Saluki Health Research, Inc.

AKC Canine Health Foundation cardiomyopathy lecture

by MaryDee Sist, DVM, Saluki Health Research, Inc.

Dr. Kathryn Meurs presented a very interesting cardiology lecture at the 2013 AKC Canine Health Foundation Conference. Following is the abstract.

The term cardiomyopathy simply means heart muscle disease. There are many types of cardiomyopathy and two (Arrhythmogenic, Dilated) are quite common in dogs and only valvular heart disease is more common.

Arrhythmogenic Right Ventricular Cardiomyopathy (ARVC) is very common in Boxers and sometimes English Bulldogs. It is characterized by heart muscle that generally functions well but has an abnormal appearance under the microscope. Additionally, it has a very abnormal electrical system. Symptoms can include fainting or sudden death.

Dilated cardiomyopathy is more common in large breed dogs, including Doberman Pinschers, Great Danes, Irish Wolfhounds and Scottish Deerhounds, among others. It is characterized by a dilated, poorly-functional heart and sometime disruption of the electrical system. Symptoms can include fainting, but also coughing and shortness of breath. Although the term dilated cardiomyopathy is used for all of those breeds, the disease is quite different from one breed to another. For instance, in the Dobe the disease is inherited in a dominant fashion and, at least in some families, is associated with a mutation in the mitochondrial gene - PDK4. In the Great Dane the disease appears to the carried on the X chromosome. In the Irish Wolfhound the disease appears to be dominant, but no known mutation has been identified.

In Boxers, Dr. Meurs found a genetic deletion in a gene that produces striatin, a key binding protein that helps hold together cardiac cells that puts them "at risk" for developing cardiomyopathy. She developed a commercial DNA test for this. She says, "The striatin-deletion mutation may not be the only mutation that causes ARVC in the Boxer. In samples of ARVC-affected Boxers from the United Kingdom, only 71 percent had the deletion mutation; 29 percent did not. The findings show that the DNA test may not predict ARVC in all Boxer populations. We believe in Boxers that ARVC has an autosomal dominant mode of inheritance with variable penetrance. Some individuals with the mutation never develop the disease."

She stated that since various breeds of dogs can have their own "type" of cardiomyopathy, they will not have the same clinical course. In Boxers, the diagnosis is made on finding a cardiac rhythm disturbance on an ECG rather than finding a greatly enlarged heart on a radiograph or ultrasound exam, like in a Doberman with DCM. The response to medication varies and the prognosis is different. Whereas Dobes generally progress to congestive heart failure within six months, Boxers can live without symptoms for a longer time, but eventually develop signs of an arrhythmia, such as a rapid heart rate or fainting episode.

I continue to be contacted by owners whose Salukis have been diagnosed with Dilated Cardiomyopathy (DCM) by finding a large heart on a radiograph or ultrasound exam with decreased contractility. Even though the dogs do not have symptoms of heart failure, they are given a poor prognosis since Doberman Pinschers with DCM rapidly deteriorate from occult to clinical signs of heart failure, generally within months. I question if these enlarged hearts are secondary to valvular insufficiency or part of a different cardiomyopathy, unique to Salukis, as Dr. Meurs feels is probable.

It is difficult to differentiate Dilated Cardiomyopathy from primary valvular disease early on since, as the heart enlarges, there is leakage across the valves. That is why we had to re-examine the Salukis in our study. We found that we could only distinguish between primary cardiomyopathy and secondary by microscopically looking at the heart muscle after death. We found a low incidence of cardiomyopathy and a high incidence of mitral valve disease, but also a fair incidence of non-hemangiosarcoma rupture-induced sudden death, which could have been due to a cardiomyopathy, more like the Boxer ARVC.

We continue to bank Saluki DNA for future studies, which will hopefully provide insight to the heritable nature of Saluki cardiac disease.