

# HOLISTIC HEALTH CARE FOR CAVALIERS

## Part VIII

### *Genetic Issues and Their Relation to Breeding and Therapy*

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**K**aren and I have raised numerous litters of our own dogs and consulted on many more cases for others in our veterinary practice. We decided, since the last few chapters have addressed breeding, pregnancy and puppyhood, that it would be a good time to talk about some of the genetic issues facing Cavaliers.

We wanted to stress the need to test for those problems both for breeding purposes and treatment, if detected. This chapter can help you to better understand these medical issues, in case you are unfortunate to have one in your own dog. We treat many Cavaliers with genetic medical issues, often with great results, but our fundamental belief is that preventing a problem is much better than having to treat it.

During our breeding chapters, we talked about the importance of testing the stud and the dam prior to breeding in Cavalier King Charles Spaniels. If the grandparents are available, also having negative test results for them would be ideal. This is an essential step in helping to reduce or eliminate some of the heartbreaking issues that have challenged the breed. The number one and most infamous problem is mitral valve disease (MVD) with subsequent heart compromise. A more recent and widespread genetic problem is a brain-spine disorder called syringomyelia (also known as SM).

I rank these two problems at the top of the charts, as they can have the most severe and life threatening effects on the animal. There are additional disorders included in the recommended testing regimens and these include: hip dysplasia, luxating patellas and eye problems. These issues can also be very serious but are, usually, not as life threatening as MVD or SM.

We will discuss each of these areas from a conventional and then a holistic perspective.

#### **Heart Disease - Mitral Valve Disease (MVD)**

There are so many aspects to heart disease in the Cavalier that this subject could be a book unto itself but we will try to cover the most important aspects in this chapter.

The main heart problem in the Cavalier is the mitral valve. A little bit of heart anatomy should make the problem easier to understand. The mitral valve lies between the left atrium (upper chamber) and the left ventricle (lower chamber) of the heart.

The canine heart (like the human heart) is a four chamber pump. Blood comes back from the body and fills the right atrium, travels through the tricuspid valve into the right ventricle. When the right ventricle compresses it pumps the blood through the lungs for oxygen. This blood then returns to the left atrium and fills the left ventricle through the mitral valve. Finally, the left ventricle compresses and pumps the blood out into the general circulation. The blood makes the trip through the body and returns to the right atrium.

Normal blood pressure is usually 120/80 mm Hg. This is blood pressure in mm of mercury (a way of measuring pressure that originated in 1643 with the invention of the mercury barometer) at “systole”, the peak of the left ventricle contraction and “diastole” the point of left ventricle relaxation. The blood pressure in the lungs is much lower. It is usually 20-40 mm at its peak. Essentially, we have two separate pumps and circulatory systems in our body – one high pressure circuit to circulate blood throughout the body and one low pressure circuit to circulate blood through the lungs. The main heart valves (Mitral and Tricuspid) keep these systems separate.

When the very strongly muscled left ventricle contracts, it pushes the blood out the aorta at the 120 mm pressure. During this contraction, the mitral valve between the left ventricle and left atrium must close and seal so the blood cannot flow backwards into the left atrium and the low pressure lung circuit.

If the mitral valve closes incompletely, some of that high pressure blood shoots back into the left atrium and this raises the overall blood pressure in the lungs and causes an increased hydrostatic pressure in the lung tissue. This elevated pulmonary pressure creates a strain on both the lung tissue and the right side of the heart leading to swelling of the lung tissue (pulmonary edema) and problems oxygenating the blood.

As this condition progresses and the heart weakens there are many effects. The end effect is, usually, cardiac enlargement as the heart tries to compensate. This enlargement, however, only makes the heart muscle weaker with stretching of the valve and increased leakage. As things deteriorate, we start to see congestive heart failure (CHF). If the congestion is just in the lungs, it is right sided CHF, if there is an accumulation of fluid in the abdomen (ascites or “dropsy”), it is left sided CHF and when both occur, it is bilateral CHF.

## Heart Murmurs

The initial screen or indication of this condition (MVD) is the heart murmur. Heart murmurs come in all shapes and sizes. A murmur is the result of unusual turbulence in the heart (thus creating the sound) and the severity is ranked on a scale of 1 to 6. The location where the murmur is the loudest can often indicate the type of problem present but ultrasound (echocardiography) is now the most accepted way to measure all the heart components. Auscultation (listening with the stethoscope) is still the screening method used for determining if the dog is “heart clear”.

Every Cavalier should be screened yearly if possible and a breeding animal should be screened prior to use. Since Mitral Valve Disease (MVD) can develop as the dog ages, it is highly recommended we not use dogs under the age of 3 for breeding and the best breeding stock are heart clear dogs over 5 years old.

MVD in the Cavalier King Charles Spaniel can have the full range of implications. We see dogs that develop a small murmur at a young age and slowly deteriorate over the years, we see dogs with murmurs that remain stable for a decade and, sadly, we see dogs that move quickly into the CHF stages over a period of months to a few years. There are no clear predictors of the course, initially, in the asymptomatic case.

The best initial workup includes, survey chest radiographs, an electrocardiogram and an ultrasonic exam. An ultrasound can produce the most accurate picture of the heart’s status. This includes chamber and wall measurements, contractility of the muscle (fractional shortening) and the location and severity of the leakage. When done at regular intervals, these data points can indicate how things are (or are not) progressing and allow better choices in both conventional and holistic therapy. Once the initial ultrasound is done and has been evaluated, we have a number of decisions to make.

If the dog is asymptomatic with good exercise tolerance, normal activity, no coughing and minor changes in the cardiac parameters, many cardiologists choose to wait, watch and retest in six months or a year. This is an excellent time to get the animal onto natural cardiac supportive therapy and look into homeopathic care. Since we have discussed homeopathy in previous chapters, you should understand this is the time to not just focus on the heart issues, but treat the whole dog with constitutional therapy.

Some of the supplements we find useful in our NON-MEDICATED cardiac patients include:

- Coenzyme Q10 - CoQ10
- Glandular Cardiac Support
- Herbs like Hawthorne and Cactus Grandiflora
- DMG – Dimethylglycine

These are all supplemental care – other items like taurine, L-carnitine and the proper diet are very helpful. Of course, in our view, appropriate homeopathic therapy can play an essential role.

As we mentioned in an article last year, being aware of dental health can have a significant impact on the health of the Cavalier. Many veterinarians recommend a course of antibiotics pre and post dental procedures and I find it difficult to argue

with this from a holistic standpoint.

In the case where the MVD has progressed, we usually see animals that have been started on a multitude of conventional medications and have to tailor our therapy to each individual situation. For example, Hawthorne is contraindicated in dogs being treated with Digitalis, so you NEED to consult with someone familiar with all aspects of care and not just grab things at the health food store. Pimobendin (Vetmedin) is a drug that has shown great promise in treating more severe cases and we have used it on some of our own dogs since it was first introduced in England and many more cases after its approval by the FDA. Many cardiologists still seem to feel it is a medication to use only as a last resort, when the animal is in severe failure, but we have had many cases where, starting it early, has seemed to prevent (or at least delay) the patient from reaching that critical stage.

We also use homeopathic therapy in severe cases and have brought a number back from the edge with remedies like *Laurocerasus*, *Naja* and *Lachesis*. These are remedies that should be used in conjunction with a trained homeopath, as the danger of pushing a weakened heart too hard can always have risks.

Bottom line on an MVD dog is to diagnose, monitor and, most of all, understand the range of possible options for support and treatment.

Our first Cavalier developed MVD around five years of age and passed on the day after Thanksgiving at age six and a half. We had bred her at two, three, and four years of age, so were concerned that, although she was clear at each breeding, we still had the gene in our line. Some of her puppies did exhibit MVD as they aged but her youngest, “Noelle,” was fifteen this Christmas. She had evidenced a mitral valve murmur, was treated holistically and then with Pimobendin from age eleven. We lost two of her daughters last year – one clearly to heart failure and one to other issues, although she had a murmur. One was eleven and the other twelve. Her grandchildren were all clear past age five and her great grandchildren are clear at three. Noelle finally passed on Feb. 16th from age and arthritis.

One of our prior stud dogs is now showing a murmur at age ten but was heart clear through age eight. I go into this detail because it raises the question about using an older stud with great qualities but a mild murmur developed later in life (as many non-Cavaliers do). I think the jury is still out on this but I also think it a valid question.

## Syringomyelia

This affects the brain and upper spinal cord. In simple terms, there is a malformation of the skull. This is the part of the skull that contains the cerebellum. The upper cord and cerebellum can herniate through the opening at the base of the skull (the foramen magnum). This can also create a blockage or impedance to the free flow of cerebral spinal fluid (CSF) through this opening. This additional or shifting pressure can also create cavities in the spinal cord.

There is a similar condition in humans called Chiari malformation.

There is a tremendous variation in the presentation of this



syndrome in the Cavalier. Many cases seem to have a recurrent itching on the side of the neck with no apparent cause in the skin. This can also progress to sudden pain episodes and severe cases can develop leg weakness and even paralysis.

Current conventional treatment is very limited, and aimed at reducing the pain and inflammation of the disease. Steroids, NSAID's, and neuroactive drugs like Gabapentin (Neurotin) and Lyrica have had some short term success. Lasix and other diuretics are used, as well as other drugs to slow the production of Cerebral Spinal Fluid (CSF).

Recently, there has been more focus on surgical intervention in severe cases and this, usually, involves decompression of the foramen magnum. A 2007 study found good post-operative results but a high incidence (almost 50%) recurred in the first year. The study indicated there may be a statistical relationship (a correlation but that does not always mean a cause-effect relationship) to the length of time one waits prior to surgical intervention<sup>2</sup>.

In 2010, a presentation at the ACVIM (American College of Veterinary Internal Medicine) showed some evolving surgical techniques (including decompression of a wider area) had a better result and prognosis than the 2007 study, but it had only been a few years since the study began, so data on long term results was still limited but promising. An emerging point seems to indicate that earlier intervention has the best result<sup>3</sup>.

A recent study<sup>1</sup> focused on the possible mechanisms of the pain and deficit (that it may not only be the mechanical pressure). The Cambridge study points to Substance 'P' (SP) as a potential source of pain that MAY be addressed in future conventional treatment regimens. The study only notes that SP is increased in the cases studied versus non SM dogs. It notes that this can be a side effect of the destruction and not, necessarily, the reason for the pain and deterioration.

These studies (and there are more ongoing) show that, while research is being done, the actual mechanism of pathology is far from clear. The conventional non-surgical therapy is not corrective but only palliative and the best way of dealing with SM in the Cavalier King Charles Spaniel is to avoid breeding any dog with it. Unfortunately, the only way to accurately diagnose SM is via an expensive MRI. There has been a push to make SM MRI testing mandatory. The British Cavalier Club is including MRI in their testing guidelines, whereas the American Clubs have not yet taken that step.

In our practice, we stress treatment with the appropriate homeopathic remedies to address the symptom picture. We also make use of acupuncture, chiropractic and Low Level

Light Therapy (LLLT) with a class 4B laser. There are a number of supplements available to help minimize pain and some of the neurologic effects.

### Hip Dysplasia

Hip Dysplasia is a syndrome that has haunted dogs for over fifty years. In fact, the OFA (Orthopedic Foundation of America) was founded in 1966 to help overcome this issue through selective breeding programs.

The focus was to radiograph potential breeding stock and have multiple radiologists look for the markers and degree of hip dysplasia and give a rating. Based on this rating the animal could be used in a breeding program.

Since this is a chapter on the pathology of inherited disease in the Cavalier and some of the testing and treatment regimens, I will focus on the actual mechanics of the hip dysplasia issue. I often wonder that, if this is a strictly genetic issue, why almost fifty years (in general, not specifically Cavaliers) of OFA programs has not done a better job of eliminating the issue?

It could be that not enough breeders are seriously following the standards, but I do feel that hip dysplasia is not *solely* a genetic issue. It has to do with susceptibility and conformation, but nutrition, exercise, supplements and, possibly, overuse of vaccines are all additive components of the problem.

The coxofemoral or hip joint in the dog is a typical ball-socket arrangement. The ball (femoral head) is covered with cartilage, as is the lining of the socket (the acetabulum). The ball is round with a smooth neck and the socket is smooth and deep. The ball lies nicely within that socket.

In the dog with hip dysplasia, there can be multiple abnormalities including but not limited to:

- Shallow sockets
- Partial dislocations (sub-luxation)
- Deterioration of the socket or ball
- Squaring of the head and neck of the femur
- Loss of cartilage creating bone on bone pain
- Bone spurs

A dog showing any combination of these is diagnosed as hav-



***Continued on page 24***

### References for syringomyelia:

<sup>1</sup>Distribution of substance P and calcitonin gene-related peptide in the spinal cord of Cavalier King Charles Spaniels affected by symptomatic syringomyelia

Res Vet Sci. August 2012;93(1):318-20

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<sup>2</sup>Dewey CW, Marino DJ, Bailey KS, et al: Foramen magnum decompression with cranioplasty for treatment of caudal occipital malformation syndrome in dogs. Vet Surg 2007 Vol 36 (5) pp. 406-15

<sup>3</sup>Successes & Failures in the Surgical Management of Caudal Occipital Malformation Syndrome in Dogs ACVIM 2010 Andy Shores, DVM, MS, PhD, DAVIM (Neurology) Auburn, AL, USA

ing hip dysplasia and the degree of one through six is determined by which issues are present and their severity.

An experienced veterinarian can usually look at an x-ray and give a good opinion of a dog's dysplasia status but this can be trickier in the younger dog with a mild form. There are other methods (like the Penn Hip) to help determine joint laxity and act as a predictor of whether a dog may develop degenerative joint disease of the hip.

In a clear-cut case of hip dysplasia, there are definitive radiographic indications, even in a young dog. However, it is not always so black and white. In an older dog with progressive degeneration, the evidence is much clearer. This is why the OFA uses multiple radiologists to help interpret the case. OFA has strict requirements about positioning and technique, to add consistency to the test, but it is not foolproof. Also, a dog cannot have definitive evaluation until after the age of two (which is fine because one should not breed dogs under that age anyway).

Until recently, the US Cavalier Clubs suggested checking hips to be an important part of any pre-breeding testing but now STRONGLY suggests OFA certification.

### **Knees – Luxating Patella**

The patella (kneecap) rides up and down in the patellar groove at the end of the femur. It attaches to the quadriceps muscle of the upper leg and inserts at the tibial crest below the knee. If there is a deformity, trauma, an irregularity of this insertion angle, or the ridges on one or both sides of the groove are too low, the patella slips to one side (or both) and locks the knee in extreme cases or just creates pain, instability and a limp. If the patella slips to the inside of the leg it is called a medial luxating patella and, if it slips toward the outside, a lateral luxating patella.

An experienced veterinarian can usually determine if this problem exists in the early stages by palpating the region with the knee (stifle joint) in full extension and gently trying to push the patella to one side.

Over time, if the patella keeps luxating, it can wear down one or both ridges. Since these help keep the patella in place, the luxation becomes more frequent, the ridges wear more and we get into a degenerative cycle.

There is a definite genetic component to this problem in the Cavalier and most dogs with luxating patellas should not be bred.

We treat many cases, and have good success, with intermittent luxations or trauma, especially if caught early. Holistic treatment can include: appropriate homeopathic remedies, supplements, acupuncture, chiropractic, LLT (Low Level light Therapy – i.e. therapeutic laser) and exercise. The goal is to re-



*We dedicate this chapter to Noelle, our first Cavalier to live fifteen plus years and the lessons she taught us.*

duce the inflammation in and help the ligaments and joint tighten. With severe anatomical reason for the luxation, there is a greater probability that surgical correction may be needed.

### **Eyes**

Breeding dogs need to be cleared by a veterinary ophthalmologist before breeding. There are a number of ocular disorders that preclude breeding due to their genetic component and some that are more “breeder optional”. In other words, the breeding should be discouraged but it is not, strictly forbidden by the club rules. However, we feel that any listed ocular disorder (an example is retinal folds - a form of retinal dysplasia) should be treated as a contraindication to breeding.

The main eye issues include:

- Hereditary cataracts
- Progressive retinal degeneration or atrophy (PRA)
- Corneal dystrophy
- Keratoconjunctivitis sicca (dry eye syndrome or KCS)
- Eyelid defects like entropion (a rolling in of the lids)
- Microphthalmia and retinal dysplasia

Many of these may only affect the dog to a minor degree and can be addressed through treatment or surgery but any of them preclude breeding.

### **Conclusion**

Somehow, this chapter became more of a discussion of the various genetic issues that can affect the Cavalier and their relationship to a sensible and accepted breeding program. If it seems light on the natural treatment recommendations, it is. That is because most of these issues require expertise that transcends general, cookbook therapy. It is also a chapter for those of you looking for your own Cavalier pup. Do your best to obtain one from a reputable breeder who has proof of the required and, hopefully, even the optional testing.

The holistic aspects of this conversation go deeper than just a discussion that there are therapies and regimens that can help in dogs suffering from these issues. It goes to the idea that naturally bred, raised and treated Cavaliers do tend to have fewer problems. As noted earlier, we have been breeding and raising Cavaliers for over twenty years and have seen each generation prove stronger than the one before. Is this our raw feeding? Is this our minimal use of drugs and vaccines? Is this our adherence to testing guidelines? I hope so. 🐾

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