

Tremors and Shaking in Dogs with Kidney Failure



Canine kidney disease is a very complex condition. It develops as either a primary or secondary illness, caused by a multitude of potential factors, including genetics, heart disease, trauma, prolonged fungal or bacterial infection, long-term use of antibiotics or chemotherapy, exposure to toxins, and failure of other bodily organs or systems.

Apart from other more common symptoms of kidney failure, some dog owners report their best friend suddenly experiencing “the shakes”, tremors or minor convulsions. These are alarming things to witness, particularly when an owner is unaware they might happen.

There is a significant difference between “muscle twitching” and “tremors or seizures”. These happen for different physiological reasons during kidney failure and some owners may understandably confuse them. It is, however, important to distinguish between the two because treatments vary and early treatment can prevent some problems from deteriorating rapidly into much more serious and painful conditions.

Muscle Spasm Misdiagnosis

Spasmodic muscle twitching is very common in dogs with kidney disease. There may also be signs associated with stiffness and weakness in the legs.

Occasionally, some vets wrongly diagnose this as age-related arthritis or joint inflammation, particularly if the kidney disease has not so far been identified.

There are occasions when a vet may prescribe inappropriate drugs for misdiagnosed arthritis. This can have harmful effects on kidney disease, making it much worse and potentially adversely affecting the liver as well. If you or your vet suspect your dog is suffering from arthritis, make sure they conduct a full blood test and urinalysis to discount kidney disease before any suggested treatments begin.

Occasional cramp in the legs can also go with muscle twitching. These are both painful symptoms of kidney disease and they will often cause difficulty for dogs to stand up, walk properly, or climb up steps or stairs. Treating the primary condition of kidney disease with a suitable renal diet, fluid therapy, and regular veterinary observation and intervention are the best ways to prevent muscle spasms from occurring over time.

Why Calcium Levels Need Monitoring

Calcium deficiency is one of the most likely reasons that muscle spasms occur in dogs affected by kidney disease (KD). Vets commonly refer to calcium deficiency as hypocalcemia. However, I do not advocate anyone giving their dog a calcium supplement, just because they have observed muscle spasms occurring. The arbitrary use of calcium supplementation can lead to hypercalcemia and bladder stones being produced, as well as hypertension, constipation, depression, and, in severe cases, coma. The best course of action is to have your vet complete a full blood panel test to assess the levels of calcium and phosphorus (see below), and then have them prescribe and supervise a suitable calcium supplement treatment plan if required.

Note that excessive calcium in the blood (hypercalcemia) can also occur through excessive Vitamin D intake. So while supplementing your dog with vitamins may sometimes seem an attractive and helpful option, it can sometimes do more harm than good. Always take your vet's advice before adding to or changing your KD dog's diet.

Reducing Phosphorus Intake

Guarding against high phosphorus levels is of paramount importance to the improved health and well-being of dogs diagnosed with kidney disease. Phosphorus is the next most abundant mineral after calcium in the canine body. It helps in a variety of essential functions. These include maintaining a healthy

pH balance, transporting oxygen around the body, producing vital hormones, and transforming protein and fat into useful energy. Phosphorus and calcium together help create and support bones and teeth. Healthy kidneys regulate these two minerals and keep the correct balance of them in the blood. The kidneys also turn vitamin D into an active hormone (calcitriol), which helps increase calcium absorption from the intestines into the blood.

Problems occur when there is an excessive amount of phosphorus in the body, and this is common in dogs with kidney disease. High levels of phosphorus cause low blood calcium (resulting in calcium being forcibly extracted from bones), heart problems, hardening of tissues in the heart, arteries, skin, joints, and lungs, and an over-production of PTH (the parathyroid hormone). The latter can lead to a condition known as renal osteodystrophy, where bones become weak and break easily.

Excessive amounts of phosphorus cannot be excreted from the dog's body, because kidney disease prevents this function from occurring properly. It is vital to cut the amount of phosphorus taken in through the diet to prevent other problems from occurring. In addition to other complications, high levels of phosphorus prevent calcium from being absorbed, which in turn leads to abnormal nerve functioning. Muscle spasms are a symptom of this nerve function defect.

Seizures Due To Kidney Failure

Seizures are sometimes confused with muscle spasms, but are more serious and are more likely to occur late into kidney failure. Seizures might be mild, where there is a general trembling of the body or the onset of a sudden 'trance-like' state lasting from a few seconds to a few minutes; or they might be more extreme, with dogs suffering full-blown epileptic-like convulsions.

This type of seizure is often associated with low calcium levels in the blood, so it is worth ensuring vets undertake comprehensive and regular blood level tests. Later into the degenerative nature of kidney disease, the build-up of toxins can lead to a condition known as 'Uremia'. Uremia involves a range of toxins, including parathormone, and this further complicates calcium absorption.

Uremic encephalopathy is an organic brain disorder and causes fatigue and weakness and, in severe cases, seizures, and coma. It develops when kidney function falls below a critical level and when toxin concentrations start to have a severe effect on a dog's neurological system. There is a huge void of research

into this area of canine kidney failure, which means in turn there is a lack of useful advice on treatment. In human kidney failure, dialysis is known to have a marked improvement in uremic encephalopathy, but this is only rarely available to dogs through very few vet practices. There is a known link between this condition and BUN (blood urea nitrogen) levels. Therefore, the best we can do is aim to lower BUN levels to a normal range by employing diet changes, giving certain supplements, fluid therapy, and other forms of veterinary intervention.

When seizures become aggressive and increase in frequency, despite an owner having already done all that is possible to treat and manage the kidney failure, then the time may have come for an owner to consider euthanasia. This type of seizure cannot be prevented late into stage 4 kidney failure and they are likely to further deteriorate and become associated with more painful conditions in the ensuing days or weeks.

Seizures Due To Hypertension

Dogs suffering from KD commonly also suffer from associated systemic hypertension (high blood pressure). Recent studies confirm that about two-thirds of all dogs diagnosed with chronic kidney disease (CKD) have this condition. There is a known link between CKD, glomerular proteinuria and systemic hypertension. While the metabolic processes involved in these conditions are complicated, it is probably enough that owners realize high blood pressure can in itself cause seizures in CKD dogs.

Hypertension in itself also accelerates kidney failure, which means it is crucial to recognize and treat it as soon as possible. Vets should automatically take a blood pressure reading as part of the management and treatment of kidney failure. If yours doesn't ... instruct them to do so, sooner rather than later.

You can cut high blood pressure by withdrawing salt from the diet. Do this slowly and progressively, otherwise complications will occur. Manufactured renal dog foods have reduced salt, but owners will need to use extra caution when providing home-cooked meals. Some water companies also add sodium to their filtration and supply processing systems, so it is worth giving KD dogs filtered water in preference to faucet or tap water.

Reducing salt from the diet is the first line of defence against hypertension, but it isn't enough to treat it fully or to prevent it from producing seizures.

Vasodilators are the best route to rapid treatment. I generally recommend avoiding the use of medicines and drugs when a dog has kidney failure

because they produce toxins in addition to any beneficial effect and the toxins merely add to the stress the kidneys are already under – however, dealing with systemic hypertension is a notable exception.

The best advice for treating hypertension in CKD dogs is with an initial treatment of a suitable ACEI (angiotensin-converting enzyme inhibitor), because these have beneficial effects on intraglomerular pressure and proteinuria. Vets need to check blood pressure throughout the treatment, as low blood pressure can result from excessive dosing. Canine blood-pressure kits are now widely available (check online), which means an owner can undertake monitoring at home, under veterinary supervision. This will help relieve any traveling stress on CKD dogs and cut the ongoing vet-expenses for owners.

Holistic Remedies and Cannabis-Oil

A wide variety of supplements and herbal remedies claim to treat canine muscle spasms and seizures. It is impractical to assess each product here, due to article length restrictions. If you intend to take a holistic approach to treatment, extensive research is crucial, because most companies make claims without offering any reliable study data. Others create altered human products that are wholly unsuitable for a dog's metabolism or body size and many herbal remedies can adversely interfere with existing treatments. For these reasons, it is always important you consult your vet before buying or administering any of these products.

There is a great deal of interest and debate among dog owners and veterinarians about cannabis-oil and whether it has any benefit in treating muscle spasms and seizures. The subject is making headline news on several dog websites and is splitting opinion among vets and other professionals involved in treatment. While there are a limited number of research studies to support some of the claims being made, the resulting data stem largely from human subjects - not dogs. The claims made about treating canine conditions with cannabis-oil are mostly anecdotal and dubious at the very least.

The basis for using cannabis-oil originates from the fact that dogs have the same cannabinoid receptors as humans, so the consensus is they can benefit in the same ways from marijuana. Just to clarify ... marijuana and cannabis are derived from the cannabis plant and have the same meaning.

Tetrahydrocannabinol (THC) is the chemical responsible for most of marijuana's psychological effects and is already accepted by many vets for its appetite stimulant properties. For example, Marinol is a synthetic form of THC and is already widely used in veterinary oncology treatments. Chronic pain relief and

muscle spasms are both treated with other forms of marijuana, although it's thought more likely to relieve the pain associated with muscle spasms and not treat the condition itself. It is also used to treat nausea, particularly when associated with chemotherapy cancer treatment.

There are a huge amount of side-effects associated with all these treatments in humans. Dry mouth, ataxia, blurred vision, incoordination, muscle weakness, tremor, twitching, tachycardia, and hypotension are all common. Hallucinations and disconcerting cardiovascular effects can also occur. Marijuana intoxication is often reported in dogs and is a worrying effect, although rarely life-threatening.

Scientists have also discovered that dogs, but not other animals, had a very unique reaction when they got too much THC. They developed something called static ataxia where they stood still and rocked back and forth as if they couldn't move. They drooled saliva, their eyes opened very wide, and they looked as if they were having a bad 'trip' (a drug-induced hallucination).

When cannabis or marijuana products are used to treat epilepsy and convulsions, the cannabinoids have complex actions on seizure activity and exert both anticonvulsant and proconvulsant effects. The seizures of some dogs seem to decrease in frequency and size – while the seizures in others seem to get worse. The lack of consistency and unpredictability of the reactions is probably the main source of veterinarian uncertainty and debate. One of the other problems in using cannabis-oil is it can accumulate in the canine body over time, so cautious dosing and close monitoring is essential. Some researchers and commentators suggest using industrial hemp as an alternative, as there are fewer adverse effects, despite the fact it seems to offer the same benefits.

In Conclusion

I would like to underline the fact that I am not a vet, though I do have some experience and knowledge about kidney failure in dogs and have written a variety of articles about it. Canine kidney failure is complex and affects different dogs in different ways. You should always take your own vet's advice over and above anything that I might suggest, but you may also like to draw your vet's attention to elements in this article if you feel they have some relevance. Some vets lack experience and knowledge on this subject – they are only human, after all – and it is purely my intention to give owners the latest information and best advice available.

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