

**Cardiomyopathy, Dilated cardiomyopathy, Restrictive cardiomyopathy,
Hypertrophic cardiomyopathy**
Heart disease, Heart muscle failure

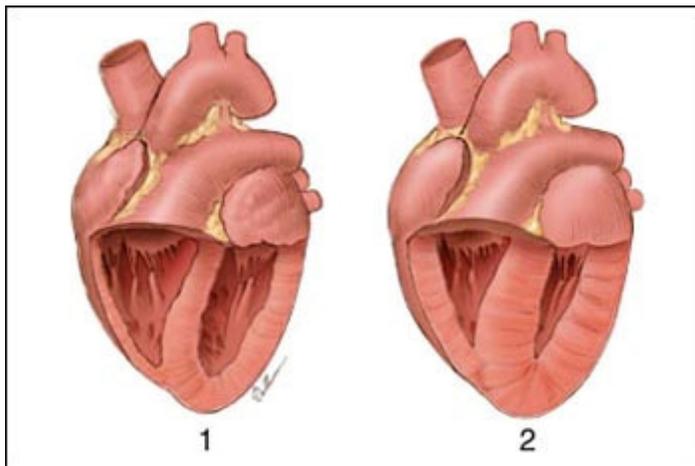
Affected Animals:

Cats.

Overview:

Cardiomyopathy is a term that is used to describe diseases of the heart muscle. There are many types of heart disease, but cats generally develop three different forms of heart muscle disease: dilated cardiomyopathy, restrictive cardiomyopathy, and hypertrophic cardiomyopathy. Each of these conditions is different, but ultimately they cause problems because the heart becomes unable to pump an adequate volume of blood to supply the demands of the body.

Just like humans, cats can have heart disease for a long time before developing heart failure. A severe, life-threatening condition, heart failure occurs when the heart is no longer able to pump enough blood to supply the tissues with the oxygen they require. The right side, left side, or both sides of the heart can fail, causing a number of complications.



1. Normal feline heart
2. Feline hypertrophic cardiomyopathy

One of the most severe forms of heart failure occurs when the lungs fill with fluid, a condition called pulmonary edema. This complication occurs because the left side of the heart is not pumping blood effectively. Excessive pressure builds up behind the pump, and fluid leaks into the air spaces in the lungs. Thus, the cat effectively is drowning in its own fluids, which inhibits the exchange of oxygen between the lungs and the blood. The result is that the cells of the body do not receive enough oxygen and begin to die. If uncorrected, pulmonary edema leads to multiple organ failure and death.

Another complication of heart disease in cats is the development of a blood clot, clinically known as aortic thromboembolism, which usually forms in the heart and travels through the blood stream. Most commonly, the clot lodges at the branch of the aorta that feeds the back legs, shutting down blood flow and causing partial or complete paralysis. This condition is excruciatingly painful and requires immediate medical attention. Cats experiencing an aortic thromboembolism will be unable to move their back legs and may vocalize due to the pain. Aortic thromboembolism usually indicates significant heart disease; two thirds of cats that develop this condition will die or be put to death humanely. In cats that survive aortic thromboembolism, recurrence is common.

Symptoms:

Common symptoms include rapid breathing, panting from activities that are not normally stressful, difficulty breathing, coughing, loss of appetite, vomiting, weight loss and listlessness. Some cats may be paralyzed in their hind limbs due to a blood clot that forms in the heart and lodges at the branch of the blood stream that supplies the back legs. Some cats can have fainting spells or may die suddenly. Often, a heart murmur, abnormal heart rhythms, or abnormal lung sounds may be detected when the veterinarian listens to the cat's chest with a stethoscope. The cat may have experienced recent stresses such as anesthesia, surgery, boarding, or car rides that caused it to develop heart failure.

Description:

There are three general types of heart muscle disease that affect cats, all of which greatly compromise the cat's health because they result in the heart being unable to pump blood properly. Each of these diseases is serious, but affected cats often can be managed for long periods with appropriate medication. Also, with early detection and the initiation of preventive health strategies, a veterinarian can greatly improve the cat's quality of life.

One form of feline heart muscle disease, called dilated cardiomyopathy, occurs when the heart chambers become big and dilated, like a "flabby balloon." With dilation, the heart muscle is often weakened dramatically so that it cannot contract with the normal amount of force. This disease was very common before it was recognized that the majority of cases were due to a dietary deficiency of the amino acid taurine. Since commercial diets now adequately are supplemented with taurine, this disease is uncommon.

Hypertrophic cardiomyopathy, the most common form of feline heart muscle disease, occurs when the lower left chamber of the heart, called the left ventricle, thickens and stiffens, while the top left chamber, the left atrium, enlarges. This thickened left ventricle does not leave much room in the chamber to fill with blood. Thus, smaller than normal amounts of blood are pumped out of the heart with each contraction.

Additionally, this thickening of the heart muscle increases the heart's own consumption of oxygen, which is needed to supply the additional muscle present. If these oxygen demands are not met, then cell death occurs and leads to areas of scarring in the heart muscle.

A third form of heart disease is called restrictive cardiomyopathy. It also has been called intermediate cardiomyopathy because it has characteristics of both dilated and hypertrophic cardiomyopathy. With this form of the illness, the walls of the cat's heart develop fibrosis, which is the replacement of normal heart tissue with scar tissue that does not function as well. This scarring makes the heart stiff and less effective as a pump.

Occasionally, cats with heart disease will develop a condition that leads to complete or partial paralysis of their back legs. With rapid attention, this condition sometimes can be treated, but more often than not, affected cats will die or be put to death humanely.

Diagnosis:

After the veterinarian performs a thorough history and physical exam, he or she will listen to the heart and lungs with a stethoscope. Next, the cat's heart rate will be assessed, and certain blood tests may be given to determine the presence of any underlying diseases or medical conditions.

Chest x-rays will reveal changes in the heart size and abnormalities such as fluid in the lungs, which would result from heart failure. The best way for the veterinarian to evaluate the type of heart disease present is by performing an ultrasound of the heart. This test is optimal because it is noninvasive and can distinguish between the different types of heart disease. A heart ultrasound, clinically known as an echocardiogram, can be performed by a veterinary cardiologist, veterinary radiologist, or others with special training in conducting this procedure.

Prognosis:

The cat's life span and quality of life depend on the type and severity of heart disease that is present. With dilated cardiomyopathy, cats that respond to taurine administration and survive the first few weeks of therapy have a good prognosis.

Cats experiencing heart failure generally have a worse long-term prognosis than cats whose disease is identified before symptoms become severe.

Many cats on appropriate medications live for years with well-controlled heart disease. By identifying the specific type of disease and instituting appropriate medical therapy, the veterinarian can help affected cats live longer and have a better quality of life than cats that are left untreated.

Cause:

Heart disease is suspected to have a hereditary component. Burmese, Siamese, and Abyssinian breeds have been shown to be at risk for dilated cardiomyopathy. In the past, cats that did not get enough of the amino acid taurine in their diet often developed this form of heart disease. Until this taurine deficiency was recognized as a major problem in commercial cat diets, dilated cardiomyopathy was a very common disease. Since then, commercial diets have added taurine, making dilated cardiomyopathy rare in cats.

Hypertrophic cardiomyopathy has no known causes. Heart problems that have similarities to hypertrophic cardiomyopathy can be caused by diseases such as hyperthyroidism, hypertension, and subaortic stenosis.

There is no known cause of restrictive cardiomyopathy, although inflammatory heart conditions may be a possible source. Also, there is speculation that this condition may occur in some cats with hypertrophic cardiomyopathy that have had recurrent episodes of myocardial infarction, which leads to areas of dead heart muscle and scar tissue.

Treatment:

The treatment of heart disease in cats is often complex. Only taurine-responsive dilated cardiomyopathy is potentially curable. The other diseases are controlled with medications and diet and activity modification.

Cats that are severely affected, or in heart failure, need oxygen therapy. Because stress can aggravate heart conditions, cats experiencing serious symptoms should be confined to a cage and prevented from participating in all forms of activity. Once the cat is stabilized, however, it is best for the veterinarian to determine which specific type of heart disease is present so that appropriate treatment can be initiated. Generally, treatments vary according to the form of heart disease.

A number of medications are prescribed to cats with heart disease. In the case of dilated cardiomyopathy, taurine may be administered. If the disease is taurine responsive, and the cat survives the initial weeks of treatment, the animal usually can be weaned off of its heart medications within a few months.

If there is fluid in the lungs because the heart is not able to pump effectively, a diuretic will be prescribed to help clear the lungs. Additional drugs are available to relax the cat, regulate heart rate, and influence the force and speed of heart muscle contraction. The type of therapy often depends on several complicated factors. In many cases, a veterinarian will recommend referral to a veterinary cardiologist for more precise diagnostics and to help in developing the initial treatment plan.

Cats that develop a blood clot and have become paralyzed in the hind legs due to heart disease will need medications to treat the heart disease, to control pain, to improve blood flow to the back legs, and to reduce the risk of further blood clot formation. In rare instances, surgery is recommended to remove the clot, but this has a high risk of death.

Some institutions are investigating drug therapies to dissolve clots. There are very specific time windows when these drugs can be used. In addition, the therapy is often very costly and the overall success rate is unknown. Older studies with these therapies indicated a high death rate; however, newer trials are underway at various universities and research institutions.

Prevention:

Breeders should avoid breeding cats that have heart disease or heart defects. Feeding a good quality cat food ensures the appropriate level of the amino acid taurine to prevent nutritionally-dependant dilated cardiomyopathy. In general, most cat foods are well supplemented with the amino acid taurine, but cats that are fed homemade diets or who do not eat cat food may need additional supplementation. Cats with heart disease should not be placed in stressful situations, since stress increases the workload of the heart. This increase may “push them over the edge” and lead to serious complications, including heart failure.