

Hypertrophic Cardiomyopathy in Cats

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BASIC INFORMATION

Description

Hypertrophic cardiomyopathy (HCM) is a heart disease caused by thickening of the walls of the left ventricle, which decreases the space available for the blood. Blood accumulates in the left atrium, causing it to dilate. Eventually blood accumulates in the lungs, left ventricular filling diminishes, and left-sided heart failure occurs.

Retained blood in the left atrium may form clots that can break off and travel to other areas of the body. Outflow of blood from the left ventricle can also be obstructed (obstructive HCM), which makes it harder to pump blood to the rest of the body.

Causes

The cause of HCM is unknown (idiopathic) in many cases. It is a genetic disease in the Maine coon cat, American shorthair, and ragdoll breeds. HCM may also be genetic in the Norwegian forest cat, Turkish van, Scottish fold, British shorthair, and Devon Rex.

HCM can also occur secondary to hyperthyroidism, hypertension (high blood pressure), or aortic stenosis (a congenital heart defect). Males develop HCM more often than females.

Clinical Signs

HCM is commonly detected before heart failure develops, because 80% of affected cats have heart murmurs that are heard on a routine physical examination. An abnormal heart rhythm (arrhythmia) or an extra heart sound (gallop rhythm) may also be heard. HCM comes in all different degrees of severity. Milder forms may progress and worsen, or may stay static for years.

Early signs, such as lethargy and exercise intolerance, are often missed. The first signs noticed may be increased breathing rate (faster than 50 times per minute) and effort of breathing. If a clot lodges in a blood vessel to a front leg or to the rear legs, the affected legs will be paralyzed, with cold, blue foot pads. At the onset, this condition is also very painful.

Diagnostic Tests

Tests that may be recommended after a heart murmur is detected include chest x-rays, an echocardiogram (heart ultrasound), blood pressure measurements, and thyroid hormone levels (in cats older than 5 years of age). Other laboratory tests to check the kidneys and other organs may be done in cats with heart failure and blood clots. If an arrhythmia is present, an electrocardiogram (ECG) is indicated.

Blood tests can be performed for the gene that causes HCM in Maine coon cats and ragdolls.

TREATMENT AND FOLLOW-UP

Treatment Options

No drug is known to prevent the progression of HCM, so asymptomatic cats may not be treated unless they have significant outflow obstruction or significant ventricular hypertrophy, enlargement of the atrium, and faster than normal heart rates. These cats may be treated with atenolol or diltiazem. Asymptomatic cats with HCM secondary to hypertension or hyperthyroidism may need no medication for their HCM if the primary disease is successfully treated.

Cats in heart failure often require hospitalization for stabilization with oxygen therapy, injectable diuretics (furosemide), and nitroglycerin ointment treatment. If a significant amount of fluid is present in the chest, it may be manually removed. Once heart failure is stabilized, the cat is often switched to oral furosemide and either atenolol (a beta-blocker) or diltiazem (a calcium channel blocker). These latter drugs keep the heart rate low so that the left side of the heart has adequate time to fill.

If the left atrium is enlarged, medications may be started to prevent blood clots from forming. Baby aspirin has been used for many years, and clopidogrel (*Plavix*) may also be beneficial.

An angiotensin-converting enzyme (ACE) inhibitor, such as enalapril, benazepril, or ramipril, may also be recommended to reduce the amount of fluid retained by the body, especially in animals with left heart failure.

Follow-up Care

Cats with asymptomatic HCM and no left atrial enlargement are usually rechecked initially every 4-6 months (with repeated echocardiograms), then annually if they remain stable. Mildly affected cats on therapy may be rechecked more often, depending on the medication used. Cats with left heart failure are rechecked frequently, with chest x-rays and laboratory tests, with the frequency determined by the cat's response to therapy.

Cats with secondary HCM often have echocardiograms repeated 4-6 months after treatment of their underlying problem to ensure that the HCM is regressing. Cats with murmurs and normal echocardiograms may be monitored with yearly echocardiograms.

Prognosis

Cats with left heart failure may survive 1 year or longer if response to initial therapy is good. Cats with advanced HCM usually die from heart and kidney failure. Cats with thrombosis have a very poor prognosis. Asymptomatic cats may survive for years if their disease remains stable.