

Living with Idiopathic Epilepsy

Watching a dog have a seizure is a frightening event. Learning that your dog will be on medication for the rest of his or her life to try and control the frequency and intensity of seizures is devastating. Fortunately, the PBGV is not a breed that is at high risk for seizures, but there are affected dogs in our midst. I asked the PBGV community to contact me if they have or had a dog that has experienced seizures. I received responses from 16 owners who were eager to share their experiences.

One typical response stated that the day of her dog's first seizure "he was uncharacteristically clingy, whimpered a lot and would lick me — all behaviors that were not really like his normal personality." In the middle of the night, the owner heard a commotion in the kitchen. She found him "on the floor and his water had spilled out of his bowl. I believe he was perhaps making a coughing or gagging sound." He was paddling with his feet. When she got him up, he was disoriented and showed signs of blindness. He had two additional seizures within the day. This 6-year-old dog was on anti-epileptic drugs for the rest of his life, another eight years. The meds made him thirsty, hungry and sleepy. He still had seizure-like activity but no major seizures. Unfortunately, the dog's personality also changed; he became snappy, restless, difficult to calm down and aggressive toward the family's other dog. The family's time away from home was limited because they had to maintain a strict medication regimen. Of course, they also experienced considerable stress and worry.

and psychic disturbances. They may also salivate, urinate and defecate. Stereotypic behaviors include lip smacking and fly biting. One PBGV owner said that it "was like a ritual: He snapped at imaginary flies with his head up and then took his paw and brushed his muzzle and then laid down on his side for a few moments and then repeated it over and over. Sometimes these episodes lasted just a few minutes, but one time it was all night. He would come over to me for comfort when these were about to start."

Another owner said, "Every time he's had a seizure it has been when he's asleep, usually at night about two hours after we are all asleep." The dog "sleeps on his pillow on the floor at the bottom of the bed. The first time, I was awakened by an odd thrashing sound and my other two little dogs were awake and excited." The dog "was lying on his side, his eyes wide open and bulging, his jaw open and stiff, his head pumping up and down on his chest. All four of his legs were stiff and pumping back and forth as if he was running. He lost control of his bladder, his bowels and expressed his anal glands. He was drooling heavily. With my hands I kept gentle pressure on his neck and hip so his head wouldn't bang so hard on the floor. After about three minutes, the seizure slowed and then stopped. He tried to get up when his eyes were still bulging so I gently held him down and talked to him until he seemed calm enough to walk. He walked around the room as if not knowing where he should go. He gradually became fully aware of his surroundings within eight minutes. I took him outside for

“ *In the hours preceding an ictus, the animal may show altered behavior; they may hide or seek attention, and appear restless or anxious. One PBGV vomits right before a seizure.* ”

What is idiopathic epilepsy? Epilepsy is a disorder of the brain that is characterized by recurring, unpredictable seizures. The seizures are likely due to uncontrolled electrical activity in regions of the brain, which can produce behavioral changes. When no specific cause for the seizures can be found, the disease is known as idiopathic epilepsy (IE). IE is one of the more common, chronic seizure disorders in dogs. Patients typically suffer generalized tonic-clonic seizures (formerly known as grand mal). That means that the whole brain is involved, not a specific part of the brain, and that a sustained contraction of muscles (tonic phase) is followed by involuntary movements (clonic phase).

The seizure itself, which is called an ictus, may last for one to two minutes. Animals in ictus may exhibit involuntary, repetitive movements, loss of consciousness

fresh air, gave him water (which he lapped up gratefully) and returned to bed. He was anxious and continued to walk around the bedroom until I asked him up on the bed where he fell asleep."

There are often warning signs that a seizure is about to occur. In the hours preceding an ictus, the animal may show altered behavior; they may hide or seek attention, and appear restless or anxious. One PBGV vomits right before a seizure. The animal may also exhibit a stereotypic behavior minutes before the ictus. The ictus itself typically lasts seconds to minutes. Afterwards, the animal may recover quickly or he/she may be confused, disoriented, hungry, thirsty or blind for minutes or hours.

Most very young dogs (less than one year of age) that experience seizures do so because of exposure to an

infectious agent or to a developmental anomaly. However, the seizures could also be due to an inherited degenerative disease or metabolic disorder. One PBGV's seizures began when he was two and were linked to low thyroid hormone level. The dog was placed on thyroid medication and the "change was amazing. His seizures occur only about once every six months and are very short in duration." Six years later, he still lives an active, athletic life.

Most dogs that experience their first seizure when they are much older than five years of age most commonly do so because of a neoplasia, or tumor, although there are older age onset degenerative or metabolic disorders that could be the cause. One PBGV had her first seizure in April 2012 at 15 years. She has since had a seizure every 10 days. "She paces constantly before and for about two hours after an episode," the owner said. The dog stumbles and sometimes has a pronounced limp. The vet thinks she has a tumor.

Another dog developed Cushing's disease at 12 years of age. Four months later, the owner heard a thumping noise coming from the kitchen. She found the dog "collapsed and her back legs had given way. She was unconscious and thumping her legs, paddling and panting. When she came out of it she was so frightened and her back legs wouldn't work. Then she had sea legs." This dog likely had a pituitary tumor that had led to the Cushing's and eventually became large enough to impinge on the brain and produce seizures. At age 14, "the seizures got the best of my girl ... she had seven or eight seizures in a day and a half ... was vocalizing all night, obviously in high distress. Vet visits didn't help and I couldn't eat, sleep or do anything. I knew it was her time."

IE is the diagnosis when a specific cause for the seizures cannot be found. It typically occurs in between these very early and late cases, with an age of onset between one and five years. IE is only diagnosed after physical and neurological exams, blood tests, brain imaging and cerebral spinal fluid analysis have ruled out other causes of the seizure activity. The dog typically has normal physical and neurological exams and normal behavior between seizures. Some



dogs will have a single seizure that is never repeated. Such was the case with two PBGVs in one household, both of whom had experienced a stressful event before the seizure. However, a dog that has multiple seizures becomes a candidate for anti-epileptic drugs, which can improve quality of life in most cases. According to veterinary neurologist Dr. Kim Knowles, "The objectives of treatment are a reduction of seizure frequency and intensity with minimal side effects. Client education is almost as important as the diagnosis because success of treatment depends more on the owner than any other variable." Note that the stated goal is to reduce seizure frequency; unfortunately, an elimination of seizures is rarely accomplished. Most IE therapies lead to side effects. The most common side effects are increased eating, drinking and elimination; sedation and lethargy; weight gain; and lack of coordination. Also important are the inconvenience of daily treatment for the life of the animal and cost to the owner.

Most dogs with IE have a normal lifespan. However, dogs that experience seizures lasting at least five minutes or who have multiple seizures without recovery in between (known as status epilepticus) typically have a reduced survival time. Such was the case with Elliot, pictured at left.

Elliot had his first seizure at nine months of age. His owner said she "noticed something odd about Elliot even before his first seizure occurred. Even as a puppy, he was slow to wake to the point I thought something was wrong with him and I postponed leaving for work in the morning. I could literally pick him up and try to set him on his feet and he would just collapse back into sleep mode. I would have to rub him and force him into standing before he would move with any determination." After the first episode, he had cluster seizures every three to four weeks. Before a cluster, he exhibited neediness, excessive whining and obsessive-compulsive behavior. Elliot was on multiple medications that led to side effects but did not bring the seizures under control. He was 'pharmacoresistant.' Elliot's owner kept a log "of every
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Epilepsy *continued from page 27* seizure type, duration, amount, medication given and post-ictal” behavior but was never able to come up with any triggers. By the time Elliot was euthanized in May 2012, soon after his second birthday, she had logged 121 seizures. She states that by then he “was mentally on the fringes of retardation, physically he was stunted, and emotionally he was somewhat flat. This does not in any way mean his life was not purposeful. For what he was given, he was extraordinarily happy and found joy in living the life he had as only a dog can. He was not riddled with the fears of mortality and the human emotions of inequity in his plight. That was my burden.”

Quality of Life: The University of Glasgow Study.

What is the impact of having a dog with idiopathic epilepsy on the family and on other dogs in the household? To answer this question in a scientific manner, clinicians at the University of Glasgow Veterinary Hospital searched their clinical database for dogs that had been diagnosed with idiopathic epilepsy at the hospital and were undergoing treatment with phenobarbitone and/or potassium bromide. They sent a questionnaire to the owners of 29 dogs that fulfilled specific clinical criteria. Responses from 25 participants were received, whereupon veterinary staff and lay volunteers evaluated the answers.

The key finding was that, from the owner’s perspective, the dog’s quality of life, acceptable seizure frequency and tolerable drug side effects were their three greatest concerns. The impact of having an epileptic dog on the owner’s lifestyle and cost of treatment were of significantly less concern. Most of the owners felt that their dog’s seizure management was successful. Dogs with owner-perceived adequate seizure control were those experiencing one seizure every three to six months or longer; however, some dogs were perceived to have inadequate control with a seizure every two weeks to two months.

Most owners who answered the survey felt their dog’s quality of life was good and drug side effects were minimal. Dogs tended to be less active than they were before they

began experiencing seizures, although interactions between dog and family members were unchanged. Most frequently reported side effects of medications were increased appetite, drinking and urinating. Their dog’s increased wobbly walking caused the owners some concern.

Most owners felt that administering the medications was not a nuisance, and that caring for their dog did not cause conflict with their work or day-to-day activities. However, having an epileptic dog did affect their ability to stay away overnight because they were too worried to leave the dog with someone else and/or because seizures often occurred while the owner was away or had just returned.

The University of Glasgow authors acknowledge that these responses do not reflect the full spectrum of epileptic dog owners. It was a small study and the questionnaire did not go to owners whose dogs were so severely affected that they had been euthanized. The owners included in the study were those with dogs that have a more acceptable quality of life.

Quality of Life from the PBGV Owner’s

Perspective. Anti-epileptic drugs help most, but not all, PBGVs that experience seizures. Nevertheless, all of the families bear the burden of not knowing when a seizure will occur. One owner stated, “My husband and I haven’t traveled for two years ... after all ... who could I leave her with? Who would be good enough? Every morning I’d come down to see if she was alive and there she was, thumping her tail ‘Hello.’ I was pre-mourning her.” Another owner said, “I had to keep to a strict medication schedule and was limited to what I could do away from home in between his medication times. General stress and worry for eight years about his health and whether he would have another seizure. I was quite devastated when he developed epilepsy and it broke my heart that he had to suffer so.”

Obviously, Elliot’s illness had a severe impact on his family. “The adjustments in our lifestyle were freely given ... Vacations together were not taken. Daily regimens of medications, sitting on the floor of our master bath at

3 o’clock in the morning with a seizing dog, cleaning up vomit, urine and feces, emergency veterinarian visits, hours spent on the computer researching possible new treatments and studies, and finally realizing the awful truth that the time has come to let the disease win.”

The Genetics of Idiopathic

Epilepsy. Most canine IE is thought to have a genetic basis. The prevalence of epilepsy is higher in specific breeds and it was first thought that this would be due to a founder effect. This would mean that most epilepsy cases within a breed would be due to a common founder and would have the same gene defect. If this were the case, it would simplify discovery of the epilepsy genes and genetic tests for carrier dogs. Consistent with this notion, several epilepsy genes have been identified in breeds with the highest prevalence of the disease. However, most cases of canine IE are now thought to be polygenic, which



Elliot

means it is attributed to two or more genes. This significantly confounds identification of the genes leading to IE.

Ekenstedt, Patterson and Mickelson are canine geneticists who study epilepsy. They concede that their quest has proven to be more complex than originally anticipated. "Seizure characterization is of the utmost importance, and owner-reported information is fraught with inconsistencies, making it nearly impossible to universally properly classify seizures into an appropriate category. Subtle differences in seizure presentation may actually represent different underlying genetic causality, and if these are inadvertently pooled, this may prevent identification of associated genes. Human epilepsy encompasses more than 40 different syndromes, specifying age of onset, seizure stimuli, seizure characteristics and EEG abnormalities. Clearly, there is room for improvement in the accuracy of canine seizure phenotypes into more tightly defined syndromes."

Many owners of affected PBGVs contacted their dog's breeder to report their dog's illness. Some owners received sympathy, support and information on the incidence of disease in the pedigree. They learned that breeder neutered dams, sires and/or siblings to prevent further cases. One breeder said, "I owe it to my prospective owners and as a producer of show-quality animals to know, to the best of my knowledge, what my animals carry in good and bad genetics." Other owners found that the breeder of their dog was not as responsive. The breeder either didn't reply to their letter, or responded with disbelief or anger.

Last Thoughts. I asked the owners of affected dogs for some final thoughts to convey to the readers of this article.

"I would like to tell readers that we didn't choose this horrid disease for our dogs but this is our dog's journey ... do what you can for both you and the dog ... hang in there ... try not to pre-mourn the dog ... they live in the moment and so should we ... I admit I could never do this myself. I'm telling all this to honor the best dog I've ever had in my life ... and to help other PBGVs and their owners and breeders. I know good breeders would never ever want epilepsy in their lines but hey, things happen in life ... to humans as well as dogs."

"Please do not give up on a dog that has seizures, seek to get it under control if possible. It will require a lot of dedication and adherence to medication schedules as well as adjustment to different behaviors a dog might experience as a result. For breeders, I would beg them to research and diligently work to breed out this disease if possible. Also, I beg everyone to be honest if their dogs develop epilepsy, for only in being honest can we hope to eradicate this disease in these beloved dogs."

"I suggest anyone thinking of breeding first be brutally honest with yourself. Research your pedigree back as far as you can to try to discover any dogs in your pedigree that had either seizures or produced pups with seizures. Second, research the pedigree of any prospective stud dogs to the

How Can You Make A Difference?

The PBGV Health & Rescue Foundation looks for opportunities to fund research that will help free our loving breed from these horrible afflictions. I encourage you to give generously to the Foundation whenever you are able.

See the donation form on page 31 and use the envelope included in this issue of *Saber Tails*. Together we can help PBGVs stay a happy and healthy breed.

— *Laura Liscum*

same degree. Do not rely on the honesty of the stud dog owner. Do your own research; make phone calls to owners of other dogs from the stud dog's line. Ask everyone in PBGVs and carefully take into consideration even the 'gossip' about the stud dog and relatives in the pedigree. In my case, I researched my female's pedigree and relatives back eight generations. My line was clear, and I was feeling satisfied my bitch was safe to breed. I failed to do as much extensive research into the pedigree of the stud dog. This was a failure on my part and I believed the stud dog owner."

"Elliot was described by a specialty internist as the 'one percent,' being that he had the most intractable form of epilepsy. Medications never controlled his seizures, and they became so severe

and there were so many of them that his brain was damaged beyond recovery. I applaud the efforts to bring this disease into an open forum. We all must be willing to openly admit it exists in this breed and encourage transparency when it rears its ugly head. Until they find the genes that cause epilepsy, this may be our only way to control it ... That fate decided I was the one who would be lucky enough to experience Elliot in my life and unlucky enough to watch him die will direct the way I see things for the rest of my life. Maybe in just little ways, but when a dog impacts your life the way he did ours, I have to believe it is all for the better. I am still looking back and feel profound sadness and loss, but we are looking forward as well."

Elliot's family now has a 10-week old puppy from the same breeder. "He will hopefully fulfill what his predecessor could not: a long life full of car rides and agility classes, and a mom who can sleep at night without the fear of seizures." ■

Glossary:

Epilepsy. Disorder of the brain that is characterized by recurring, unpredictable seizures.

Generalized seizure — a seizure in which the source is distributed throughout both hemispheres of the brain (whereas the source of a partial seizure is localized to a particular region of the brain).

Ictus. The seizure itself, usually lasting one to two minutes.

Idiopathic epilepsy (IE). Recurring, unprovoked seizures for which no causative brain abnormality can be identified.

Seizure. A sudden, transient, abnormal phenomenon resulting from a transient dysfunction of part or all of the brain.

Tonic-clonic. A seizure characterized by a tonic phase with sustained contraction of all muscles and possible loss of consciousness, followed by a clonic phase with thrashing movements.

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