JUVENILE CATARACTS IN THE BOSTON TERRIER

Kathryn T.Graves, PhD
University of Kentucky
ktgraves@uky.edu

Juvenile cataracts in dogs are generally defined by veterinarians as any cataracts occurring before 5 years of age. This causes some confusion in Boston Terrier breeders and owners, as Boston Terriers are affected by cataracts affecting different age groups within that 5 year span. It is most accurate to refer to juvenile cataracts in the Boston Terrier as early onset (appearing before 12 months of age) or late onset (appearing at 4-6 years) juvenile cataracts.

The genetic form of cataract that is the focus of my project to identify a DNA test to detect carriers, affects young puppies, causing them to go blind by 12-18 months of age. It is recessive, meaning that the parents do not develop cataracts as puppies. Therefore, a breeding can produce an affected puppy although both parents appear normal.

We are fortunate that the early onset cataracts are detectable in 8-12 week old puppies 90% of the time. This is a good reason to get your puppies a CERF exam before you place them in new homes or decide to keep any as show/breeding prospects. This form of genetic cataract is always bilateral (affecting both eyes) and progresses rapidly. If a puppy is found to have cataracts, it means BOTH parents are carriers for the condition. If the recent health survey results are representative of the Boston Terrier population 20%, or 1 out of 5 dogs, may be a carrier for early onset juvenile cataracts.

Although ophthalmologists and veterinarians may argue that the late onset and early onset cataracts do not appear the same, my research so far indicates a very strong correlation between development of late onset juvenile cataracts in dogs 4-6 years of age, and carrier status. I have several families of Boston Terriers in which both parents of an early onset puppy developed cataracts at 4-6 years of age. Like the early onset cataracts, the late onset cataracts are always bilateral as well. Unlike the early onset form, these cataracts developed in middle age progress very slowly, and the affected dog may not go blind until well into old age. According to all the pedigree evidence collected to date, the late onset cataracts appear to correlate with the heterozygous state for the juvenile cataract gene. In other words, dogs that develop bilateral cataracts between 4-6 years of age should be considered carriers for the early onset form of cataracts.

Without a genetic test for the cataract gene, regular CERF exams are your best defense against producing an early onset puppy. CERF exams are only good for one year, and breeding stock that CERFed normal at less than one year of age should be CERFed annually starting at 3 years of age. If a dog CERFs normal (regarding lens clarity) through 8 years of age, there seems to be a very low probability that such a dog is a carrier. Since we do not know which gene is responsible for these cataracts, it must be kept in mind that nutrition and environment may affect the progression of cataracts in an individual. But for now, it should be assumed that any dog developing bilateral cataracts

between 4-6 years of age without an underlying medical problem such as diabetes, is a carrier.

So what happens if you have a dog that might be a carrier? This is a difficult question. As a breeder, you feel devastated perhaps. By 4 years of age, it is likely that this dog has been bred and produced puppies. Probably no one will breed to your dog, or be willing to buy a puppy out of a potential carrier. Without a DNA test, there is no telling which puppies will be carriers themselves and which will not inherit the gene. Half of the puppies a carrier produces will themselves have the cataract gene and therefore be carriers. However, the other half will not. If two carriers are bred together, 50% of the puppies will be carriers, 25% will have only normal genes, and be neither affected or carriers, and 25% will develop the early onset cataracts. Remember that even if your dog is a carrier, when bred to a non-carrier, only 50% of the offspring will inherit the carrier gene.

If you have a young bitch you want to breed, I recommend you find a stud dog over six years of age that is CERF clear for cataracts. If you know the CERF status of the bitch's parents and they are 6 years or older, so much the better. It is not necessary to spay a bitch that has only ONE parent with late onset cataracts. Remember that she may not have inherited the cataract gene from that parent. She has a 50% chance of being clear herself. Breeding her to an older clear dog would be best. You can use a young dog if you know both his parents are CERF clear at age 6 or older.
If BOTH her parents developed late onset cataracts, she has a 50% chance of developing cataracts herself and a 25% chance of being clear. This is definitely a bitch that you want to seek out an older clear dog to breed to.

I do not want to downplay the significance of the cataract gene. No one wants to have their next BIS hopeful go blind. Before you jump out the window, consider that there is a surgery that can be done (although expensive) and at least salvage these dogs as pets. Deafness and epilepsy are much more serious in this respect. In addition, if it is true that the dogs with the late onset cataracts are the carriers, at least we as breeders have some indication as to the prevalence of the cataract gene in our lines as our dogs age. A genetic test is not far in the future, and the cataract gene has a simple inheritance pattern that means the DNA test should be direct and accurate.

Have your dogs CERFed through 8 years of age AND SEND IN YOUR CERF forms to have your clear dogs recorded in the database. This is incredibly important information to help breeders know which individuals are clear although they may have relatives that suspected of being carriers. Breeders can check to see if the parents of their dog remain clear as they age and use that to make breeding decisions.