurology@vetmed.illinois.edu) to refer a patient or for any additional information. Referring veterinarian and client inquiries are welcome.

