

## **Ventricular Arrhythmias**

A normal heartbeat starts with an electrical impulse originating within sinoatrial (SA) node located in the right atrium (upper chamber of the heart). This impulse causes contraction of both atria which pushes blood to the ventricles (larger lower chambers of the heart). The electrical impulse then reaches the atrioventricular (AV) node signaling both ventricles to contract pushing blood to the lungs and body.

A ventricular premature contraction (VPC) occurs when an abnormal electrical impulse originates within the ventricle. The 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 or three beats or, in more severe cases, can be continuous causing a life threatening arrhythmia called ventricular tachycardia (VT).

VPCs and VT can be caused by one or more disease processes including cardiac disease, abnormal serum levels of calcium or potassium, splenic or gastrointestinal diseases. Ventricular arrhythmias can lead to hypotension, destruction of cardiac muscle tissue and sudden death.

### **Symptoms**

Symptoms include weakness, lethargy, collapsing, fainting, pale gums, seizures and shock.

### **Diagnoses**

An electrocardiogram (ECG) records the electrical impulses within the heart. Once an arrhythmia has been diagnosed, a cardiac ultrasound (echocardiogram or echo) may be indicated. An echo will allow the cardiologist to assess the structure and function of the heart. This will determine if the VPCs are being caused by underlying cardiac disease. If the heart structure and function appear normal, the VPCs could be an early indicator of Arrhythmogenic Right Ventricular Cardiomyopathy (ARVC) or Dilated Cardiomyopathy (DCM). If ARVC or DCM are suspected a Holter monitor may be indicated. A holter monitor is a mobile ECG device that will record the pet's ECG for a 24 to 48-hour period. This will help determine the severity of the arrhythmia and what treatment options are best. If ARVC or DCM is not suspected, an abdominal ultrasound may be indicated to rule out a systemic disease process.

## **Treatment**

Treatment of cardiac arrhythmias can be frustrating. Treatment will depend on the severity of the arrhythmia and the disease process involved. Serial Holter monitors and ECGs may be required to get the arrhythmia controlled. Once the arrhythmia is controlled routine rechecks will be required to ensure the medication(s) are continuing to control the arrhythmia. In severe cases of ventricular arrhythmias, hospitalization and intravenous antiarrhythmic therapy may be required to get the arrhythmia under control. Once the arrhythmia is controlled oral medications can be started.