



# FEATURE

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## ***Not All Seizures Are Created Alike, Part 3: Seizures Caused by Medication***

Edited by Nannette Newbury, Guest Editor

The following article is the third in a three-part series that focuses on “reactive” seizures (not idiopathic epilepsy) in Australian Shepherds. I would like to personally thank owner Barbara Holland (Part Two) and breeder Michele Colborne (Part Three) for being willing to contribute to this series in addition to my Part One.

The stories for all of us remain painful. We are however united in our commitment to sharing our stories. Our goal is to illuminate the role that the environment plays on seizures (and compromised immune systems) and ultimately the long-term health of our dogs and our breed. By making small changes in what we put in and on our dogs we can eliminate and/or drastically reduce those seizures not caused by heredity. We encourage you to become an advocate for your dog’s health...be in charge, question treatments and procedures educate yourselves. Nannette Newbury

### **By Michele Colborne**

After owning, showing and training other breeds, I fell in love with the Australian Shepherd. I spent several years learning about the breed, and after extensive research I imported several dogs to South Africa, over a period of time. My very first Aussie that I imported from the US was a lovely black tri bitch, “Vicki” who was healthy, sound and had great temperament.

In 2009 I had my first Aussie litter of seven pups out of

my finished BISS winning bitch “Vicki” and my multiple BIS/BISS winning Aussie male “Baloo” who was out of lines also imported from the U.S. via another breeder. This was an outcross litter from two unrelated lines. The litter was strong, happy and healthy. I kept two pups out of the litter, a dog and a bitch. The other pups went to loving homes in different parts of South Africa, two of which were show homes.

The puppies all had the normal, veterinarian-recommended vaccine protocol, of vaccinations at 7 weeks, 12 weeks and again at 16 weeks of age, along with regular de-worming. All seemed to be well, except that the boy pup that I had kept, developed a tremor in his left hind leg at four months. This condition still persists today. He was neutered and re-homed. When the pups reached the age of 11 months, I



### **South Africa Vaccine Protocol**

6-8 weeks:

Distemper, adenovirus 1, para-influenza, parvovirus, corona

12 weeks:

Repeat above

16 weeks:

Repeat above, plus leptospirosis and rabies

Then annually:

Repeat as for 16 weeks

received that first awful telephone call from the one show home, to say that their beloved boy “Zac” had just had a seizure. My heart sank. Then within two weeks of this first call, a second owner phoned to say that their bitch pup “Roxy” had just had a seizure.

This led to the most awful period of time; one that I would never wish on my worst enemy. Both owners stayed in close contact with me, so I knew how they were feeling and what was being done to help their beloved pets. Both pups lived in completely different environments; one lived in a suburb of Johannesburg, with two other Aussies. The other pup lived on a farm in Natal, with another Aussie, a Great Dane and two Yorkies. Both pups were dearly loved and cared for. They lived in the house as part of the family, and were fed high-quality kibble and/or a raw diet.

Over the following months, the seizures (all grand-mal seizures) were frequent and always when the dogs were resting. Both dogs were put onto phenobarbitone and then later on, additionally potassium bromide. Neither of these drugs, nor a combination of drugs was successful in arresting the seizures. They each had a series of blood tests, spinal taps, MRI’s, etc., none of which came back with any conclusive results.

Both dogs had spells of “status epilepticus” where the seizures happen in clusters that don’t stop. They both were admitted to their respective specialist vets (again in different parts of the country) who had to put them under heavy sedation for several days, to halt the seizures. Both owners were fanatical about checking for anything on their properties that the dogs might have ingested, and came up with nothing.

Eventually Roxy, the bitch in Natal, was euthanized at 15 months old, after another bout of “status epilepticus.” I requested and paid for a post-mortem necropsy. I must mention here, that the post mortem that is performed on a dog suffering seizures, MUST be done within three hours of death, and the brain and spine is removed first, or the lesions will most likely be missed. The pathologist came back with the result of “Hypomyelinogenesis,” which means that the axons of the nerves in the brain are either not present, or are sadly lacking. In other words, the nerves are acting like exposed electric wires that keep

touching one another and setting off sparks. There is no cure for this, nor is there any treatment to assist in easing this condition. Nor is there any way to test for it whilst the dog is alive. Not a prognosis that gave us any hope for Zac, here in Johannesburg. Eventually, after many heart-wrenching months of uncontrollable seizures, they too made the difficult decision of having their beloved pet euthanized.

I had him tested post mortem, as well, but because his body was tested the following day after euthanasia, no conclusive results were found. I had two very distraught owners, which no amount of money could help, as this could never replace the loss that they suffered.

It is important to note here that most of the research and literature on canine hypomyelinogenesis states that the puppies exhibit signs of the disorder at an early age in the whelping box. This was *not* the case with my litter. One puppy did exhibit tremors at four months of age. He still has a tremor today, I see him quite often. He also does agility and this does not affect his performance. So while we

“Hypomyelinogenesis” In utero infection and heredity are the general causes of hypomyelination. The viruses of classical swine fever, border disease, and bovine viral diarrhea have been incriminated, but mechanisms responsible for the hypomyelination have not been defined... The inflammatory neuraxial disorders in domestic animals in which demyelination is found are canine distemper, visna, and caprine arthritis encephalitis syndrome.”

([http://www.merckmanuals.com/vet/nervous\\_system/demyelinating\\_disorders/overview\\_of\\_demyelinating\\_disorders.html](http://www.merckmanuals.com/vet/nervous_system/demyelinating_disorders/overview_of_demyelinating_disorders.html))

had a definitive diagnosis, we also had anomalies that were not consistent with the current research and data on this condition.

My initial reaction to the horror of producing two seizing puppies was that I was dealing with idiopathic epilepsy that was inherited from the parents. One of the lines I was using is often referred to as producing seizures and “should be avoided” according to those who analyse pedigrees. In the emotional turmoil that followed, I decided to spay the bitch to avoid producing seizures in the future. I did not neuter the sire, but he was not used at stud again.

I consulted with the breeder of the bitch in the U.S. She kept asking me about vaccines, drugs or medications. I was very open to discussing every possible factor, but was still somewhat unconvinced about this being



### **Metronidazole Warnings:**

Central and Peripheral Nervous System Effects  
Convulsive seizures, encephalopathy, aseptic meningitis, optic and peripheral neuropathy, the latter characterized mainly by numbness or paresthesia of an extremity, have been reported in patients treated with Metronidazole." (<http://www.drugs.com/pro/metronidazole.html>)



anything other than a classic case of inherited epilepsy. I made a decision to avoid *both* lines, and imported a male Aussie from Denmark who was a complete outcross to what I had. He was gorgeous and full of promise as a show dog. He had the sweetest temperament and was dearly loved by myself and my husband.

He too went through the normal protocol of vaccines and combinations of drugs that our vets recommended. He was a strong healthy puppy, but after a few months of being here in South Africa he acquired a parasite called giardia. The only two treatments that are given to dogs here for giardia are Panacur which is in a liquid form that is dosed at 1 milliliter per kilogram and tastes foul. The alternative is metronidazole commonly known as Flagyl. As the Panacur gave Koda terrible diarrhea, metronidazole was what was prescribed. Over the months that followed, Koda had several treatments due to ongoing giardia, which was proving extremely difficult to eradicate.

At 15 months of age, you can imagine my utter horror to experience my beautiful boy suffering a grand mal seizure. It was happening all over again. I had changed bloodlines. I had done everything in my power to avoid seizures after the heartache of the previous litter. And here I was again. My heart absolutely sank to the ground. Over the following months, he suffered many seizures, increasing in frequency, despite being on epilepsy drugs. He was also still being treated with metronidazole for the giardia, as this is what my vet insisted was the only treatment that would work.

Eventually, just after his second birthday, and after a day of repeated seizures (seven), with the post-ictus phase becoming increasingly longer, I made the decision to have him put to sleep. I had made arrangements with

"Metronidazole is an antibiotic especially effective against anaerobic infections (infections that grow without the presence of oxygen.) Unlike many antibiotics, metronidazole is able to penetrate the blood-brain barrier and treat central nervous system infections. It also penetrates bone, making it especially useful in oral/dental infections. In addition, it has anti-inflammatory properties in the large intestine and is a very effective anti-diarrhea medication. It is an effective antibiotic against certain protozoal infections, especially giardia."

Ondersterpoort, our Veterinary University, to have their pathology department conduct the post mortem. Due to the speed with which this has to be done, I had to take my beautiful boy out there to be put to sleep. I still have tears pouring down my cheeks as I write this. I understand that the University will be writing a paper on their findings, because they too eventually came back with the result of "Hypomyelinogenesis." They also found a heavy infestation of giardia, despite all the on-going treatments!

I then contacted both owners of the two pups that I had bred, only to find that both pups had been treated regu-

"Metronidazole, a 'classic' drug in canine medicine, is currently very popular to treat a variety of diseases: giardiasis, various inflammatory processes in the gastrointestinal tract, hepatic encephalopathy etc. The potential myelosuppressive side effects of this drug are well known, but neurological problems seem to be more common and less known" (<http://www.vetcontact.com/en/art.php?a=572>)

larly with metronidazole for giardia. This appears to be the only thing that these three dogs have in common, that, and the early and multiple combination vaccine protocol. Two of them were MDR1 mutant/normal and one was MDR1 normal/normal.

While I was initially reluctant to discuss the possibility of these unrelated seizures cases to be anything other than inherited epilepsy, the facts and data did not support my original suspicions. I was faced with looking at other sources for the causes of seizures in the dogs. I reconnected with the breeder in the U.S. who had asked about vaccine protocols and the use of metronidazole. Research finds that this drug which is an often used and seemingly harmless antibiotic has been directly linked to central nervous system toxicity causing seizures and acts as a neurotoxin.

Needless to say, with my last litter who are now one year old, vaccines have been done sparingly, and the use of metronidazole has been banned for all of them. I am keeping my fingers tightly crossed that none of my puppy buyers ever have to go through the experience of living with a dog that suffers from seizures.



### **Causes of Dog Seizures (this is just a start)**

- brain tumor
- head injury
- cancer
- diabetes
- tick bites
- heart block
- excessive daytime sleepiness (narcolepsy)
- insufficient production of thyroid hormone by the thyroid gland (hypothyroidism)
- overactive tissue within the thyroid gland (hyperthyroidism)
- disability involving damage to the joints (arthritis)
- acute inflammation of the brain (encephalitis)
- chronic neurological disorder (epilepsy)
- low level of glucose (sugar) in the blood (hypoglycemia)
- low serum calcium levels in the blood (hypocalcemia)
- a qualitative or quantitative deficiency of hemoglobin, a molecule found inside red blood cells (anemia)
- shortage of oxygen in the body (hypoxia)
- deficiency in the concentration of dissolved oxygen in arterial blood (hypoxemia)
- elevated blood level of the electrolyte potassium (hyperkalemia)
- abnormal raise of lipids and/or lipoproteins level in the blood (hyperlipoproteinemia)
- rocky mountain spotted fever
- viral disease (distemper)
- lyme disease or borreliosis
- liver disease or hepatic encephalopathy
- renal failure or kidney disease
- gastrointestinal disease or garbage poisoning
- parasitic disease caused by the protozoan *Toxoplasma gondii* (toxoplasmosis)

### **What to do if your dog has a seizure?**

“In most cases of idiopathic epilepsy, which means seizures of unknown origin, your vet will want to start your pet on an anti-seizure medication. However, my rule of thumb is this: an animal must have in excess of one grand

mal seizure a month in order to even consider drug therapy and oftentimes, natural seizure control therapies reduce seizure intensity and frequency so that animals won't require drug therapy.” Dr. Karen Becker (<http://healthy-pets.mercola.com/sites/healthypets/dr-karen-becker.aspx>)

Immediately analyze and look for environmental or toxic causes: food, supplement, poison, anything recently ingested (plants and shrubbery), vaccines, medications, any change in routine or location. Remove any toxins from the dog's environment.

Any dog that has seized should have an MDR1 test completed if not already done. Check the MDR1 results of your dog and look at the list of drugs to avoid. Determine if your dog was exposed to any of the “do not use” drugs.

Mark the date, time and other pertinent data about the seizure (location, length, type of seizure). If the dogs seizes again, start a formal log.

Advise the breeder of your dog immediately about the seizure. Ask if they have any other affected dogs or any previous experience with the issue.

Gather the complete medical history for the affected dog to include: any and all medications, vaccines, treatments while the dog was a puppy. In addition have the complete medical/treatment history of the adult animal.