

Dalmatian Club of America

A Brief Overview of Seizures, Their Causes and Treatment

The Dalmatian Club of America Study Group on Seizure Disorders
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Seizures are the result of muscle responses to an abnormal nerve-signal burst from the brain. They are a symptom of an underlying neurological dysfunction. Toxic substances, metabolic or electrolyte abnormalities and/or imbalances cause an uncoordinated firing of neurons in the cerebrum of the brain, creating seizures from mild "petit mal " to severe "grand mal".

There are four basic stages to a seizure:

- **The Prodrome:** may precede the seizure by hours or days. It is characterized by changes in mood or behavior.
- **The Aura:** signals the start of a seizure. Nervousness, whining, trembling, salivation, affection, wandering, restlessness, hiding and apprehension are all signals.
- **The Ictus, the actual seizure:** A period of intense physical activity usually lasting 45 seconds to 3 minutes. The dog may lose consciousness and fall to the ground. There **may be** teeth gnashing, frantic thrashing of limbs, excessive drooling, vocalizing, paddling of feet, uncontrollable urination and defecation.
- **The Post Ictus/Ictal:** after the seizure, the dog may pace endlessly, sometimes for several hours and may appear blind and deaf and eat or drink excessively. This can be as short as a few minutes or as long as several days. Solutions to lessen this problem are discussed elsewhere in this article.

The Cause, anything that disrupts normal brain circuitry:

- **Idiopathic Epilepsy:** meaning no known cause and possibly inherited. This is also referred to as Primary Epilepsy. Check history of pedigree

and make sure your veterinarian has looked for possible underlying factors.

Seizures caused by underlying factors are referred to as Secondary Epilepsy.

- **Congenital hypoglycemia** (low blood sugar)
- **Hypothyroidism** (low thyroid)
- **Infections** causing brain damage (such as canine distemper, Cryptococcosis,)
- **Ingestion of toxins** (such as lead paint chips, insecticides)
- **Brain tumors**
- **Portosystemic shunts.** Improperly routed intestinal blood vessels bypass the liver (one of the body's important waste-product detoxifiers)

The following are standard tests used to rule out underlying causes of seizures.

- Glucose tolerance test, to check for hypoglycemia.
- Thyroid panel, 6 tests, to check for low thyroid function/hypothyroidism.
- EEG, CT or MRI to see if there are findings suggestive of a tumor.
- Cerebrospinal fluid analysis, to look for encephalitis, distemper and other infection.
- Blood test to check for lead poisoning.

Types of Seizures:

- **Mild:** (Petit Mal) this can be as simple as momentarily staring into space, or upward eye movement.

- **Moderate:** (Grand Mal) the dog falls down, loses consciousness and extends its limbs rigidly. Paddling of limbs, salivation followed by possible loss of control of bladder and bowels and vocalization (blood curdling scream) may follow. This may occur for 1-3 minutes and is most often followed by a period of restlessness, pacing, bumping into

objects and loss of balance. (Post Ictal period) The dog is conscious but may appear deaf, blind and disoriented. Great care must be taken to prevent the dog from injuring itself at this time. The use of Bach's Flower Essence **Rescue Remedy** (found in any Health Food Store) has been found to be extremely useful when given at this time. Simply put 4 drops of the Essence into the dog's mouth after the seizure has finished. In most dogs the post ictal time will be cut considerably. A spoonful of Breyers Natural Vanilla Ice Cream or a handful of kibble is also useful in cutting post-ictal time. It is said that a 1-3 minute seizure is equivalent to a human running the Boston Marathon.

- **Status Epilepticus:** Status can occur as one continuous seizure lasting 10 minutes or more, or a series of multiple seizures in a short time with no period of normal consciousness, **this may be life threatening.**
- **Cluster Seizures:** Multiple seizures within a 24-hour period time, may also be life threatening. It is often difficult to distinguish between the two types and veterinarian assistance is imperative. Rectal Valium is extremely useful in breaking cluster seizures.

Medications

- **Phenobarbital**
- **Potassium Bromide**
- **Phenobarbital & Potassium Bromide**
- **Primidone (Mysoline)**
- **Valium (Diazepam)**
- **Dilantin**
- **Gabapentin**

Most dogs can be controlled by the use of **Phenobarbital and/or Phenobarbital and Potassium Bromide**. **Potassium Bromide** is used alone if the dog's liver has become damaged by Phenobarbital.

IMPORTANT: Dogs on Phenobarbital need to have their liver enzymes tested every few months using the following tests **ALT (SGPT), AST**

(SGOT), GGT, and Alkaline Phosphatase. Both drugs are available by prescription in pill capsule or liquid form. **Primidone**, once commonly used, metabolizes to **Phenobarbital** in the liver. With prolonged treatment it can also cause liver damage. **Valium**, injectable, or rectal and oral is a good choice to halt a cluster seizure or interrupt status epilepticus.

Please see <http://www.canine-epilepsy.com/diazepamprotocol.html> for an extensive article on the use of valium to stop cluster seizures. **Dilantin** is currently not recommended for use. **Gabapentin** is a newer drug being used for humans. It does offer exciting possibilities for dogs as it is only partially metabolized by the liver. At present it is more expensive than the other anti-epilepsy drugs (AEDs) about \$75.00 a month for a 60lb dog, however with the few dogs that have used it, the results have been very positive and is worthy of consideration if all else fails.

Alternative Medicine:

It is tempting when first faced with a beloved pet seizing, to resist traditional methods of control and seek out alternative options. **However, the most important thing you can do for your pet is to first control the seizures.** Once reasonable control has been obtained then other methods can be explored.

Some of the alternative options available are acupuncture, gold bead implants on the acupuncture points of the head neck and back, gold wires in the ears, Chinese herbs, homeopathic remedies and flower essences. All may be used along with traditional approaches. Vitamin and mineral supplements are also utilized along with a natural kibble without preservatives, or a home cooked diet. The hope is that Phenobarbital and Potassium Bromide doses can be lowered and, in a few cases, discontinued all together.

PLEASE NOTE: Some breeds seem to be very resistant to alternative methods. Do not put your dog's life in danger by avoiding using allopathic (traditional) medicines at the onset of seizures, after tests have proven that there is no underlying cause for seizures such as hypothyroidism.

Diet.

Diet plays an important role in the management of Canine Epilepsy. Feed a kibble that is preservative free. Preservatives such as **Ethoxyquin** and **BHT**, **BHA** should be avoided as they **can** cause seizures. Many "Supermarkets"

foods are loaded with chemical dyes and preservatives, buy a high-quality kibble made from "human grade" ingredients or better yet cook for your dog. Many recipes can be found in Dr Pitcairn's Complete Guide to Natural Health for Dogs and Cats.

PLEASE NOTE if your dog is taking Potassium Bromide please be very careful when you switch dog foods. Try to make sure the sodium content is the same as the previous food. Change over very slowly, whether it is the same sodium content or different, so that the absorption rate of the KBr remains constant.

Susan Wynn, DVM: "Dogs evolved from *Canis lupis* - the wolf. Wolves eat caribou or the like, but if they are forced, they will eat smaller game (rarely). They have been observed to graze on grass, eat berries, etc., but only when they need to. This is our lesson in canine nutrition - they are omnivores who do well with fresh meat, the vegetation they get in a caribou stomach (which is mostly green, unless the beast is eating from baited fields), and a smattering of other stuff if they are hungry.

Food companies have, in the main, revolutionized pet nutrition by eliminating major nutritional deficiencies and providing optimal nutritional for the average pet. Our concern, however, is not for the average pet. It is for the sick pet. If epileptic animals have a disease with even a small nutritional component, wouldn't we want to deal with it? Is your epileptic animal showing other signs of allergies? If s/he is chewing feet, scratching ears, having anal gland problems, vomiting bile seasonally, etc. one may want to consider dietary changes, including hypoallergenic diets, if appropriate.

I think that the main benefit of feeding real food - meat (raw or cooked, raw or steamed veggies, cooked grains) - is to provide stuff that is killed in the kibble extrusion process. If you or I were to eat a diet of Wheaties, yogurt, Veg All, and Spam day after day for 20 years, would this be enough? I don't know, but it makes me uncomfortable. I think our pets need a more varied diet and a fresher one than we can give them with commercial kibble. So, I do recommend supplementing pet food with lean meat and vegetables."

Low Thyroid Function - Hypothyroidism:

Seizures are one of the symptoms of hypothyroidism along with chronic skin disease, hair loss, weight gain, lethargy and slow metabolism, behavioral

changes (aggression, hyperactivity, poor concentration, passivity, phobias, anxiety) A recent study of 634 dogs showed that 77% of the dogs who were hypothyroid also had seizures. Dr William Thomas, a board-certified neurologist, had this to say about thyroid testing:

"Thyroid testing should be considered in any dog with recurrent seizures. Such testing is relatively inexpensive and carries little risk to the patient. Any dog that is diagnosed with hypothyroidism by appropriate testing should be treated with thyroid replacement therapy. This applies to all dogs, whether or not they suffer seizures. If the seizures improve with thyroid therapy, then great! If not, the patient should still be treated because hypothyroidism can cause many other health problems. Appropriate use of thyroid medication is one of the most safe and effective treatments available in veterinary medicine. "WB Thomas DVM, Dipl.ACVM (Neurology) University of Tennessee, Knoxville, TN

It is a good idea to have a full thyroid panel of 6 different tests to determine if your dog is hypothyroid. The tests needed are T3, T4, free T3, free T4, T3 and T4 Autoantibodies. Two or three thyroid tests (e.g.T4, free T4 or TSH) are not conclusive for hypothyroidism. Make sure that all 6 tests listed are run. Proper thyroid medication may reduce or eliminate seizures. These tests can be run at either Michigan State or under the supervision of Dr Dodd's at Hemopet.

Environment:

It is important to keep your epileptic dog as free from chemical pollution as possible. Think about the environment your dog is living in. Do you use **chemical sprays** on your lawn? Dogs will sometimes seize only when the lawn is sprayed for weeds. How about the cleaner you use for the floor? Some dogs have been known to seize after the floor has been washed with a **pine scented** cleaner. Flea and Tick medications can also cause seizures. Avoid products containing **Ivermectin**, many vets recommend the use of **Frontline** for fleas and **Interceptor** as a monthly heartworm preventative. Flea & Tick collars containing **organophosphates** should be avoided. There are many things that can lower a dog's **seizure threshold**. Keep a diary of your dog's seizures. Note down anything you have done or that the dog could have come in contact with that day which could have contributed to a

seizure. It is also a known phenomenon that some dogs may seizure around the full moon.

Vaccinations:

Vaccinations **may** lower a dog's seizure threshold and trigger a seizure. If you feel that this is the case for your dog, ask the vet to split the shots give them separately. Also ask for the Rabies to be given 2 weeks later. Ask your vet if he/she knows about the new 3-year protocol being used now by many vets. The Colorado State Veterinary School Protocol for small animal vaccinations can be found at <http://webcanine.com/2007/colorado-state-univ-protocol/>

Acepromazine

The use of **Acepromazine** can reduce the seizure threshold and thus bring on a seizure. Be sure to discuss this issue with your veterinarian.

Please Note:

The opinion(s) expressed above is/are for informational purposes only.

Suggestions and advice offered, are not be misconstrued as an alternative to personal and professional veterinary care. Please contact your veterinarian to discuss any changes in your dog's medication or care.

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