

Heart Disease – Cardiomyopathy in Cats

What is cardiomyopathy?

Cardiomyopathy is a term used to describe diseases of the heart muscle. In cats, three classes of cardiomyopathy have been described: *hypertrophic*, *dilated*, and *intermediate or restrictive* cardiomyopathy. In all classes, the heart disease usually results in clinical signs of heart failure. Cardiomyopathy may be seen as a primary condition or secondary to other diseases.

What are the clinical signs seen with cardiomyopathy?

"Often cats will alter their activity levels to those that they can cope with, which make it difficult to diagnose cardiomyopathy until it is quite advanced."

In the early stages of disease, the cat may not show any signs of disease. This is referred to as *compensated heart disease*. Often cats will alter their activity levels to those that they can cope with, which make it difficult to diagnose cardiomyopathy until it is quite advanced. In the long term, cats with any type of cardiomyopathy are at an increased risk of developing congestive heart failure, thromboembolic disease, and hypertension.

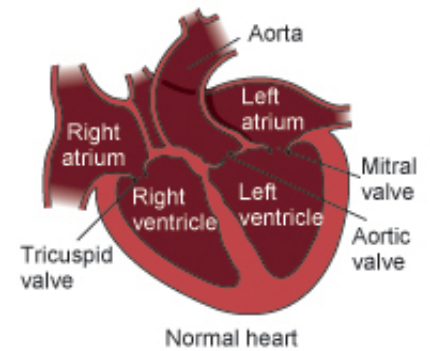
Development of congestive heart failure – Breathlessness and lethargy are the most frequently noticed signs of congestive heart failure and result from failure of the heart to pump blood efficiently.

Thromboembolic disease – Altered flow of blood in the enlarged heart chambers increases the risk of blood clot formation within the heart called a *thrombus*. If parts of the thrombus become dislodged, they can travel in the bloodstream and block smaller blood vessels. These travelling blood clots are called *emboli* and the most common place for them to lodge is at the bottom of the aorta, which is the largest artery in the body. This results in obstruction of the blood supply to the back legs, which is very painful and leads to paralysis. This blockage is commonly referred to as a *saddle thrombus or saddle thrombosis*. Although some cats may recover with appropriate treatment, this is a potentially fatal complication of any cardiomyopathy.

Hypertension – High blood pressure or hypertension is a possible complication seen in many cases of hypertrophic cardiomyopathy. This may result in spontaneous bleeding, such as nosebleeds or hemorrhage within the eye; it is a common cause of retinal detachment and sudden blindness in cats. This may be noticed as a sudden loss of vision and widely dilated pupils. The blindness will be permanent unless the retina is reattached within a couple of days, and requires immediate emergency treatment. Drugs that lower the blood pressure may be used to treat cats with this problem. Measuring blood pressure in cats is challenging due to their small size; in addition, blood pressure rises with stress, which makes interpretation of results difficult. In many cats, hypertension is detected only after a problem has occurred. Examination of the eyes may give early indications of hypertension since the blood vessels of the retina may show changes and small hemorrhages may be seen. For further information about hypertension, see our handout "Hypertension".

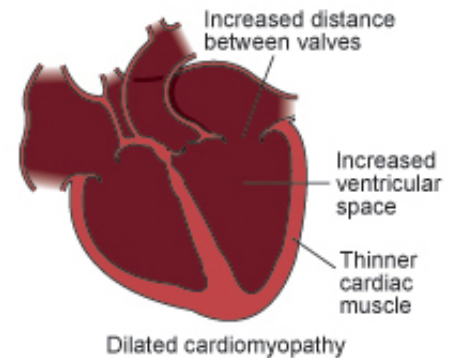
How is cardiomyopathy diagnosed?

Diagnosis of heart disease can be suspected based on clinical signs, chest x-rays, and electrocardiography (ECG). The specific diagnosis of the type of cardiomyopathy is made with a cardiac ultrasound or echocardiography.



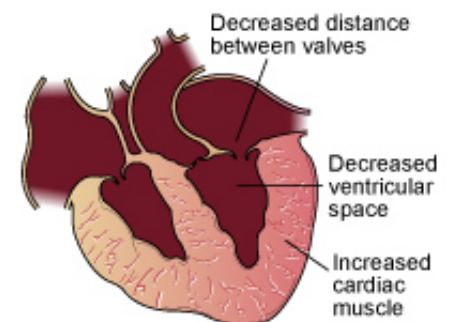
Normal heart

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Dilated cardiomyopathy

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Hypertrophic cardiomyopathy

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In cases where hypertension is a possibility, blood pressure can be evaluated if suitable equipment is available. Retinal examination may provide evidence of hypertension where blood pressure measurements cannot be made.

Other tests, especially blood tests, may be done in order to check that the cardiomyopathy is not secondary to some other disease.

What causes cardiomyopathy?

Some cases of cardiomyopathy, especially restrictive cardiomyopathy, appear to be congenital. In older cats, *hyperthyroidism* commonly causes hypertrophic cardiomyopathy. *Kidney failure* may cause hypertension and cardiomyopathy. A previously common cause of dilated cardiomyopathy that is now rare is a dietary *deficiency of taurine*, which is an essential amino acid for the cat. Commercial cat food is supplemented with taurine, and this disease is only seen in cats that are fed imbalanced home-prepared diets or dog food.

How is cardiomyopathy treated?

"Hyperthyroidism is the most treatable cause of cardiomyopathy since complete resolution of the heart disease is possible if diagnosed and treated early."

In cases where an underlying cause of the heart disease is found, then treatment of this condition may result in improvement or reversal of the heart disease. Hyperthyroidism is the most treatable cause of cardiomyopathy since complete resolution of the heart disease is possible if diagnosed and treated early. In cases where no cause is identified, called *idiopathic cardiomyopathy*, and in cases where the heart disease persists following treatment of the underlying cause then medication may be needed.

Treatment varies according to each case but may include:

1. **Diuretics** if congestive heart failure is present.
2. **Beta-blockers** to reduce the heart rate if it is excessive.
3. **Calcium channel-blockers** to help the heart muscle relax and hence help more effective filling of the heart.
4. **Aspirin** may be used for its effects at reducing the risk of thrombus formation and thromboembolic disease. Dosing of aspirin should always be as advised by a veterinarian since aspirin may be toxic to cats. Aspirin poisoning, which occurs if the dose or frequency of aspirin administration is too high, may cause vomiting and internal bleeding. If your cat shows these signs, stops eating or appears sick, aspirin therapy should be stopped and you should consult your veterinarian immediately.
5. **Angiotensin Converting Enzyme (ACE) inhibitors** – these drugs also help to control congestive heart failure.
6. **Drugs to lower blood pressure** – additional medications may be needed to treat hypertension.

What is the prognosis?

"Cats with idiopathic cardiomyopathy may remain stable for several years."

The long-term prognosis for a cat with cardiomyopathy is extremely variable, depending on the cause of this disease. Cats with idiopathic cardiomyopathy may remain stable for several years.

Does a cat with cardiomyopathy need a special diet?

Cats with underlying kidney disease should be fed a special kidney diet to manage this disease. Depending on the clinical signs, your veterinarian may recommend a special heart diet instead of the kidney diet. Low sodium diets are often recommended for cats with idiopathic cardiomyopathy. This may decrease the risk of developing congestive heart failure and hypertension. Cat

treats are often quite salty and should be avoided. Your veterinarian will make specific dietary recommendations, based on your pet's condition.

Ernest Ward, DVM

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