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How Breed, Age and Gender Factor Into Congestive Heart Failure



Breed, age and to some extent, gender play a role in your analysis if heart failure is among the differential diagnoses for a dog that presents with cough or fatigue. Of the trio, breed and age are the more important considerations.

Although dogs of any age and breed may develop heart failure, a breed predilection for the development of degenerative mitral valve disease (MVD) or dilated cardiomyopathy (DCM) does exist.

Small breeds such as the Chihuahua, Miniature Schnauzer, Shih Tzu, Maltese, Toy Poodle and others are prone to developing degenerative mitral valve disease, with the Cavalier King Charles Spaniel being the breed at highest risk. MVD in small breed dogs is by far the most common cause of acquired heart disease and heart failure in veterinary patients.

As the mitral valve degenerates it begins to thicken and lose its ability to prevent backflow of blood from the left ventricle into the left atrium, eventually causing the enlargement of both the left atrium and ventricle and potentially leading to congestive heart failure.

Large and giant breeds, such as the Great Dane, Doberman Pinscher, Labrador Retriever, Irish Wolfhound and Golden Retriever, are more susceptible to developing dilated cardiomyopathy (DCM). In North America, DCM is diagnosed most frequently in

the Doberman Pinscher. Small breed dogs infrequently develop DCM with Cocker Spaniels most commonly affected.

DCM primarily affects the myocardium and is characterized by a thin ventricular wall, enlarged heart chambers and reduced pumping of the ventricular muscle. As the ventricular heart muscle deteriorates, systolic pump function decreases and intracardiac pressures increase, putting affected dogs at high risk for fatal congestive heart failure (CHF). Either side of the heart may be affected, but signs of left heart failure predominate in most patients. DCM dogs are also at increased risk for sudden death secondary to ventricular arrhythmias, which may accompany the muscle deterioration in some patients.

Boxers are prone to arrhythmogenic right ventricular cardiomyopathy (ARVC), often called boxer cardiomyopathy, which can lead to sudden death from arrhythmias. A small percentage of boxers also appear to be at risk for muscle deterioration and the development of CHF, similar to classic DCM dogs.

Certain breeds are also prone to congenital heart defects. Such defects can range in severity from clinically insignificant to extremely severe with a high risk for congestive heart failure or sudden death during the first several years of life. A puppy with a persistent heart murmur and clinical signs, such as poor growth and failure to thrive or respiratory distress, should have the heart evaluated.

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Age is an important consideration when evaluating a dog presented for clinical signs that might be associated with heart disease, as acquired diseases typically manifest signs in late middle age or beyond, while clinically significant congenital disease will often manifest signs at a very young age.

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There are many factors that will play into your evaluation of a dog that presents with cough, respiratory distress or a decrease in stamina. But as you are making the initial evaluation, breed and age could influence your differential list and additional diagnostic decisions, and help answer the often perplexing clinical question: Do I pursue heart disease or primary respiratory disease?

A 2-year-old, small breed dog with a heart murmur and the above clinical signs is more likely to have a significant congenital defect than MVD because MVD typically causes clinical signs in dogs older than 8 years of age. The course for a Cavalier King Charles Spaniel can progress more quickly, as the dog may present in CHF from MVD as early as 5 to 7 years of age. Coughing often is associated with CHF in all breeds, but small breed dogs with MVD frequently cough for other reasons, such as tracheal collapse, chronic bronchitis or main stem bronchial collapse associated with cardiomegaly. Questioning the owner carefully about the presence of dyspnea, restlessness or a decrease in stamina is important in these patients.

DCM also tends to be a disease of older dogs, but Doberman Pinschers will frequently develop signs of heart failure at 4-5 years of age, and potentially much younger. Any Doberman that presents with a soft, moist cough as one of the primary clinical signs deserves to be evaluated for the presence of congestive heart failure.

Breed can also help place congestive heart failure much lower on the differential list. Cardiologists are always getting calls about the 9-year-old West Highland White Terrier that cannot stop coughing. Westies, although a small breed, uncommonly develop significant MVD and frequently suffer from severe chronic airway disease or idiopathic pulmonary fibrosis. The lungs may auscult with prominent crackles and the patient may be coughing constantly, but the breed lets me know that CHF is lower on the differential list than with many other small breeds. If the Westie does not have a heart murmur, I can be confident in pursuing primary airway disease as the problem.

Obtaining baseline thoracic radiographs is an important diagnostic step in evaluating a dog of any age or breed with a heart murmur and clinical signs that might be associated with CHF or primary respiratory disease. Radiographs are critical in evaluating cardiac size, pulmonary blood vessels and the presence of congestion, and primary pulmonary pathology. Radiographs are also a great way to monitor the progression of MVD over time.

Age and Treatment Considerations

We frequently utter the mantra that “age isn’t a disease” but age also plays a role in treatment decisions, because older dogs tend to have co-conditions that may affect other organ function and the patient’s ability to tolerate certain treatments. The presence of hyperadrenocorticism, hypothyroidism or chronic renal disease may significantly impact a patient’s cardiovascular status or the ability to tolerate treatment for CHF. Dogs with advanced osteoarthritis are frequently on medications that may interact with common medications used in the treatment of CHF. This requires balancing treatment for heart disease along with kidney disease or some other disorder, and that can be tricky.

The presence of concurrent conditions does not mean CHF cannot be successfully treated, but it does mean that careful monitoring of a patient’s clinical and laboratory status is required. When we see these dogs at our hospital, we will usually recommend baseline lab work prior to being placed on medication, and regular monitoring to evaluate kidney function, potassium levels and other laboratory parameters, depending on the dog’s co-existing conditions.

Gender is the least important of the trio of age-breed-sex, but it may have some influence on the incidence or severity of some forms of cardiac disease. Males tend to have a slightly higher incidence of MVD and may be more severely affected, and several congenital defects have a slight gender predilection. It is important that dogs with cardiovascular disease stay in

good physical condition. Recommend that owners maintain the dog in good body weight and exercise the dog regularly. Sometimes, in a breed that is predisposed to heart failure, owners are afraid that physical activity will hurt the dog, so you may need to convince them that this is not the case. If the dog stays in good physical condition, it will help the dog's body and heart deal with the stresses that the disease places on them. Moderation and common sense are key components. Prolonged, strenuous activity will need to be avoided in dogs with advanced heart disease, as will prolonged exposure to high heat and humidity.

Recent research has led to the development of genetic testing for some forms of ARVC in Boxers. Unfortunately, we do not have genetic testing for other forms of cardiovascular disease in the dog. Until such tests become available, breeders should be advised to monitor breed lines carefully in breeds with known heart disease association and to avoid the use of individuals or lines that have been demonstrated to produce high numbers of significantly affected individuals.

You will never diagnose heart disease or heart failure on the basis of breed, sex or age alone, but with certain problems like degenerative valve disease or dilated cardiomyopathy, these factors will be important in creating a differential list and making diagnostic and treatment decisions. ■

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