

Arrhythmogenic Right Ventricular Cardiomyopathy

Arrhythmogenic Right Ventricular Cardiomyopathy (ARVC), also called Boxer Cardiomyopathy, is a disease of the lower chamber of the heart called the ventricle. The right ventricle is primarily affected in most cases, but it can sometimes affect both ventricles.

In ARVC, the normal heart muscle tissue is replaced by fibrous or fatty tissue. This disturbs the electrical conduction system of the heart, usually resulting in a ventricular premature contraction (VPC). A ventricular premature contraction occurs when an abnormal electrical impulse originates from within the ventricle. These abnormal impulses cause the ventricles to contract prematurely, before the chamber is full of blood, and can lead to a decrease of blood flow to the body. VPCs can occur intermittently as a single beat, come in clusters of two beats, three beats or (in severe cases) can be continuous causing a life-threatening arrhythmia called ventricular tachycardia (VT).

In some cases, the progressive infiltration of abnormal tissue in the heart muscle can result in the muscle to become weak and enlarged, with decreased blood flow to the body. This condition is called dilated cardiomyopathy (DCM). When the ventricle is unable to pump blood efficiently the pressure within the heart increases and backs up into the lungs (left sided disease) or body (right sided disease) causing fluid to leak from the blood vessels. This fluid can accumulate in the chest cavity (pleural effusion), in the lungs (pulmonary edema) and/or in the abdomen (ascites). The accumulation of fluid means the pet is in Congestive Heart Failure (CHF) and requires immediate medical attention.

Symptoms

Collapsing with exercise or excitement is the most common symptom of ARVC, and is called syncope. Some dogs will appear weak or wobbly, others may collapse but still be conscious, and some will collapse and be unconscious. Most dogs will appear to be completely recovered almost immediately after the episode. Other symptoms can include pale gums, labored breathing, coughing, distended abdomen, lethargy and/or decreased appetite.

Diagnosis

The best method for diagnosis is a 24 hour Holter monitor. This is a device that records an ECG for 24 to 48 hours. The small device has leads that are attached to electrodes and placed on the dog's chest. The monitor records the ECG while the dog goes about their daily routine at home. This recording will help the cardiologist determine how severe the arrhythmia is and which antiarrhythmic medication(s) should be started. A recheck Holter monitor may be recommended a few weeks after starting antiarrhythmic medications to ensure adequate control of the arrhythmia. Annual Holter monitor screening is recommended for ALL Boxers three years of age and older. This can help identify ARVC prior to the onset of symptoms.

An ultrasound of the heart (echocardiogram) should also be performed to assess the structure and function of the heart. Serial echocardiograms may be needed if cardiac disease is detected and in order determine when to start and how to adjust medications to help treat and slow down the progression of cardiac disease.

Another diagnostic option is a test that looks for a genetic mutation thought to lead to ARVC. This test is typically recommended for dogs that are going to be used for breeding. No genetic test is 100% accurate in diagnosing ARVC in dogs, and therefore all genetic testing should be used in conjunction with the diagnostics discussed above.

Treatment

Although there is no cure for ARVC, medical management with antiarrhythmic therapy can reduce symptoms and increase survival time. Managing and controlling arrhythmias can be a bit frustrating because they require close monitoring. Each pet has different needs and will require medical management tailored to their condition. ARVC is a progressive disease, and therefore serial recheck Holters, ECGs and echocardiograms will be required to help the cardiologist properly manage disease progression and cardiac arrhythmias.