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## Seizures in Dogs



### What is a seizure?

A seizure is an external manifestation of an intermittent electrical abnormality in the brain. Although seizures may only occur occasionally, the source or cause of the electrical abnormality is constantly present in the brain. Little is known about why the source only intermittently causes seizures and why unknown factors limit the activity of the source or suppress the spread of abnormal electrical activity. A seizure is also referred to as a convulsion. The most common form of a seizure consists of the following symptoms:

- The dog stiffens
- Loses consciousness
- Urinates and salivates
- Jerks intermittently and
- Paddles and then recovers

Before the seizure, the dog may run to the owner or whine as if it feels uneasy or knows something is about to happen. This is called an aura and may last a few seconds or many hours. After the seizure, the dog may pace up and down or in circles, be disoriented, lose sight or may show behavioral changes. These are called post-ictal signs and may last from a few minutes to several days. The seizure itself usually lasts from 1-5 minutes, although it may be much longer. If a seizure lasts more than 15 minutes, or if one seizure rapidly follows another, the dog is said to be in “status epilepticus.” “Status epilepticus” is an **emergency** situation.

### Recognizing a Seizure

Depending on the parts of the brain affected by the burst of electrical activity, the signs that the dog shows during a seizure will vary. For example, if the behavioral areas of the brain are affected, then changes in behavior may be apparent. The dog may also seem to be hallucinating. Similarly, if the visceral centers are involved, the dog will urinate, salivate, defecate or vomit. Muscle spasms, twitches and paddling are the result of motor areas of the brain being affected. Loss of consciousness, disorientation and hysteria are a result of effects on the centers controlling the alert state of the dog.

### Causes of Seizures

Intracranial causes of seizures in dogs include:

- Brain infection (encephalitis) or severe trauma
- Increased size of the fluid-filled cavities in the brain—seen in puppies
- Brain tumor (common in dogs over 5 years of age)

Possible extracranial causes of seizures in dogs include:

- Poisoning
- Liver disease
- Low blood sugar or low blood calcium

**The most common cause of seizures in dogs under seven is epilepsy**

### What is Epilepsy?

Epilepsy is defined as a state of repeated intermittent seizures. It is not a single disease. Epilepsy has several causes, the most common of which is inherited. Epilepsy is due to the development of one or more areas of unstable neurons in the brain that spontaneously triggering seizures. These foci usually retain their ability for the life of the animal. These areas are not usually visible because they are mostly functional (physiologic) lesions- the cells in the lesions look normal but are working abnormally.

## **Types of Seizures:**

- Focal motor (twitches limited to one part of the body with no loss of consciousness)
- Generalized motor (loss of consciousness with gross body movements) and
- Psychomotor (marked behavioral changes seen either after the generalized motor seizures or making up the entire seizure.
- Cluster seizures: when a dog is going in and out of seizures or has multiple seizures in a 24 hour period. These are life threatening and you must take your dog to a veterinarian immediately.
- Status Epilepticus: a seizure lasting more than 5-10 minutes. These are life-threatening.

## **Frequency of Seizures**

Seizures due to epilepsy tend to begin as short, mild episodes that become more frequent and severe during the initial 1-2 years. After that, the pattern tends to stabilize for many years and the frequency may decrease in old age. Unfortunately, this is only a tendency because epileptics may have an episode of “status epilepticus” as their first seizure. A seizure pattern may do just about anything. The variability of seizure patterns makes evaluation of therapy difficult. Veterinarians do not know in advance what the dog’s pattern will be and treatment is usually started in the early phase when seizure patterns are developing.

## **Factors Affecting Frequency of Seizures**

- *Physical irritations* such as itchy skin, sore ears and pain will increase the frequency of seizures. Also, emotional irritation, worry or stress such as a visit to the veterinarian or kennel, visitors, another dog, a new baby, a party, a child leaving for college, unaccustomed boredom or any event in the life of the owner that makes the owner change habits or be upset may increase the frequency of seizures.
- *Hormones* such as estrogen can lower the threshold to seizures of parts of the brain. Estrogen is at high levels in female dogs in heat.
- *Certain drugs* may precipitate seizures in epileptics. Antihistamines, tranquilizers and antiemetics (anti-travel sickness) should not usually be given to epileptics.
- Seizures tend to occur when a dog is in light sleep or relaxing, when brain activity is high, although some dogs may be affected while they are excited. Thus, the night is a common time for seizures to occur.

## **Breed Incidence:**

Any dog may become an epileptic for acquired reasons such as brain trauma or infection or birth injury. However, in certain breeds, epilepsy is a common problem. Such breeds include German Shepherds, St. Bernards, Schnauzers, Cocker Spaniels, Irish Setters, all Poodles, Golden Retrievers, Labradors, Shelties, Beagles & Huskies. Since epilepsy is inherited, no dog that has had a seizure should be used for breeding. Females should always be spayed to achieve better control of seizures. Male dogs also benefit from neutering because of reduced sexual stress.

## **Diagnosis of Seizure Cases:**

There is no specific test for epilepsy in the dog; not even the electroencephalogram (EEG) is sufficiently reliable. Epilepsy is a diagnosis of exclusion--elimination of all other causes of the seizures. The general health, age, breed and seizure pattern may suggest that some causes are more likely than others.

**A thorough history, physical examination and neurological examination all play a vital part in the diagnosis. Bloodwork is run to detect infection, low blood sugar or calcium and liver or kidney disease. More in depth testing, such as MRI, can be used in older dogs if a brain tumor is suspected. If all is normal, epilepsy is diagnosed.**

## **Treatment of Seizures:**

Epileptics are treated with anti-convulsant drugs. There are two common anti-convulsants and several newer, less commonly used drugs. If seizures are mild, occur singly and less frequently than one every

month; the side effects of the drugs may outweigh the benefits of seizure control. If status or multiple seizures on 1 day have occurred, then the epileptic must be treated.

We are able to control seizures in approx 80 to 90 percent of epileptic dogs. Our goal is to stop the frequency and duration of seizures--we cannot always completely eliminate them, and it may take weeks to months of therapy with a variety of drugs or drug combinations. Control may be lost even after several years of success.

Common side effects with anti-convulsants are increased thirst, urination or appetite, drowsiness, clumsiness and hyper-excitability. These effects may be temporary or may persist as long as the drug is given. Some drugs produce minor liver changes. These changes may become serious in some individuals. Epileptics on medication require periodic physical examinations and blood tests. It is also important that all medications be given on a regular basis. If you miss or skip doses, this may lead to seizures!

The most common cause of seizures in dogs over seven years of age is a brain tumor. We have many patients that live long lives after diagnosis of brain cancer, but the prognosis is unpredictable and depends on the area of the brain affected and the type of tumor (aggressive vs. benign). Steroids are administered, and are usually very effective. Dogs may also be given anti-convulsants.

### **What to expect and what to do during a seizure:**

- Evidence suggests that dogs do not suffer during a seizure, but disorientation commonly occurs afterward. This may be upsetting to the dog. Some dogs may scream or moan in seizure. This appears to be involuntary and not associated with pain.
- During a seizure, dogs are rarely dangerous but should not be moved or handled unnecessarily except to prevent injury. Talking to your dog may help reassure it.
- **If the seizure lasts over 10 minutes, or they are having cluster seizures, their body temperature can become very elevated, so put water on their feet, armpits and groin and get them to a veterinarian STAT.** Do not get their entire body wet!!! You do not want to lower their body temperature too much and too fast—this can be dangerous.
- Keeping a diary of your pet's seizures is very helpful in regulating the use of anticonvulsant drugs and detecting new problems. The diary should include: activity before and after the seizure: changes in the pet's routine: diet changes: time and date of the seizure; how long it lasted; a brief description of the seizure.
- Once anticonvulsant medication has been started, it cannot be stopped without careful direction from your veterinarian. Medications must be given as directed in order to be effective.
  - Provided the epilepsy is controlled, the life expectancy of an epileptic dog is normal. If a dog has had no convulsions for 1 year, we may consider slowly reducing the dose over several months. Some dogs eventually may be weaned off medication, but this is uncommon.

### **REVIEW:**

1. Epilepsy is common and usually well controlled with medication.
2. Medications are usually needed for their lifetime.
3. Medications are given if your dog has: more than one seizure per month, more than one seizure in a 24 hour period, or a seizure lasting more than 5-10 minutes.
4. **Cluster seizures and seizures lasting more than 5-10 minutes are life-threatening emergencies!!!**