

## Arrhythmogenic Right Ventricular Cardiomyopathy (ARVC) “Boxer Cardiomyopathy”



Your dog has been diagnosed with Arrhythmogenic Right Ventricular Cardiomyopathy (ARVC), also known as “Boxer Cardiomyopathy”.

### **What is ARVC?**

Arrhythmogenic right ventricular cardiomyopathy (ARVC) is a genetic (inherited) cardiomyopathy (abnormality of the heart) that is typically detected in middle aged to older Boxer dogs. This disease is characterized by replacement of the right ventricular (right pumping chamber) muscle with fat and sometimes fibrous tissue. This fibro-fatty replacement can cause ventricular arrhythmias (abnormal heart rhythm coming from the pumping chambers). Ventricular tachycardia (excessively fast heart rate), a severe type of ventricular arrhythmia, can cause lethargy, collapse (typically associated with excitement or exercise) and in very severe cases, sudden death.

Some dogs with ARVC can also develop Dilated Cardiomyopathy (DCM), a more severe form of ARVC. DCM is a condition whereby the heart muscle becomes weak and dilated. In severe cases, this can result in congestive heart failure.

### **How do you test for ARVC?**

*Electrocardiogram (ECG) and Holter Monitoring:* The best way to test and screen for ARVC is with a 24 hour Holter monitor. A Holter monitor is an ambulatory ECG monitor that is put on in hospital. Your pet then wears the monitor at home for 24 hours, and the heart rhythm is recorded. The recording is then reviewed for evidence of ventricular arrhythmia and other rhythm abnormalities. If a significant arrhythmia is detected, medications may be started based on the severity and type of arrhythmia. The Holter monitor is then typically repeated after medications are initiated to monitor response to therapy.

*Echocardiogram:* Since some dogs with ARVC can develop Dilated Cardiomyopathy, an echocardiogram may also be recommended, especially if your pet has a heart murmur. The echocardiogram (heart ultrasound) is the best way to evaluate heart structure and function. Some of the anti-arrhythmic medications can affect heart function, which is another reason that it is important to perform an echocardiogram prior to starting these medications.

*Genetic Testing:* ARVC is an inherited disease, meaning that parents pass the disease to their offspring through a genetic mutation. However, the severity of disease is very variable from dog to dog, even when they have the same mutation. There is a test, available through NC State, for one of the mutations that cause ARVC (striatin mutation). Dogs that are positive for the test will not necessarily develop significant heart disease. Some dogs will develop a very mild form of the disease and may not even require treatment. Dogs with two copies of the mutation (homozygous mutation) are more likely to develop to develop more significant disease. Typically, genetic testing is not recommended for household pets, and is most commonly used as part of screening tests for breeders.

### **What is the treatment for ARVC?**

Most treatments are based on Holter monitor assessments. The primary goal of treating ARVC is to control ventricular arrhythmias and prevent collapse episodes. Unfortunately, it is not possible to completely prevent the risk of sudden death in dogs with very severe disease. The most commonly used medications are Sotalol and Mexilitine. In some cases, additional medications may be used.

### **Monitoring and At Home Care.**

Once your dog's cardiologist determines that the disease is well controlled, repeat Holters are typically recommended at least every 6 months. An echocardiogram may also be recommended periodically.

It is important to remember that your pet is at greatest risk of having an episode during extreme exercise. In dogs with severe disease, it is recommended to limit highly strenuous activities. If your pet develops collapse or fainting episodes with exercise, contact us immediately, as this is a sign that your pet may be having worsening arrhythmias.

Thankfully, most dogs with ARVC feel completely normal as long as their arrhythmias are well controlled. We will work closely with you and your family veterinarian to ensure that your dog gets the best care possible.