



FEATURE

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Not All Seizures Are Created Alike, Part 1

Edited by Nannette Newbury, Guest Editor

This is the first part in a series of three articles that focus on seizures in Australian Shepherds. I would like to thank owner Barbara Holland and breeder Michele Colborne for being willing to contribute to this series. The stories for all of us are painful. We are, however, united in our commitment to sharing our stories. Our goal is to illuminate the role that environment plays on seizures (and compromised immune systems) in our breed. We are united in our dedication to potentially saving Australian Shepherds from a similar fate in the future.

We have long been aware of idiopathic epilepsy or seizures in our breed. Much time, money and attention is currently being directed to determining the mode of inheritance and developing a genetic test so that we can eradicate this heart-breaking disorder from our breed. Pedigrees are analysed, specific lines known to produce “epilepsy” are avoided, and yet, there appears to be little results in terms of eradicating or diminishing the disorder. Our dogs are still having seizures and, while we have not attempted to keep formal track of the rate of incidence (The rate of idiopathic epilepsy in canines is estimated to be 1-2% of the population), it appears that there may be even more affected dogs, not fewer; or at least we are getting more adept about talking openly about the affliction.

The three stories in this series are about seizures, but not necessarily epilepsy and not necessarily seizures caused or based on inheritance. We also have seizures in

our breed that are “reactive” seizures, as one researcher describes them; or created by environmental factors. Australian Shepherds have known issues with the blood brain barrier (MDR1) and potentially is a breed that also might be sensitive to a wide variety of toxins, medications, and other products. This is evidenced by dogs who are MDR1 Normal/Normal that have issues or reactions to substances that are not currently on the MDR1 list. This could be because the list is not current—drugs not yet identified that can potentially cause issues—or we have something else going on in addition to MDR1.

Along with our focus on the genetic component of epilepsy we may wish to focus on the “reactive” seizures at the same time. While we wait for the gene test for epilepsy to appear, there are things we can do now to modify our interaction with our dogs that will reduce the non-genetic seizures immediately.

This article and the two that will follow in the November/December 2014 and January/February 2015 issues of the *Australian Shepherd Journal* are written by breeders and owners of Australian Shepherds—three very different, yet compelling stories about how seizures present in our dogs.

The Litter that Started it All

by Nannette Newbury

My first experience with seizures occurred in 1992 when my 8-month old Australian Shepherd almost died from his second dose of Heartgard (prescribed by the vet and in the low-dose “safe” packaging). Within hours of receiving the medication the dog was exhibiting signs of severe neurological impairment, including mild seizures. This was long before the MDR1 test became available and long before our focus on hereditary idiopathic epilepsy became public. During that experience I learned from my veterinarians, from the head neurologist at the University of Tennessee medical school and from other breeders that dogs can have seizures and not have epilepsy. I also learned how devastating it is to watch a beloved animal afflicted with seizures of any nature.

Fast forward to 2006–2007, arguably the worst year of my life and the lives of four of my puppy owners. With the advent of the internet, which improved and added speed to our communications, we are learning about the devastating effects of idiopathic epilepsy on our breed. We now have a genetic test for a mutation in the MDR1 gene that can help us avoid medications and products that may cause seizures as well.

My litter was born in early 2004; eight happy, healthy puppies. The dam was quite nice and I had several inquiries from other breeders for puppies as potential show prospects. For the first time, I sold three of these pups to friends for show. I kept one and the remaining four went to pet homes. At two years of age two of the females (a show prospect in Alabama, and a pet in Nevada) developed seizures within one week of each other. At three years of age two of the males (both show prospects) developed seizures within two weeks of each other (one in Pennsylvania and one in North Carolina).

Thus began my unintended and unwelcomed journey into the world of canine seizures. The story above did not have a good ending, with one exception. That one exception has led to further study and has helped me and countless others to understand that inherited epilepsy, with an unknown mode of inheritance, is in our breed, but, and this is a *big* “but,” that there are about a million other reasons including environmental factors that can cause a dog to seize.

A renowned canine seizure researcher in Belgium estimates that canine inherited epilepsy occurs at rate of 1 to 2 percent in the canine population (the rate is around 4 percent in the human population). As we do not know the



number of Australian Shepherds in the world today (and have made no efforts to track this data), it is impossible to estimate the rate of occurrence in our breed at this time. Do we have an epidemic? If we have more than 1 to 2 percent of our dogs seizing, then there is an indication that there might be other reasons that a dog has seizures. (This same researcher at a recent seminar noted privately that he thinks about 20 percent of seizures are indeed primary epilepsy and that 80 percent of seizures are what he terms “reactive” seizures).

If there is any good news on the seizure story is it this; we can control and potentially immediately eliminate seizures from dogs who seize due to environmental or reactive reasons. This does not mean we should not continue our efforts to find the mode of inheritance and potentially a gene test for inherited seizures, but it does offer a huge window of opportunity to rapidly reduce the number of dogs suffering from environmental seizures in our breed.

Causes of seizures in pets include head trauma, brain tumors, infections (bacterial, viral, fungal, parasitic), certain immune-mediated diseases, cervical subluxation, birth defects, liver disease, low blood sugar, other metabolic conditions such as hypothyroidism, toxins, heat stroke, and human and certain veterinary drugs including vaccines. Improper nutrition can also cause seizures... Soybean products are also linked to seizures...

Dr. Karen Becker

My litter that produced four dogs with seizures was incredibly painful for the owners and devastating for me as the breeder. All of the dogs received the highest calibre of veterinary care. Three of the dogs were treated by veterinarians who diagnosed them with idiopathic epilepsy (they are on the epi-genes list) and started the dogs on standard treatments, including anti-seizure medications. The dogs responded poorly; the seizures were never eliminated and all of the dogs were eventually euthanized.

One of the dogs however received care by a neurologist at the University of Tennessee medical school. She herself had Border Collies who had seizures. After an MRI, she treated this Aussie differently, never putting her on anti-seizure medication. As part of the therapeutic protocol she used steroids to reduce a swelling in the brain that she felt

caused the seizure. That one animal never seized again, is alive today and finished a conformation championship. The other veterinarians were offered a consultation with this neurologist in an effort to save the other patients... none of them chose to consult with her.

The other four littermates remain unaffected and are alive and healthy today. One of the pups is a multi-titled agility and obedience competitor. Two others are active and healthy pets. The bitch I kept out of the litter went on to produce three carefully planned litters with not one incidence of seizures in any of the future offspring.

There were some incredible lessons learned from the pain and suffering of these four dogs and their owners. As a breeder I vowed at the time that their stories and lives would not be in vain. I have spent my time since this incident studying about seizures disorders and trying to find out how four related dogs in four different parts of the country could develop seizures within weeks of each other based on sex. One of the conclusions made by the professionals involved is that this was not epilepsy. If it was not epilepsy then what was it? And what caused it?

One of the first things we did was have the new MDR1 test conducted on all four dogs. All four were Mutant/Mutant. Researchers at the University of Washington have no evidence that a Mutant/Mutant diagnosis is linked to inherited epilepsy. Is it, however, an indication not only of sensitivity to an ever-growing list of products, but also of possible exposure to these and other environmental factors that have resulted in a predisposition to seizures? Could the exposure to the environmental factors permanently alter the DNA of these dogs? Thus, an additional focus on environmentally triggered seizures started, with the idea of reducing the number of seizures in our breed by removing the offending items from the dog's environment.

I now recommend and verify the MDR1 results of every puppy I produce. Keep in mind that many breeders have stories of dogs with drug reactions who are MDR1 Normal/Normal. This means that there might be additional drugs to add to the list of drugs to avoid; or perhaps we have a breed that is just sensitive to environmental factors in general. The second story (November/December issue) about Banner, indicates that once dogs are exposed that their bodies may not recover and that they may in fact develop a hypersensitivity to the environment.

A drug that is not on the list that can cause seizures or life-long health issues is metronidazole. This drug has been used safely for years to treat puppies for minor issues and is especially appealing as it has therapeutic ability to calm the stomach. It is also a neurotoxin and the potentially the cause of later onset seizures (See the third Michele Colborne article in the January/February issue.) as it may destroy the myelin sheath.

An additional culprit of environmental seizures and compromised adult immune systems is our vaccines, especially puppy vaccinations.

Primary Vaccination: A recommended vaccination schedule should start at or about 6 weeks of age. The presence of maternal antibody is known to interfere with the development of active immunity. Puppies should be revaccinated every 2 to 3 weeks until 12 weeks of age.

From a vaccine label



What is interesting to note in the vaccine label above is that it provides potentially conflicting information... by the manufacturer of the vaccine. While stating that the vaccine schedule should start at six weeks of age, the next line clearly indicates that vaccination will interfere with the development of antibodies (i.e., *no* antibodies will be developed). The duration of maternal antibodies can be different for each puppy, but it is generally accepted that the maternal protection, on average, can last from 12 to 16 weeks of age. There is also research that documents the incredible harm done to puppies when we vaccinate early and interfere with this natural system.

I have worked behind the scenes for many years talking about seizures with many different breeders/owners. When provided with a detailed health history of each dog one of the most common threads of each affected dog was that they were given 5- or 7-way combination shots (including leptospirosis) around eight weeks of age. Some were given vaccines as early as six weeks of age. In addition to the administration of the shots, generally during their first vet visit, many were also given additional medications ranging from Bordatella vaccine, flea and tick medication, heartworm medication and some even given rabies shots during their first puppy vaccination schedule.

The leptospirosis vaccine is highly controversial even amongst the veterinary community and is often linked to seizures and/or long-term health issues for the life of the dog (see subsequent Barbara Holland article). Vaccine reactions are difficult in terms of linking them to later

onset seizures, but the one common thread in these dogs that developed seizures later in life was the huge chemical cocktail administered to them as puppies. Current research indicates that too many vaccines administered too early have an adverse effect for the life of the dog.

The other common factor in several cases was vaccines administered to puppies or dogs that were at the vet for immune-related issues. I have the medical records for a dog that had an immediate reaction to a rabies vaccine; a vaccine administered at six months of age, while the dog was at the vet for unrelated and serious immune issues. Vaccines should never be administered to an animal whose immune system is compromised. A breeder should not be telling you this, your vet should. It is nothing new; it is clearly stated on any vaccine label.

Vaccinate only healthy, non-parasitized dogs.

From a vaccine label

I recently received two calls from Aussie owners whose dogs suffered seizures around the holidays. After lengthy discussions and input from veterinarians an unusual link emerged in these totally unrelated reports (one from California MDR1 Mutant/Normal; one from Florida). Both dogs were exposed to plug-in scented air fresheners ("Holiday Scent" seemed to be the direct culprit) and one dog was living in a home that used many scented candles. After the offending scents were removed, both dogs were seizure free. The older dog (13 years old) was euthanized two months later due to clusters of seizures that could not be stopped.

We have collated these stories to bring awareness to the emotionally charged issue of seizures in our dogs. We would like to remove the emotional component and start to look at this issue within our breed in a more analytical method. We hope that the information provided here and in the subsequent two articles will help you in your journey with your own dogs and your ability to improve and maintain their immune systems based on past experiences and new scientific data. The other two case studies are compelling. I hope we can all learn from their experiences.

