



## **FELINE CARDIOMYOPATHY**

### **How does the heart work?**

The heart is the organ responsible for maintaining the circulation of blood within the body. It is a four-chambered organ containing right and left atria (upper chambers) and ventricles (lower chambers). The right side pumps deoxygenated blood returning from the body into the lungs. From the lungs, oxygenated blood enters the left side of the heart where it is pumped out into the tissues of the body through the arteries.

### **What is feline cardiomyopathy?**

Cardiomyopathy is a general term meaning “disease of the heart muscle” - the myocardium. In broad terms, cardiomyopathies are brought about by a structural abnormality in one or more of the four chambers of the heart, most commonly the left ventricle. The heart muscle grows too thick, it scars and becomes stiff, or it weakens. In each case, the heart’s ability to pump blood is impaired. Feline cardiomyopathies are primary diseases - those whose origins are either genetic or unknown. The heart can also thicken as a secondary disease; for example, due to hyperthyroidism or high blood pressure.

There are three types of primary cardiomyopathy in cats as discussed below: hypertrophic, restrictive, and dilated. Cardiomyopathies primarily affect adult cats and although all cats are susceptible, a genetic predisposition for the disease has been shown in Maine Coons, Ragdolls, and in some American shorthair cats.

### **Hypertrophic Cardiomyopathy (HCM)**

Hypertrophic Cardiomyopathy (HCM) is the most prevalent feline cardiac disease. It is a primary disorder of the heart muscle characterized by thickening of the left ventricle. This thickening causes the heart to not be able to relax normally when filling with blood. Over time this can lead to elevated pressures within the heart and ultimately congestive heart failure (fluid accumulation). Some cats with HCM will also have an obstruction to blood flow that is associated with the thickened muscle wall that can cause a heart murmur. Other cats may have only the thickened muscle wall and no appreciable murmur.

A confirmed diagnosis of HCM requires an echocardiogram (ultrasound of the heart) demonstrating a thickened, left ventricle with no identifiable underlying cause for the observed changes.

### **Restrictive Cardiomyopathy (RCM)**

Restrictive cardiomyopathy is caused by excessive buildup of scar tissue (fibrosis) on the inner lining of the ventricle. This prevents the ventricle from adequately relaxing, filling, and emptying with each heart beat. The clinical signs are similar to HCM and a confirmed diagnosis also requires an echocardiogram.

### **Dilated Cardiomyopathy (DCM)**

Dilated cardiomyopathy is rarely seen in cats today. Historically, it was linked to a dietary deficiency in taurine, which has been corrected by most cat food manufacturers. DCM is characterized by a poorly contracting dilated left ventricle and oftentimes enlarged atria. Cats with DCM usually progress to congestive heart failure.

### **Potential Outcomes**

Although there is variable progression with feline cardiomyopathy with many cats remaining asymptomatic for years, many will progress to developing clinical signs associated with their disease at some point.

A common outcome with cardiomyopathy is congestive heart failure (CHF; fluid accumulation). The most common location for fluid accumulation in cats is within the lungs (pulmonary edema) or around the lungs (pleural effusion). This results in difficulty breathing and is a medical emergency.

Cats with significant heart disease are predisposed to the formation of blood clots. If a clot forms within the heart and enters the circulation, small pieces may lodge within the arteries. The most common location for this to happen is within the terminal aorta, causing an occlusion of flow to the hind legs. This process is accompanied by severe pain, lameness and/or paralysis of one or both hind legs.

### **What are the goals of treatment?**

Currently, there is no cure cardiomyopathy in cats and no drugs have been shown to slow the progression. In a small subset of cats with a rapid heart rate or significant obstruction to blood flow within the heart, a drug called a beta blocker may be prescribed prior to development of clinical signs, in order to slow the heart rate and decrease the workload on the heart. A beta blocker should not be prescribed prior to an echocardiogram. In most other cases, treatment is not initiated until the development of CHF, and is aimed at alleviating fluid accumulation, improving heart function, suppressing arrhythmias, and reducing the risk of blood clot formation. Please see the brochure on Understanding Canine and Feline Congestive Heart Failure for more information on treatment.

### **What should I monitor at home?**

Breathing rate: In an effort to catch CHF early, is important to become familiar with your cat's normal resting breathing rate and effort at home. When your cat is at rest, watch his/her sides rise and fall as he/she breathes normally. One rise and fall cycle is equal to one breath. Count the number of breaths he/she takes in 6 seconds, then multiply this number by 10 to get total breaths per minute. For example, if you count 3 breaths in 6 seconds, that is equal to 30 (3x10) breaths per minute. A normal cat at rest should have a respiratory rate less than 40. If you notice this number increasing consistently, or notice an increase in the effort it takes to breathe, please contact a

veterinarian. It may be helpful to keep a daily log of your pet's breathing rate so that you will notice increases or changes from normal breathing.

Use of limbs: Cats with heart disease are at a higher risk for forming blood clots. The most common way this manifests is through loss of use of one or more limbs, most commonly the hind legs. Monitor your cat for any dragging or inability to use the limbs.

General: Monitor for any lethargy, collapse, exercise intolerance, coughing or decreased appetite. Contact a veterinarian if you notice any of these changes.

Thank you for visiting the cardiology service at the Ryan Veterinary Hospital. If you have any further questions, please do not hesitate to contact us