

Cardiac Exams in Border Terriers

Marg Pough and the Genetics and Health Committee

There has been a lot of discussion concerning the cardiac screening exams that were done at the 2005 BTCA Specialty Health Clinics. A number of dogs were reported as having Grade 1 or Grade 2 murmurs. We are hearing rumors that people are deciding to spay or neuter some of these dogs without any further testing. We are hearing rumors that people are blaming the Cardiologist. She is a Board Certified Veterinary Cardiologist, and we can tell you that Cardiologists are trained to detect soft aberrant heart sounds. Some owners are blaming the blood draw that was done on many dogs prior to their cardiac exam, and suspecting that their dog was "stressed".

There are currently 106 ACVIM Board Certified Cardiologists, and 102 of them practice in the USA or Canada. Unfortunately, they are found in only 30 states and two Canadian Provinces. That means that clinics, at Specialties and other dog shows, present the best opportunity for many of us to have our dogs screened. Board Certified Internal Medicine Specialists often have advanced training in cardiology. They are much more numerous and can be found in 45 states and 6 Canadian provinces.

Auscultation (listening to the heart with a stethoscope) is only a screening test. For pediatric exams we only require a licensed veterinary practitioner, since most of the significant congenital heart defects that are known in Borders are apt to produce a fairly loud murmur. For our pediatric exam we recommend that murmurs, which are grade 3 or greater, or persist beyond 15 weeks of age be further evaluated with an echocardiogram. The current pilot study is to help us determine incidence of congenital heart disease in Borders, and what percentage of Ventricular Septal Defects (VSDs) close by the time the dog is an adult as well as the incidence of "innocent" murmurs. If we are to determine these incidences, it is important that **all** results, not just the normal results be reported.

Murmurs are the result of turbulence in the blood flow. Turbulence may be caused by leaky valves, strictures at valves, blood flowing from high to low pressures causing a jet (such as flow through a VSD), or thin blood (severe anemia, or immature blood with fewer blood cells). In some cases, no structural defects can be found, no thickening of the walls of the heart chambers, no strictures noticed at valves, no leakage across the valves, and Doppler echocardiography shows laminar (normal) blood flow across each valve. High ejection flow velocity across the valves may also cause a murmur. It is not unusual to hear a murmur for about 5 to 10 heart beats after a dog runs for even a short distance. In such cases, the murmur is designated as a physiological murmur rather than a structural defect. Grade 1 or Grade 2 murmurs may turn out to be physiologic ("innocent") rather than having an underlying structural defect. However, the only way to determine this is to do follow-up testing including a Doppler echo.

Echocardiography is expensive, and may mean traveling some distance. Unfortunately most cardiac screening clinics do not have the equipment to do an echo. Echocardiography should not be done in a hurry, since all chambers of the heart, and all valves should be carefully examined. Hurried Echos may result in an incorrect diagnosis.

I recently had two mildly abnormal cardiac screens reported on two of my Borders, one at the Specialty, and the other here at a local screening clinic. In both cases, I went ahead and had the Echo done. I am very lucky because I have access to the Cornell Companion Animal Hospital, without driving a long distance. I am also able to be in the room and watch the procedure, and listen as the cardiologist is teaching the students.

These exams are not cheap, but the expense is worth it, we need to know we are breeding dogs with healthy hearts. In both my cases, the murmurs have been described as physiological. No structural abnormalities were noted, but different cardiologists heard the sounds. In the bitch with the pulmonic area "whoop" we would expect that Sub Arteric Stenosis would be apparent in a bitch her age (2). Instead, all blood flow and heart structure looked normal. This is a very athletic bitch, and it may be just high ejection pressure that is causing the sound.

Conversely, I know of at least two dogs with Grade 1 mild murmurs (only detected by a Cardiologist) that turned out to have structural defects, one had Mitral Valve Dysplasia, and the other had Sub-Arteric Stenosis (SAS). Echocardiography confirmed the cause of the murmurs. Although both these dogs continue to live normal lives, they are having regular follow-ups to monitor progression and neither will be used for breeding.

It is important to get a firm diagnosis of the cause of heart murmurs. Some dogs can be helped to live longer good quality lives by early treatment of their cardiac disease. Some dogs with murmurs may not have any disease at all and should not be excluded from breeding on that basis. Some dogs may have had a VSD, which was apparent as a puppy but closed before adulthood. These dogs may not have a functional defect, but the genes are still present, and they should not be bred. Prior to the availability of echocardiography, follow-up exams were invasive, and few people had them done. Echocardiography allows us to identify the cause of murmurs and thus advance our understanding their significance in Border Terriers.

We are urging all Border terrier owners to screen their dogs for heart defects, both as puppies and as adults and to report the results. These screenings can help breeders to identify defects, which are potentially harmful to the dog, may have a genetic basis and should not be propagated. Having your dogs evaluated and the results reported will also help the breed as a whole by allowing researchers to determine the incidence and progression of congenital heart defects in the border terrier. When the true incidences of genetically based health issues are known we can better prioritize how we spend our resources to insure the future health and soundness of the breed that we love.

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