Brain & Cognitive Disorders

CANINE EPILEPSY

Epilepsy is a chronic disease of the brain affecting up to 5% of dogs worldwide. It is characterized by seizures caused by "electrical storms" in the brain (when electrical activity of neurons is abnormally hypersynchronized).

Idiopathic epilepsy is the most common form of epilepsy. In addition to seizures, epileptic dogs may exhibit cognitive impairment, including memory deficits and attention-deficit/hyperactivity disorder-like (ADHD-like) behaviors, e.g., increased chasing and fear. Antiepileptic medications, alone or in combination, are used to reduce or eliminate seizures. However, up to a third of dogs are refractory to treatment (defined as having <50% decrease in seizure activity). Feeding a diet containing medium chain triglycerides (MCTs) may be a useful adjunct to medication in dogs with refractory idiopathic epilepsy.

Key Messages

- Healthy brains rely on glucose as the primary energy source, but in dogs with epilepsy, glucose metabolism is disrupted, resulting in brain energy depletion.
- Medium chain triglycerides (MCTs) can provide an alternative energy source (both ketones and medium chain fatty acids) for the brain.
- Medium chain fatty acids derived from MCTs also have direct anticonvulsant effects.

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DID YOU KNOW?

Up to 60-70% of the brain's energy needs can be met by ketones.

Key Messages (continued)

- Two Purina studies showed that feeding an MCT-supplemented diet to dogs with refractory idiopathic epilepsy (being treated with at least one anticonvulsant medication) significantly reduced the number of seizures and the number of days per month with seizure occurrence.
  - More than two-thirds of dogs improved.
  - Improvement was seen as early as day 1.
  - Serum concentrations of anticonvulsant medications were not significantly affected.
- Purina research also showed that feeding the MCT diet significantly reduced several ADHD-like behaviors, i.e., chasing and stranger-directed fear.

Additional Resources

Law, T. H., Davies, E. S., Pan, Y., Zanghi, B., Want, E., & Volk, H. A. (2015). A randomised trial of a medium-chain TAG diet as treatment for dogs with idiopathic epilepsy. *The British Journal of Nutrition, 114*(9), 1438–1447. doi: 10.1017/S000711451500313X

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Molina, J., Jean-Philippe, C., Conboy, L., Añor, S., de la Fuente, C., Wrzosek, M. A., Spycher, A., Luchsinger, E., Wenger-Riggenbach, B., Montoliu, P., Gandini, G., Menchetti, M., Ribeiro, J. C., Varejão, A., Ferreira, A., Zanghi, B., & Volk, H. A. (2020). Efficacy of medium chain triglyceride oil dietary supplementation in reducing seizure frequency in dogs with idiopathic epilepsy without cluster seizures: A non-blinded, prospective clinical trial. *The Veterinary Record, 187*(9), 356. doi: 10.1136/vr.105410

Packer, R. M. A., McGreevy, P. D., Pergande, A., & Volk, H. A. (2018). Negative effects of epilepsy and antiepileptic drugs on the trainability of dogs with naturally occurring idiopathic epilepsy. *Applied Animal Behaviour Science, 200*, 106–113. doi: 10.1016/j.applanim.2017.11.008

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