



Seizures in Dogs

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Seizures are one of the most frequently reported neurological disorders in dogs. The scientific term for a seizure is “ictus” and they involve a temporary involuntary disturbance of normal brain function that is usually accompanied by uncontrollable muscle activity. Epilepsy refers to multiple seizures which occur over a long period of time. Not all seizures are associated with epilepsy, but can be due to a transient insult to the brain. These are termed a provoked or reactive seizure.

What are the causes of seizure in dogs?

There are many causes of chronic recurrent seizures, therefore epilepsy per se is not a specific disease, but instead a diverse category of disorders. Symptomatic epilepsy (or secondary epilepsy) is when the seizures are caused by an identifiable condition, such as a tumor. Idiopathic epilepsy (primary epilepsy) is chronic recurring seizures, with no underlying structural brain lesion or other obvious condition.

- Immune malfunction
- Brain malformation
- Tumors
- Medications
- Overheating
- Blood vessel rupture
- Hypothyroidism
- High blood pressure
- Infection
- Kidney failure
- Liver failure
- Toxins and poisons
- Lack of oxygen

Seizures typically consist of three phases:

1. The Pre-Ictal Phase or Aura

This is a period of altered behavior during which time the dog may hide, appear nervous, or seek out the owner. It may be restless, nervous, whining, shaking, or salivating. This may last a few seconds to a few hours. This period precedes the actual seizure..

2. The Ictal Phase

This is the actual seizure. The most common type is a generalized tonic-clonic seizure (formerly called grand mal seizures) and it involves both cerebral hemispheres. They normally last from a few seconds to 5 minutes. The first part of the seizure is the tonic phase, during which there is sustained contraction of all muscles. The dog will typically lose consciousness and fall to its side and hyperextend its limbs. Respiration is often irregular or absent and cyanosis is common. Autonomic signs such as salivation, urination, and defecation are also common. The tonic phase lasts for a minute or so and then gives way to the clonic phase, during which there is rhythmic contraction of muscles, manifested as paddling or jerking of the limbs and chewing movements. Some animals suffer milder generalized tonic-clonic seizures in which consciousness is maintained. Focal seizures only involve one region of a cerebral hemisphere and are characterized by abnormal movements of a body part: head turning to one side, rhythmic contractions of one limb or

facial muscles, visual hallucinations - snapping at invisible objects “fly-biting”. “Status epilepticus” occurs when the actual seizure lasts more than 5 to 10 minutes or a series of multiple seizures in a short time with no period of normal consciousness and immediate veterinary attention and treatment is required, as this may be life threatening. In addition, “Cluster Seizures” - multiple seizures within a 24 hour period but the dog regains consciousness between them also require immediate veterinary assistance in order to prevent permanent brain damage or death.

3. The Post Ictal Phase

This is the period immediately after the actual seizure ends. It is characterized by confusion, disorientation, pacing, and restlessness and in some cases, temporary blindness and ataxia.

What should an owner do while the dog is having a seizure?

Watching your dog have a seizure can be a terrifying experience. The most important thing is to remain calm. If possible time the length of the seizure. Talk calmly to your dog, stroke it, and reassure it. It is common for the dog to paddle/run and thrash its legs violently, try and make sure the dog it not going to hurt itself (or you). Dogs do NOT swallow their tongues during a seizure, but they may bite it. Once the dog is in the post ictal phase, administration of Rescue Remedy may be help in recovery.

After a seizure, it is important to take your dog to your veterinarian. A physical exam should be done on any dog that has had a seizure. This will include a complete blood count (CBC), which can be helpful in determining whether a seizure is caused by a neurological infection, which is

typically accompanied by high fever. A complete thyroid panel (T3, T4, free T3, free T4, T3 and T4 Autoantibodies) and liver panel should also be run. If drugs or toxins in the blood are suspected to be the cause of the seizure(s), blood and urine screening tests for these compounds may be necessary. In some cases, an EEG or MRI may be indicated to help pinpoint the possible cause of the seizures.

Diagnosis requires a detailed and accurate history, and a physical examination is important since this may help identify neurological or systemic causes. In cases in which a central nervous system (CNS) infection (i.e., meningitis or encephalitis) is suspected, a lumbar puncture (or spinal tap) can help detect an increase in immune cells (white blood cells) that develop to fight the specific infection.

For dogs that have had only one isolated seizure, a complete physical and neurological examination is in order. Owners will be advised to watch for further seizures if no abnormalities are found. In most cases, medical treatment will not be prescribed until further seizures have occurred.

It is helpful to keep a journal of your dog’s seizure activity which should include at least the following information: Date, time of day, activity just prior (previous 24 hours) of seizure, what was fed and when, any medications or pesticides used, any cleaning supplies used in the home, any form or injury or trauma, anything that was “different” in the dog’s surroundings or activities. The more information the better. By doing this, you may eventually see a pattern or be able to identify certain “triggers” to the seizure episodes. This will assist you in

removing as many of the triggers as possible, thereby (hopefully) reducing the frequency and intensity of the seizures.

Treatments

Phenobarbital is one of the most commonly prescribed drugs.. The side effects: sedation, ataxia, polyuria/ polydipsia, and polyphagia. Liver function can be impaired. Phenobarb levels should also be checked every 6 months. When administration of the drug is stopped, signs of physical dependence (tremors, incoordination, restlessness, and withdrawal seizures) may develop. This should only be done under veterinary advisement, normally when the dog has been seizure free for at least two years and the dose is very gradually tapered off.

Potassium bromide (KBr) is gaining new recognition for use in refractory (difficult to control) canine epilepsy, though used to treat human epileptics as early as 1857. It is the anticonvulsant of choice for dogs with liver disease. **Sodium bromide** is preferred for dogs with kidney problems. Combining potassium bromide or sodium bromide and phenobarbital may be useful for patients who do not respond well to phenobarbital alone. **Zonisamide** a sulfonamide derivative is also used, but due to some Weimaraners being hypersensitive to sulfonamides, it may not be an advisable option. Other drugs include Levetiracetam, Gabapentin, diazepam, lorazepam, clonazepam, Valproate and Felbamate.

Rectal Diazepam This treatment uses commercially available diazepam injectable solution. Although this solution is intended for injection by vein, studies have shown this product

is absorbed well when given rectally and is used by the owner in cases of cluster seizures or status epilepticus.

Diet

Diet may play an important role in the management of canine epilepsy. Some evidence suggests that preservatives such as Ethoxyquin and BHT, BHA may cause seizures and should be avoided. Many "Supermarket" 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 or feed a raw (BARF) diet. Many recipes can be found in Dr Pitcairn's Complete Guide to Natural Health for Dogs and Cats. Two helpful books on a raw diet are Dr Ian Billinghurst's "The BARF Diet" & Susan Johnson's "Switching to Raw".

With appropriate medications, seizures can be controlled most dogs who can then lead normal active lives.

Resources: Joane Parent DVM, MVet Sc ACVIM Neurology; Thomas K Graves, DVM <http://www.canine-epilepsy.com/Graves.html>