Feline Hypertrophic Cardiomyopathy

Introduction

Hypertrophic Cardiomyopathy (HCM) is the most common form of heart disease in cats that results in thickening of the heart muscle, specifically the main pumping chamber of the heart (left ventricle). This thickening (called hypertrophy) can impair the relaxation of the heart and cause secondary enlargement of the top chamber on the left side of the heart (left atrium). This can lead to congestive heart failure, clot formation and even sudden death in severely affected cats. HCM has been shown to be caused by a genetic mutation in Maine coon and Ragdoll cats, and a genetic basis is suspected in other breeds and mixed breed cats. Middle aged to older cats are typically affected, however, the disease may develop at a young age in some cats.

What are the symptoms of HCM?

Many cats with HCM have no symptoms and appear clinically healthy. These cats may have a heart murmur or abnormal heart, which prompts a cardiac evaluation; however, some cats with heart disease have a normal sounding heart.

Cats with advanced disease may have clinical signs (symptoms) due to congestive heart failure or thromboembolic disease (clot formation). Congestive heart failure refers to a build up of fluid (usually in or around the lungs) that occurs in addition to the heart not functioning well. Congestive heart failure symptoms include difficulty breathing or rapid breathing along with nonspecific signs such as lethargy and loss of appetite. Some cats will pant or open-mouth breathe, which is a clear sign of distress. Thromboembolic disease symptoms include sudden lameness or paralysis with pain.

How is HCM diagnosed?

A precise diagnosis of HCM is a process of careful elimination. Echocardiography (ultrasound of the heart) is the most important test for the diagnosis of HCM in cats. Echocardiography allows visualization of the inside of the heart in real time, so that heart chambers and walls can be measured. Left ventricular heart walls that are thicker than 6mm are indicative of HCM; however, high blood pressure and high thyroid concentrations should be eliminated as other possible causes of thickening of the heart walls. Therefore, blood pressure measurement and blood thyroid concentration are often part of diagnostic testing for cats suspected of having HCM.

Other tests are sometimes necessary to help evaluate a cat with heart disease. If a cat has rapid or difficult breathing, chest radiographs (X-rays) will be necessary to determine if congestive heart failure is present. An electrocardiogram (EKG, ECG) is used to evaluate the heart rhythm if an arrhythmia is suspected. Other blood tests such as BNP, troponin and genetic tests are sometimes used to further investigate heart disease in cats.

Is treatment available for cats with HCM?

Mild HCM

The benefit of treatment for cats in the asymptomatic, mild phase of HCM has not been well studied. Depending on the specific echocardiographic changes (particularly the presence or absence of left ventricular obstruction), other health conditions, the temperament of the cat and cost factors, treatment in this early phase may be initiated. However, close monitoring without specific treatment is also an option for some cats in this phase. Medical treatment at this stage mainly consists of medications called beta blockers or calcium channel blockers.

Advanced HCM

If a cat has more advanced changes such as left atrial enlargement, then anti-thrombotic treatment (e.g. low dose aspirin or Plavix) will probably be recommended to reduce the risk of clot formation, even if the cat does not have obvious signs of heart disease.
Treatment of cats with more advanced congestive heart failure involves the use of diuretics, anti-thrombotic medications (such as low dose aspirin and/or clopidogrel) and sometimes ACE-inhibitor medications (such as enalapril or benazepril). Some cats with congestive heart failure may need to have fluid removed manually from the chest cavity (thoracocentesis) if buildup occurs around the lungs (called pleural effusion). Other cats develop congestive heart failure fluid in the lung tissue (pulmonary edema) and, depending on the severity, may need to be hospitalized for initial treatment.

Treatment of cats with thromboembolic disease involves supportive therapy initially (e.g. pain control, anti-clotting medications, physical therapy) to help them through this crisis. Some cats will regain function of the affected limb(s) while other ones will not and may succumb to this complication of their heart disease. Medications such as low dose aspirin, clopidogrel, and heparin are used to help reduce the risk of future thromboembolic events.

What is the prognosis for a cat with HCM?

HCM is typically a slowly progressive disease over years; however, occasionally cats may show rapid progression over months. If no significant progression is noted several months after the initial diagnosis, cats with mild HCM are usually rechecked annually for progression or development of complications. Although cats with mild disease will need to be monitored, not all cats will experience complications from their disease.

The prognosis for cats with advanced disease that have experienced congestive heart failure or thromboembolism is highly variable, with some cats succumbing to their disease within days to weeks and some cats responding well to medications to live for more than a year or two. The average survival time for a cat with congestive heart failure is 12-18 months and the average survival time for a cat with thromboembolism is about 6 months. It is important to remember that these are average survival times based on large groups of cats. While these times can provide information on what to reasonably expect, they do not necessarily suggest an individual cat's survival time.

What rechecks and monitoring are recommended for cats with HCM?

After an initial diagnosis of mild HCM, cats should have their echocardiogram rechecked within 3-6 months to assess progression of the disease. If no changes are noted, either bi-annual or annual echocardiographic evaluation is recommended.

Cats with advanced HCM that have experienced congestive heart failure or thromboembolism require close monitoring by the owner and veterinarian to ensure optimal management of their disease. This will typically involve a recheck evaluation of bloodwork, blood pressure and possibly chest X-rays within a week of starting medications, and then approximately every 3 months thereafter. At home monitoring is critical to detecting problems that would prompt re-evaluation between rechecks. In addition to monitoring for labored breathing, lameness, lethargy and loss of appetite, daily assessment of resting breathing rate can be extremely helpful for the early detection of congestive heart failure recurrence. Breathing rate should be measured at rest or during sleep (making certain that the cat is not purring) by counting the number of breaths over 30 seconds and multiplying by 2 to obtain a per-minute rate. Normal breathing rate is less than 36 per minute. A rate that is consistently higher than this or a significant change from baseline for an individual cat should prompt re-evaluation by a veterinarian.

NOTE: Cardalis is an app available for smartphones that can assist with breathing rate measurement and tracking.

Should cats that are related to a cat with HCM be evaluated?

Because HCM is inherited in many purebred cats and presumed inherited in mixed breed cats, all cats related to an affected cat should be screened for the disease with echocardiography regardless of whether or not they have a heart murmur.