

## Heart Disease in Cats

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Heart diseases in cats is often related to a diseased heart muscle called cardiomyopathy. Most of these are primary disorders although some can be secondary to diseases like hyperthyroidism or hypertension (high blood pressure). There are 3 forms of cardiomyopathy in cats: dilated (DCM), restrictive or intermediate (RCM), and hypertrophic (HCM). Recently, our overzealous academicians have been attempting to rename RCM left ventricular endocardial fibrosis or LVEF, which more accurately describes the pathology taking place in the heart muscles. One has to wonder, why with such nice acronyms as RCM and DCM would they change it to LVEF? Probably just to irk those of us out here who spend our time actually PRACTICING medicine! (I'm still p'od about changing F.U.S. to F.L.U.T.D.).

Before we discuss the different forms of cardiomyopathy we'll review some of the more common features, including clinical signs and diagnostic tests. Since cats are reclusive by nature often the symptoms of cardiovascular disease are vague (as are those of other diseases in cats). Many cat owners report that the cats were fine one day and had difficulty breathing the next. In addition many cats become lethargic, dehydrated, and stop eating. Some cats may show partial or full paralysis of the rear limbs as a result of a saddle thrombus (a blood clot from the heart that lodges in the iliac arteries supplying blood to the rear limbs). Physical examination can reveal a heart murmur or it may be absent; your doctor can usually detect fluid buildup in the chest cavity or lungs as well.

To help determine the cause and types of disease your doctor will order some or all for the following tests: complete blood cell counts, blood chemistries including electrolytes, urinalysis, chest and/or abdominal radiographs (xrays), and an electrocardiogram. A thyroid test and heartworm tests are now considered part of the standard workup for cats with cardiac disease. An echocardiogram (ultrasound evaluation of the heart) is the definitive test to assess function and chamber size in the heart; it is also the only true way to distinguish between the 3 forms of cardiomyopathy. Most general practitioners do not possess either the equipment or the skill for this test so you may be referred to a specialty practice or a mobile sonographer may be called in. In lieu of this test and based on results of other exams your doctor will probably start treatment while waiting for an echocardiogram.

On to the different cardiomyopathies. Dilated cardiomyopathy occurs less frequently than HCM. In DCM the heart muscles become very thin and the chambers inside the heart become larger; what results is an inefficient pump. DCM was found in the late 1980's to be related to low levels of the amino acid taurine in the diet. Slowly but surely cat food producers responded and now almost all commercial preparations have been supplemented with taurine. As a result DCM is not seen to often. In 1993, Lawler, Templeton, and

Monti suggested in the Journal of Internal Veterinary Medicine that there was a genetic, inherited involvement in cats with DCM. Treatment is aimed at relieving pulmonary congestion with diuretics. Other drugs called positive inotropes (digoxin, dopamine, dobutamine) which help the heart muscle contract stronger may be needed. In addition, drugs that lower blood pressure like captopril and enalapril are proving beneficial.

Hypertrophic cardiomyopathy (HCM) is distinctly different from DCM. In HCM the walls of the heart become thicker and the effective chamber where blood fills becomes smaller. The result is similar, an ineffective heart pump. HCM is the most common form in cats; young and middle aged cats are most often affected but it can strike a cat of any age. Persian and Maine Coon cats may have a hereditary predisposition. Clinical signs are slightly different. For one, many more cats with HCM throw thrombi (blood clots); one study suggested up to 50% of cats will throw a clot. In addition, signs are more related to failure of the left ventricle than they are to failure of both right and left ventricles (DCM); your veterinarian may be able to distinguish between HCM and DCM based on these findings. Treatment is similar to DCM in that alleviating fluid buildup in and around the lungs is critical. However, there are a number of differences in treating as well, first we don't use positive inotropes like we do in DCM; second, we are using and having success with beta-blockers and calcium channel blockers which are not used in DCM. Third, we have thrombotic disease to worry about, your doctor may prescribe aspirin or even low doses of warfarin for this.

Restrictive or Intermediate cardiomyopathy (RCM or LVEF for you scientifically correct out there) is just what it says it is: a combination of both DCM and HCM. The diseased heart has features of both HCM and DCM. We do not know the cause, some researchers suggest it is a form of HCM that has not fully developed. Most cats are middle aged to older cats. Clinical signs are similar to other forms of heart disease, although a gallop rhythm is a common feature (this is an arrhythmia that sounds like hoofbeats in your cats chest). Treatment is more similar to HCM than it is to DCM.

Regardless of what form of heart disease your cat has it is a serious condition. The prognosis is not great for cats with severely afflicted hearts who are in heart failure; a study in 1992 by Atkins et al. showed these cats to have a median survival of about 3 months. However, about 20% of these cats did do well for prolonged periods. Cats that have no clinical signs and only a mildly diseased heart can live disease free for long periods of time.

Finally a silver lining!