

## **Seizures in Dogs**

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Seizures in our pets can be a terrifying thing to experience. Seizures can range from eye twitches and clacking jaws to full body convulsions. Many animals have a 'preictal' phase, a period of time before the seizure where they start acting unusually. They may be wandering, staring out to space or even turn aggressive. During the seizure, animals will twitch, shake and paddle their limbs. Their eyes will be unfocused and their bodies will be rigid. All animals have a 'postictal' phase, where they can be disorientated, have behavior changes, and stumble. During this phase dogs can be blind as their brain is telling them that they cannot see.

Seizures are an emergency, especially when trauma, underlying illness or toxin ingestion is possible. Seizures can damage the brain, so prompt treatment is extremely important to prevent further damage. Any animal that is seizing for more than 5 minutes at a time needs to be seen immediately by a veterinarian. The sooner after a seizure your veterinarian can perform tests, the better the diagnostic quality of those tests.

When we think of seizures, we usually jump to thinking of the central nervous system and brain. Infection and inflammation of the brain and meninges (the covering of the brain) can cause seizures. Head trauma, degenerative diseases, congenital abnormalities and epilepsy are all causes. In older patients, neoplasia or tumors are possible. Seizures don't always mean something is wrong with the brain though. Often, seizures are caused by toxins or a disease in other organs. Very low blood sugar will cause seizures, especially in young puppies. Advanced liver or renal disease can cause seizures. Other causes include low blood calcium, thiamine deficiency from improper diets, and a variety of toxins. One common cause is idiopathic epilepsy, or abnormal electrical activity in the brain that causes an animal to seizure.

In order to determine what is causing the seizure and treat it, your veterinarian will run various tests. First, they take a history to narrow down what could be the cause. A good description of the seizures or a video are important tools to help your vet diagnose the cause. They will perform thorough physical and neurological exams. These exams assess the dog as a whole, as well as focusing on the nervous system. The neurological exam assesses the nerves of the head including vision, reflexes and their ability to move their bodies and be aware of where their limbs are. These tests can narrow down the location of a problem. Bloodwork is done to check for diseases outside of the nervous system, including liver and renal disease. Bloodwork on the red blood cells and white blood cells can tell us if there is inflammation and infection within the body. In some cases, advanced imaging such as a CT or MRI may be needed. In cases of suspected infection, fluid collected from the spinal cord can be examined to look for bacteria or inflammation.

After the cause is found, your veterinarian can treat what is causing the symptoms. With very young puppies, glucose and fluids are the first line treatment. Toxins can be treated with fluids and supportive care. Infection is treated with antibiotics and pain control. In some cases, such as tumors or degenerative diseases, the goal of treatment is to keep the dog as comfortable as possible for as long as possible.

In some cases, all of our tests come back normal. Idiopathic epilepsy is a “rule-out” disease, meaning we eliminate all the other possibilities and are left with epilepsy. “Idiopathic” means that science hasn’t yet figured out why the disease happens. Epilepsy is abnormal activity in the brain that triggers seizures. Each dog will have triggers that set off a seizure. We can treat epilepsy but cannot cure it. Phenobarbital is used to control the seizures. This is a medication given every day that will decrease or eliminate the seizures. Potassium bromide is a medication that is used for dogs that do not respond to phenobarbital. Potassium bromide is harder to manage, since too much salt in the diet can over-ride the medication. Dogs must be kept on a strict diet, and even swimming in salt water can trigger a seizure. Epilepsy is treatable and many dogs live a long life well-managed on medication.

Seizures can be scary for both the dog and the owner. However, many causes of seizures are treatable and epileptic dogs can live long, normal lives with proper care.