

Feline Cardiomyopathy

Heart Disease (Cardiomyopathy) in Cats

What is cardiomyopathy?

Cardiomyopathy literally means disease of the heart muscle (cardio= heart; myo= muscle; pathy= disease). It is a common cause of heart failure in cats. There are 5 types of heart disease depending on how it affects the heart muscle:

1. **Hypertrophic cardiomyopathy (HCM):** This is the most common form of heart disease and occurs when the muscle of the left heart grows too thick (hypertrophy). The thick muscle restricts the heart from filling with blood due to the smaller chamber size and reduced relaxation of the muscle. In the obstructive version there is an obstruction of blood flow out the heart. These changes can cause some valves to leak. This leak can be heard as a murmur. Males seem to be more commonly affected.
2. **Dilated cardiomyopathy (DCM):** In this form, the muscle is thin, and the heart is enlarged (dilated). The heart becomes weaker and cannot pump blood around the body effectively. This form is rare today due to the addition of an essential amino acid, Taurine, into cat's diets.
3. **Restrictive cardiomyopathy (RCM):** This form occurs when the muscle tissue is replaced by fibrous scar tissue, making the muscle stiff and inelastic. This restricts the chambers from filling effectively between each beat. This is usually the most severe form of heart disease.
4. **Unclassified cardiomyopathy (UCM):** This term is used when there is a mixture of types seen.
5. **Arrhythmogenic right ventricular cardiomyopathy (ARVC):** This type affects the right side of the heart and can lead to right-sided heart failure and arrhythmias

What causes heart disease?

Primary causes:

- Hereditary causes have been recognised in Maine Coon, Persians, Ragdolls, Norwegian Forest, British Short hairs and Sphynx breeds.
- Genetic causes with a known gene mutation have been identified in Maine Coon, American Shorthair and Ragdolls
- Unknown cause, often with multiple factors present can affect any breed, including Moggies.
- Secondary causes can have an indirect effect on the heart muscle.
- Hyperthyroidism (overactive thyroid gland) usually develops in cats over 7 years of age
- High blood pressure (often with other diseases such as kidney disease)
- Excess growth hormone (Acromegaly)- usually in older cats
- Diet- deficiency in Taurine, an amino acid, which is found in meat. Cats need a daily amount of this amino acid for the heart to function and therefore cats should not be fed an all vegetarian diet.
- Exposure to toxins or certain drugs can damage the muscle

- Infiltration of cancer cells within the muscle (lymphoma)
- Infections leading to inflammation in heart muscle (myocarditis)
- Immune mediated causes where immune system attacks the heart muscle leading to inflammation
- Birth defects

What are the signs of heart disease?

Cats are very good at hiding heart disease. It is not uncommon that your vet will detect a problem without your cat having any visible signs, usually at their yearly booster. In these cases, your vet may hear an abnormal rhythm, an extra heart sound (gallop) or a murmur. However, many cats will have murmurs without any evidence of heart disease, and therefore it is important to investigate all persistent murmurs. Severity of heart disease can vary between cats. With very mild forms your cat can lead a normal life with no clinical signs. However, some will progress on to develop signs of congestive heart failure. Heart failure develops when the heart can no longer pump blood effectively around the body resulting in excess fluid building up in the chest or abdominal cavity or within the lungs. When this occurs, your cat will have an increased breathing rate and effort and may appear distressed or have a distended belly. Breathing difficulties requires immediate treatment.

Arrhythmias (abnormal beats) are also common with heart disease. This may make your cat lethargic or they may collapse / faint with exercise. In very rare cases, your cat may develop a fatal arrhythmia and pass away suddenly without warning.

Blood clots can also form in a diseased heart which can pass into circulation. The site where the clot get stuck, will determine the clinical signs. Commonly, the clot ends in the main artery supplying the back legs, which causes the cat to become paralysed in the back legs. This is a painful condition and your cat may appear to have been in an "accident" and will cry and become very distressed. This is a medical emergency.

What tests do you need to diagnose heart disease?

After an initial clinical examination your vet may recommend some further diagnostic tests. In some cases, your vet may wish to refer you to a specialist centre to have the heart assessed. Referral centres have more advanced equipment and expertise to help diagnose your pet's heart condition. Most of the tests are done without the need to sedate your pet.

1. Blood and urine tests will check your cat's general health status and will be used to monitor treatment. More specific blood tests can be run to check hormone levels, heart muscle enzymes and for infections.
2. Blood pressure will determine how effective the heart is working or if there is high blood pressure
3. ECG (Electrocardiogram) is a test used to assess if the heart is beating normally and to identify any arrhythmias. In some cases, a continuous Holter ECG recording can be used to look for intermittent arrhythmias over 24 hrs.
4. Heart scan (echocardiography): This is the best test available to diagnose your pet's heart condition. The scan will determine the wall thickness, chamber size and force of contraction. It will also identify where the murmur is originating from. Follow up scans will help look for any progression in the heart disease and

help the vet determine the best treatment options. If your cat has difficulty in breathing, ultrasound can also be used to rapidly assess for heart failure without stressing your cat.

5. X-rays of the chest: This test is usually done with sedation. X-rays will assess for any build-up of fluid in the lungs or chest cavity and can be used to identify the presence of other lung disease, especially if your cat is coughing.

What treatment will my cat need?

Many cats will remain symptom free for a long time. Currently there is no medication which prevents the progression of heart disease before the onset of heart failure. If heart failure occurs, diuretics (water tablets) can be used to reduce the amount of fluid in the lungs and cavities. Some medications are available to reduce the salt and water retention, which commonly occurs in heart failure. Where there is a large amount of fluid in the chest, your vet may need to

drain the fluid with a needle and syringe through a process called thoracocentesis. Sedation may be needed for this procedure. Anti-coagulants can be prescribed to reduce the risks of blood clots. Some medications can be used to improve the heart contractions, whilst others can be given to slow the heartbeat and improve relaxation. Anti-arrhythmic can be given to regulate any abnormal rhythm disturbances. Few preparations are licenced for use in cats; however, we can use medications licenced for dogs or humans instead. Your vet will ask you to sign a special "off- label" form for these medications.

What do I need to do when my cat has heart disease?

It is important to monitor your cat's sleeping respiratory rate and effort. The normal respiratory rate for a cat will be under 30 breaths per minute. Keep a chart of the rates and speak to your vet if you see an increased trend in rate or effort. You will also need to bring your cat in for regular monitoring of the heart condition. The frequency of rechecks will depend on the severity of the disease and clinical signs. If your pet is on medication, please ensure you do not run out of these medications. You can order the medication a few days in advance at your vet. Cats can be very difficult to medicate. Some medications are available in a liquid form but most of them are in tablet form. Please discuss any problem you may have with medicating your cat with your vet.

What should I do if I intend to breed my cat?

Do not breed cats with heart disease as the disease may be inherited. Breed screening tests are available for some breeds and must be done by an approved heart specialist. Breeding cats should have a yearly heart scan done to monitor for signs of heart disease during their breeding years. A genetic blood test is also available for Maine Coon and Ragdoll cats which can identify common genetic mutations known in HCM. A negative result does not guarantee that your pet will not develop HCM as there are other causes.