



DANADA VETERINARY HOSPITAL, P.C.

## Seizures In Dogs

Seizures are one of the most frequently seen neurological problems in dogs. A seizure, also known as a convulsion, is a symptom of a neurologic problem, rather than an actual disease itself. It represents a period of abnormal brain wave activity that leads to a variety of clinical signs.

Seizures can be focal or generalized. Focal seizures affect only an isolated section of the body such as a limb or facial muscles. They can cause the affected area of the body to be temporarily dysfunctional before returning to normal after the seizure episode. Generalized seizures (aka tonic-clonic or grand mal seizures), cause whole body convulsion. A number of signs may be observed during generalized seizures. Signs usually start suddenly and end abruptly. They may include a loss of consciousness or a change in the level of consciousness, spastic contractions of muscles, paddling, biting/chewing at the air, altered mental states (confusion, non-responsiveness), circling, pacing, and loss of urine or bowel control. Prolonged, uninterrupted seizures (status epilepticus) can cause fever and deprive the body of oxygen and nutrients resulting in more permanent changes in mentation, as well as potentially life-threatening injury to vital organs.

### ***Components of a Generalized/Grand Mal Seizure***

A seizure occurs in three phases:

**The pre-ictal phase**, or aura—a period of altered behavior in which the dog may hide, appear nervous, or seek extra attention from people it knows. It may be restless, nervous, shaking, or salivating. This may last a few seconds to a few hours.

**The ictal phase**—describes the seizure itself and lasts from a few seconds to about five minutes. During this period, all the muscles of the body contract strongly. The dog usually falls on its side and seems paralyzed while shaking. The head will be drawn backward. Urination, defecation, and salivation often occur. *If it is not over within five minutes, or if another seizure occurs before the first one has resolved completely, the dog is said to be in status epilepticus, or a prolonged seizure, and emergency medical attention is warranted. Dogs that do not receive medical attention with status epilepticus are at risk for serious complications because of the physiological changes that occur. Most significant is the rise in body temperature that occurs from continuous strong muscle activity. This can lead to permanent tissue damage, hyperthermia, and death.*

**The post-ictal phase**—there is confusion, disorientation, salivation, pacing, restlessness, and/or temporary blindness. There is no direct correlation between the severity of the seizure and the duration of this phase.

## ***Causes of Seizures***

There are numerous diseases that can involve seizure activity. Seizures can arise from dysfunction in the liver or kidneys, diabetes, thyroid disease, hypoglycemia, toxic exposure (e.g., antifreeze, chocolate, pesticides, etc.), trauma, infections, genetic conditions, tumors, auto immune or idiopathic (unknown) causes.

Animals between one and six years of age at the time of their first seizure are likely to suffer from idiopathic epilepsy in approximately 80% of cases. This is especially true for certain breeds such as Beagles, Bernese Mountain Dogs, Border Collies, Boxer Dogs, Cocker Spaniels, Collies, Dachshunds, Golden Retrievers, Irish Setters, Vizslas, Irish Wolfhounds, Keeshonds, Labrador Retrievers, Poodles, St. Bernards, Shepherds, Shetland Sheepdogs, Siberian Huskies, English Springer Spaniels, Pembroke Welsh Corgis, Vizslas, and Wire-Haired Fox Terrier. Animals outside of this age range are less likely to be epileptic.

Breeds such as Maltese, Yorkshire Terriers, Chihuahuas, German Shorthaired Pointers, and Pugs have genetic predispositions for auto-immune disease of the brain called encephalitis.

Epilepsy and some brain tumors are incurable and must be managed for life. However, identification of other causes may allow treatment of the underlying illness and resolution of seizure activity.

## ***Diagnostic Evaluation of Seizures***

When a seizure occurs, it is important that you give us a thorough account of recent events, especially recent exposure to any toxins, poisons, medications, hallucinogenic substances or history of head trauma.

The first evaluation the veterinarian will make will be a physical exam. They will evaluate for any persistent neurologic changes that indicate the seizure is still ongoing (or that the episode was not a seizure at all). They will also assess for other signs of illness such as dehydration, fever, mental appropriateness, etc.

Next a blood panel and urinalysis may be ordered to evaluate organ function, thyroid hormone levels, and blood sugar. The veterinarian will utilize this information along with your pet's age and breed to deduce which seizure-inducing causes are plausible.

If these tests are normal and there is no exposure to toxins or any history of trauma, your veterinarian may feel comfortable making a presumptive diagnosis of epilepsy. However, they may also recommend further diagnostics if:

Your pet's age or breed make them less likely to be epileptic. (Identification of cause may be curative)

Your pet's seizures are occurring too frequently or too severely

Your pet is experiencing other neurologic symptoms such as behavior changes, which make epilepsy less likely.

The pet owner is not comfortable with a presumptive diagnosis and wished to pursue definitive diagnosis.

If additional work-up is recommended, it will take place through a specialized veterinary neurologist. They will perform an MRI and spinal tap as well as any additional tests they feel are appropriate to get a definitive diagnosis.

## ***Treatment***

Whenever an underlying cause for the seizures can be identified, treatment should be directed at that cause along with seizure control. For instance, targeting auto-immune disease with steroids can have a tremendous effect on reducing seizures in those patients.

***Anti-convulsants (Anti-seizure drugs)*** – This category of drugs is designed to prevent or limit seizure activity. Not all dogs that have seizures require anti-convulsants. Anti-seizure therapy does not actually address the underlying cause of the seizures. It simply makes seizures less likely to occur. Therefore, if seizures are brief and occur infrequently, many patients can be kept off these medications. When dogs experience seizure activity in excess of 5 minutes, or if their seizures are occurring more than every 2-4 weeks, anti-convulsants can help to improve quality of life.

It is important to note that anti-seizure medications may not stop all seizures. In fact, 2/3 of epileptic dogs still experience seizures while on medication. The goal is to limit the frequency and severity of each seizure event.

Treatment of seizures is critical if a patient presents in status epilepticus. Failure to disrupt seizure activity can lead to permanent damage or death. These patients will be given rescue injections of medication to stop the seizures, followed by loading doses of anti-seizure therapy to get them prepared for at-home management.

There are a wide variety of safe and effective anti-seizure drugs available for affected dogs. Some require more frequent dosing than others. require more consistent laboratory monitoring than others. Your veterinarian can discuss each type with you and determine which is best for your pet and routine. Some patients will require more than one medication for optimal results.

***Benzodiazepine Drugs*** – Drugs such as Midazolam, Diazepam, and Clorazepate may be prescribed for use when seizures occur if a patient is prone to cluster seizures. Administering these medications can help disrupt the seizure activity and help prevent status epilepticus.

## ***Prognosis***

Prognosis is highly dependent on the underlying cause of the seizure activity and can vary greatly. Epilepsy can be managed well enough to have a minimal impact on quality of life. However, some animals are refractory to treatments.

## ***Transmission to Humans***

There are some infectious causes of seizures in dogs that pose a health risk to humans; most notable is rabies. Fortunately, this is incredibly uncommon.

Many owners are bitten by the seizing animal because of a well-intentioned effort to help. Despite the dramatic signs of a seizure, your dog feels no pain, only bewilderment. Dogs do not swallow their tongues. If you put your fingers into its mouth, you will not help the dog and will run a considerable risk of being severely bitten. The important thing is to keep your dog from falling and hurting itself. If they are on the floor or ground, there is little chance of harm occurring.