

## The Value of Cardiac Testing – One Breeder's Perspective, By Laura Munro

I'm a big advocate for health testing dogs. It's not an end-all to eliminating health problems in the breed and it doesn't mean the dog will never develop a problem later on, but it sure makes me more comfortable to know there aren't any issues when I'm putting a couple of dogs together to make puppies. In addition, I think having the information about what is in my pedigree is invaluable for making better breeding decisions.

Recently, I made appointments to get my 2 and 2 ½ year olds in for cardiac testing. Typically, at this age, I only test the dogs that I'm showing and potentially will use in my breeding program. I decided to take one along that had been neutered already. Since I had some semen from him stored, I thought it would be a good idea to get a baseline on him. I also have a litter of five year olds and a litter of seven year olds that I was interested in having come for echoes so I could see if there was anything going on that I would want to know about. My thoughts on this were that if problems (think DCM) were going to develop, they would be more likely to be there as the dog gets up in years. While I test my breeding stock early, testing the dogs in companion homes later in life was a way to get some information and not break the bank. So my plan was to do echoes on about 9 or 10 dogs this year.

The older dogs tested on my first visit to the cardiologist were fine. The intact bitch and intact dog that I'm still showing were also normal. However, this neutered sibling of theirs turned out to have mild Mitral Valve Dysplasia. There is a thickening of the valve tissue with slight regurgitation. The thickening and clubbing of the valve tissue is the "dysplasia". In itself, the trivial regurgitation is not considered abnormal for OFA genetic testing.



Here is a picture of his mitral valve on echo. Note the thickness of the valve leaflet and the clubbing at the end indicated by the arrows. (For a good discussion on MVD, you may want to review the Merck Veterinary Manual online description of the condition at: <http://www.merckvetmanual.com/mvm/htm/bc/11114.htm>.)

Since this dog is 2 ½, this is not an age-related condition. This dog has a congenital form of MVD that he inherited. The question as to how he inherited it is one we can't answer yet. His mother echoed at 2, again at 5, and now again at 7, was and is normal. The sire was also recently echoed and is normal. I was a bit surprised to find this since I'd never seen it in any of my dogs previously.

There are several interesting aspects of this. One is that this dog had no murmur and upon auscultation, appeared normal. He could have gotten an OFA normal with that auscultation alone. **It was only when he was echoed that this condition was obvious.** This dog has twelve siblings, three of which I plan to use in my breeding program.

Two of those three had already been tested normal and the third had been cleared by auscultation. And therein was my first lesson. The cardiologist told me that DCM could still be present when she did the auscultation on this dog. What I didn't realize were all the other things that could be present and not associated with an audible murmur or irregular heartbeat, which is the only thing that would be detected on auscultation. This previously auscultation cleared sibling has since been evaluated by echo and found to be clear of any heart abnormalities. After this experience, I will not use auscultation as a means to get OFA clearances on my dogs because it clearly is not a sufficient exam to rule out any congenital abnormalities. I bred and own a dog that has a congenital abnormality and has no murmur. If I had my way, OFA would not even accept auscultation as an acceptable test for cardiology clearances. Clearly, it falls very short of being sufficient for this purpose, at least in this breed. That is one change I'd like to see our Parent Club support.

But now I had to ask myself, is this dog one of thirteen and an anomaly, or do more of these siblings have this condition? The only way to answer that question is to do echoes on all of them! As of this update, I have tested eleven of the thirteen and to my amazement and dismay, six of them have mild MVD! And *not one* of them has a murmur. All have thickened valves with some "clubbing". The first dog is the only one that has any leak in the valve and it is very minor. My local cardiologist is very conservative and considers all six of these dogs to be abnormal because she feels that if some have no thickening or clubbing on the valve, then it is not "normal" for them to have thickening or clubbing.

This poses another interesting aspect of this. One of the dogs was found to have mild MVD by another cardiologist in another state. Of the five my local cardiologist has diagnosed, I originally considered 3 of them questionable. The reason I questioned their diagnosis is that it seemed clear that the one with the regurgitation in the valve was certainly affected, but the others have no leak and the thickening/clubbing on the valve was much less. In fact in one case it was so minor the leaflet only showed a very slight bit of thickening at the end when it was in a specific point of its range. Now I know that the regurgitation alone is called Mitral Valve Insufficiency and it is an acquired condition, not a congenital one. In the case of this dog shown above, he likely has the leak as a result of the dysplasia, but that is not what defines it.

After discussions with other cardiologists, I found they don't feel that a dog with a slight variation in the valve tissue, that doesn't have any regurgitation or "serious" deformity of the valve itself, is not "abnormal". It would seem that they consider this a variation in structure, but only a cosmetic one, not a functional one. The fact is that it IS cosmetic, but it is also a congenital, inherited defect with the mode of inheritance unknown. When

we are having our dogs screened at echo clinics, which are often called “cardio clinics”, it seems that the main concern is clearing the dog of DCM and not taking a close look at what other things may be present. In addition, not only are there variations of heart issues and the grades with which they occur, but also in the interpretation of the condition amongst cardiac specialists. I know of a bitch that has been echoed by 3 different cardiologists on 5 separate occasions and all three of them interpreted her results differently! One says she has mild DCM, another says she is equivocal and another says she is normal. Even though they don’t all seem to agree on what is “normal”, they are the best we have in evaluating the heart function and condition on our dogs.

To be sure that the results of cardiac ultrasound are interpreted correctly, results from cardiac ultrasounds not done by a cardiologist should be evaluated by a cardiologist. While there is some subjectivity in interpretation of the results, we still need to know how the various measurements and ratios relate to one another and a non-cardiologist can’t be counted upon to consider all these variables. A dog can have what appears to be a shortening fraction within the normal range for its breed, but if the numbers that produce that ratio are so out of whack from normal, they have to be taken into consideration when grading an individual. This is another situation that I know has happened to a dog I know that was evaluated at an ER by a Board Certified Radiologist. (The shortening fraction is the ratio between the measurements of the heart chamber at contraction and expansion.)

The local cardiologist told me that congenital MVD is not progressive like some heart diseases. Like other heart diseases it does have different “grades” of severity however and can be fatal in its severe form. Fortunately, my dogs that are affected with MVD, all have mild cases. It will not gradually become more serious than it is right now and will not impact the quality or longevity of the lives of these dogs. But it is still not something I want to breed. And I have no idea why some dogs that have this congenital condition have a much more severe grade of it than these puppies do. It can be severe enough to cause early, sudden death in our dogs and I have talked with another breeder who has found on necropsy that their puppies did in fact, die of *severe* MVD.

This experience has taught me more than just to not rely on auscultation results for purposes of really knowing if my dogs have any heart issues. In talking with the cardiologists and other professionals in practice, I’m learning that this condition is far more common than breeders might know. And it is not just common in our breed. Many breeds are showing very high rates of Mitral Valve Dysplasia while they are worrying about other heart diseases and abnormalities. If I had not taken that neutered dog in for a baseline, I would not know that he had it. If I didn’t find it in him, I wouldn’t have had any reason to check the others. None of the intact dogs from this breeding has MVD. Consequentially, had I only tested the dogs I planned to use, I would not have found this out until much later when it was not so easy to determine if it was congenital or age-related. I didn’t have plans to test the altered dogs that are in pet homes until they were five years old or so. It’s only by testing that neutered dog and then bringing in the other siblings from companion homes that I know what I have. And if my local cardiologist is right, that this is abnormal and not merely cosmetic, it is a pretty high ratio.

In addition, I have found this condition in two of the older dogs that I've tested. One of them has clear echoes from a year or more ago. In that case, the cardiologist said it is due to age related changes. And in age-related cases, we DO expect the condition to be progressive as the dog continues to age, but it is NOT hereditary.

Here is a picture of his Mitral Valve. This is a 7 year old dog who has had 2 previous echoes done. Note the thickening of the valve and the prolapse indicated by the arrow.

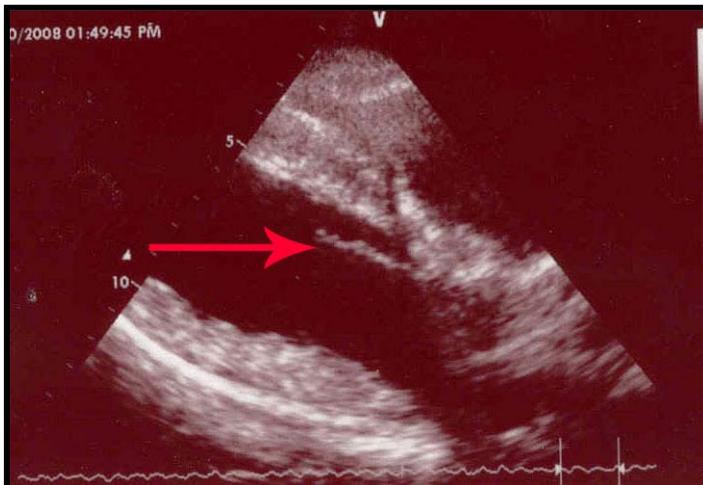


This is a degenerative, acquired condition and is not hereditary.

Since I did not do a baseline on the five year old, I don't know if it is degenerative or congenital. Since we do expect the condition related to aging to progress as the dog ages, as dogs with the congenital condition advance in age, they could have some progression of the condition

due to aging as well. After all, if a normal dog can develop MVD as a part of aging and not due to hereditary factors, certainly a dog with congenital MVD can also develop age related changes. The congenital condition is not progressive in itself, but compounded with aging, it can progress just as it can in a normal dog. I have asked my cardiologist about if and how we will ever know if older dogs are developing an age-related condition or experiencing age-related progression to a congenital condition. The answer is that we don't know. If a dog has a congenital condition and then develops a degenerative condition on top of it, we won't know if he had it from birth or if it was acquired due to age related changes. Had I done baselines on all my dogs, I would know.

To show what a normal Mitral Valve looks like, here are pictures of the mitral valve of a litter brother to this dog with the degenerative condition. Notice the uniformity of the thickness of the leaflet. Here we do not see the thickening, clubbing or prolapse seen in the previous two pictures.



Out of a total of 20 dogs tested so far this year, seven of them have mild MVD. Six of them have a congenital condition, one is due to aging and one is

an unknown since he had never had a baseline done early in life.

***From all this, I have no choice but to conclude that if I'm not doing baseline echoes on every dog I produce, I will not have any idea what I have.***

This is not an inexpensive proposition. I did 20 echoes this year. A friend of mine jokingly suggested I apply for a grant. ☺ I'm spending a lot of money, but I'm learning a lot. Can you put a price on this kind of education? I now know that I have congenital MVD, and I have approximately a 50% ratio of it in puppies produced by two NORMAL dogs! There are 2 other puppies from this breeding that I have not echoed at this point. Both these dogs are not local and would require travel expenses in addition to the cardiac checking. How much more information would I get from finding out if either of these two dogs has MVD or not? It just doesn't seem cost effective at this point. I know it is there and it will have a big influence on how I breed the non-affected siblings.

Now what about those who have puppies that died of the severe form of MVD? How often do we Dane people hear about a dog that experiences sudden death and think it must be DCM or even the generic, "cardio" COD? It's pretty common for people to make that assumption. I have to wonder how many of those dogs actually died of severe MVD. Unless people are doing necropsies on these dogs, they can only make the assumption it was DCM, but it could have been a completely different heart abnormality or something unrelated to the heart at all.

And while I'm on the subject of DCM, I have two seven year-old bitches out of a dog that echoed clear at 11 ½. I think it is a pretty safe bet that that dog did not have DCM. It has occurred to me that if either of these bitches ever develops DCM, this might disprove the x-linked theory. This could be of significant value, not only to me, but also to other breeders, researchers and scientists. I myself had a bitch develop DCM at age 11. It most likely was evident prior to that, but she had a clear echo at age five. When did it show up? Given that experience, I tested these older girls, and at this point they are clear of DCM and other heart abnormalities. I'll test them again next year. CaChing, CaChing! It will be worth it in the long run.

I was a big advocate for health testing before. This experience has given me a much greater appreciation of the benefits of health testing. Not just for my dogs, but for my own edification and the breed as a whole. It isn't perfect given the availability of the health clinics and the subjectivity of the interpretation of the results that I've heard from others and have experienced myself. Certainly improvements could be made here. What I'd like to see are some pretty radical changes in how cardiac testing is evaluated. Wouldn't it be nice to have standards for the various measurements in the heart so that one vet doesn't consider a given dog mildly affected with a condition while another considers that same dog, equivocal or normal? I'm pretty sure from DCM discussion groups that this is coming. How soon, I can't say. Wouldn't it be good to be able to get consensus on what thickening and clubbing of the mitral valve to varying degrees really means? If we don't have consistency in this, then it puts the burden on the breeder to

make an interpretation of the results. It gives the less scrupulous person an “out” on any unpleasant findings. And it puts a financial burden on those of us that want to do due diligence and are willing to get the opinions of several specialists in the field before making any interpretation and/or breeding decisions. Which brings up another point. I’d like to see low-cost echo clinics available in every region at least a couple of times a year. I’ve been trying to find one in the state of Oregon, but every heart clinic I’ve found only offers auscultation. Consequently, my dogs in that area have to be seen by a cardiologist in private practice at a cost more than double the cost of a clinic.

Along with finding out the health status of my dogs, I’m also a huge advocate of sharing information about my dogs. That’s probably obvious by now. ☺ If we can talk about these things openly and not “badmouth” this line or that line because it had <insert your favorite health issue here>, people will be much more willing to talk about their experiences openly. And that can only lead to good things! Think of the day when the tide turns and people who *aren’t* talking openly about the problems and experiences they are having in their line are the ones that are subject to “badmouthing” and “witch hunts.” If we want to see change, we have to make it happen.

In the spirit of sharing information openly, I want to let everyone know about a relatively new yahoo group dedicated to open discussion, support and engagement with the researchers and scientists that are working on identifying the genetics behind DCM in our breed. People from other breeds have joined as well. Andrea Delaplaine in Holland started this group after she lost her blue bitch, Style, to DCM. The theme of this group is “No Shame, No Blame”. I want to invite everyone to check it out!

Peace!

*Laura*



**NO SHAME, NO BLAME**

Helping Others, Helps All of Us

Help in the Fight Against Canine Dilated Cardiomyopathy (DCM)

**DCM Great Danes on Yahoo**

<http://pets.groups.yahoo.com/group/dcmgreatdanes/>

It's a Matter of the **HEART**