

Dilated Cardiomyopathy

ABOUT THE DIAGNOSIS

CAUSE: In dogs and cats, as in people, the heart is an organ made of muscle cells. When the heart contracts, it pumps oxygenated blood to the body and at the same time it sends “used” unoxygenated blood to the lungs to pick up oxygen.

Dilated cardiomyopathy is a reduced ability of the heart to contract, which leads to decreased pumping of blood throughout the body. The problem is an inherent weakness of the heart muscle tissue, which occurs as a result of genetics (usually) or nutritional deficiencies (rarely). With dilated cardiomyopathy, the circulation is disrupted in such a way that a thin, watery fluid in the bloodstream called plasma weeps through the walls of the body's veins and accumulates in the lung tissue (pulmonary edema) or leaks into body cavities such as the abdomen (ascites) and chest cavity (pleural effusion). Dilated cardiomyopathy is often a serious, life-threatening disease, but it has many degrees of severity. Some patients diagnosed early respond well to treatment and live comfortably for months or sometimes years, whereas in other, more serious cases, dilated cardiomyopathy is the cause of death within days or weeks. The way to determine the severity of the case is to perform a series of cardiac tests (see below), and even then, the ability to predict life span is never exact.

This disease is rarely diagnosed in cats or small-breed dogs; however, it is a common cause of heart disease in large and giant breed dogs, and usually occurs more in those that are middle- to older-aged and much less so in dogs under 4 years old. The cause is often unknown but is thought to be genetic in some breeds, especially Doberman pinschers, Irish wolfhounds, boxers, and Great Danes. Unfortunately, dilated cardiomyopathy may be present without symptoms (see [Signs to Watch For](#)) and may deteriorate quickly once symptoms occur. The onset of symptoms can be sudden and severe.

DIAGNOSIS: The symptoms of dilated cardiomyopathy often include one or more of the following: labored breathing/respiratory distress, fits of coughing, lethargy and sluggishness, loss of appetite, and possibly collapse and loss of consciousness. Symptoms are often subtle at first and/or not specific; that is, they can look like symptoms of other, entirely different diseases, or may easily escape notice altogether. Therefore, your veterinarian will begin by performing a thorough physical exam and taking a complete history from you, including asking questions about the nature and duration of symptoms you observed, any current medications, previous medical problems, and so on. Chest x-rays are necessary; they show the size of the heart, may show fluid accumulation in the lungs or chest cavity if present, and can help to identify the presence or absence of other reasons for breathing problems such as increased respiratory effort or coughing. An electrocardiogram (EKG/ECG) depicts the pattern of electrical activity in the heart and is important in dilated cardiomyopathy because the heartbeat is sometimes severely erratic, requiring specific types of medications, as a result of this disease. Blood tests, including a complete blood count (CBC) and serum chemistry profile, and a urinalysis can help to determine if other organs are affected and to pinpoint risk factors that would influence the choice of medications for treatment. The confirmatory test for dilated cardiomyopathy is an echocardiogram, commonly called a cardiac ultrasound or sonogram of the heart. It is an ultrasound exam like ultrasound for pregnancy in a person, and is performed awake on a dog or cat. An

echocardiogram shows the internal structure of the heart including the function of the different heart chambers, thickness of the walls, condition of the heart valves, and direction and speed of blood flow, all of which are important points in assessing patients suspected of having (or known to have) dilated cardiomyopathy. These procedures may be best performed by a board-certified veterinary cardiologist, and your veterinarian may discuss the possibility of a referral to one of these specialists (directory: www.acvim.org in North America, www.ecvim-ca.org in Europe).

LIVING WITH THE DIAGNOSIS

Dilated cardiomyopathy is rarely reversible, and individuals that have it usually have it for life. A rare exception is taurine deficiency, which is a lack of whole-body stores of the amino acid taurine. Taurine deficiency can be the cause of the problem when dilated cardiomyopathy is detected in a dog whose breed is not typical for dilated cardiomyopathy as a purely genetic problem. Retrievers and spaniels are examples of breeds that are recognized to have taurine deficiency as a more common cause of dilated cardiomyopathy. It is important to identify taurine deficiency with a blood test because confirmation of a deficiency means that adding taurine to the food can help stabilize or even reverse the dilated cardiomyopathy process. If taurine deficiency is suspected, your veterinarian can send a sample of your pet's blood to a laboratory to check the taurine level, which will either confirm or rule out taurine deficiency.

Dilated cardiomyopathy is usually suspected at one of three stages: asymptomatic, when a chest radiograph (X-ray) or electrocardiogram (EKG) is performed for another reason and an abnormality is the tip-off that dilated cardiomyopathy is present; mild symptomatic, when symptoms prompt a visit to the veterinarian and treatment is sent home with you and your pet; and severe symptomatic, when symptoms are serious enough that an urgent veterinary visit is required and hospitalization is necessary for a day or more to have the medications begin to work while maintaining your pet under close supervision.

Dogs that respond well to treatment for dilated cardiomyopathy can feel well and be normal in every way except stamina/endurance; once dilated cardiomyopathy is present, intense physical activity puts strain on the heart and should be moderated or eliminated according to the disease's severity. Dogs that do not respond well to treatment may feel lethargic or sluggish, may lose their appetite, and may have a recurrence of symptoms despite ongoing medications. In this situation, a dog's quality of life at home can deteriorate so severely that euthanasia (humanely putting to death) becomes the right choice. Dogs have variable, individual degrees of response to medication, and even a dog with severe dilated cardiomyopathy may respond strongly to medication and feel dramatically better, or not respond well at all and have symptoms that only continue to worsen. Therefore, the only way to know whether the response to treatment will be good is to begin it and monitor progress.

Dilated cardiomyopathy can be life-threatening even with treatment, and it is possible for dogs with this heart disease to collapse and not recover: the heart stops. While this cannot be predicted, it is important to realize that no pain is expected with dilated cardiomyopathy, and that with proper treatment, every opportunity is given for the heart muscle tissue to function as well as it can for as long as it can.

Regarding appetite, the most important factor is to make sure food intake takes place. Dilated cardiomyopathy can reduce a dog's desire to eat very significantly, and a mixture of dog food and balanced, home-cooked food may be necessary to preserve the appetite. Be sure to check with your veterinarian regarding what to feed (a balanced mix of proteins, starches, and fats) and what to avoid (onions, garlic, grapes, raisins, chocolate, and other ingredients that can be poisonous in the dog).

A dog who has dilated cardiomyopathy and who is taking daily diuretic medication such as furosemide can benefit from eating a low-salt diet. These can be commercially bought at your veterinary hospital. Above all, the appetite must remain good, so a gradual transition from regular food to the low-salt diet over several days is recommended. Most commercial dog treats are very high in salt, and you should switch to different treats such as baby carrots to keep away from salt, which neutralizes the effect of diuretic medication.

TREATMENT

Treatment depends on the stage of the disease and your pet's overall health. If symptoms are severe, your dog may be hospitalized while medications and oxygen supplementation are given. If congestive heart failure or severe cardiac arrhythmias are present, your dog may need a sedative to reduce the high levels of adrenaline that can further damage the heart. Stress and anxiety can make breathing more difficult. In these more serious cases with severe respiratory distress (very labored breathing), the tests described above may be withheld and treatment begun only once your dog is more comfortable.

The cornerstones of treatment for dilated cardiomyopathy are specific medications. Diuretics like furosemide remove fluid that has accumulated in the abdomen or lungs and can cause your dog to drink more water and urinate more. An angiotensin-converting enzyme inhibitor (ACEI) helps to relax blood vessels to allow more efficient blood flow from the heart and ease the workload on the heart. Medications like digitalis (digoxin) help when certain heart rhythm abnormalities (cardiac arrhythmias, like atrial fibrillation) are present, and should only be given when the appetite is good, when the demeanor and energy level are good, and digestion is normal (no vomiting or diarrhea). Pimobendan is a medication that increases the strength of contractility of the heart muscle tissue and is appropriate with severe cases of dilated cardiomyopathy. In some cases where fluid has accumulated around the lungs and is compressing or collapsing the lungs, a needle may need to be used for withdrawing the fluid from the chest cavity and allowing the lungs to re-expand. Not all of these medications may be necessary, and others are available. The treatment is tailored to the patient's exact situation and therefore is almost never the same from one case to another.

DOs

- Go to your veterinarian or the local emergency clinic immediately if your dog develops breathing problems or loses consciousness.
- Inform your veterinarian if your dog has ever been diagnosed with a medical condition and is taking medication, because these may interact with medications used for treating dilated cardiomyopathy.
- Give medication exactly as directed by your veterinarian and if you are concerned about possible negative effects, discuss them with your veterinarian immediately rather than simply discontinuing the treatment.

- Realize that dilated cardiomyopathy is often an irreversible disease that is of genetic origin and that medications can make patients with dilated cardiomyopathy comfortable, happy, and active, but they should not be athletic.
- Realize also that many individual dogs do not understand the limitations of their heart condition and may wish to be more active than they should be given their heart's compromised state. Finding the right balance between cardiac risk (from physical activity) and enough activity to bring a dog satisfaction and happiness should be discussed with your veterinarian.

DON'Ts

- Do not postpone visiting your veterinarian if you observe any symptoms of dilated cardiomyopathy. Prompt diagnosis and treatment may improve your dog's quality of life.
- Do not give medication that you have at home that has been prescribed for human use; some of these may interfere with treatment and cause even more severe problems.
- Do not assume that your dog with dilated cardiomyopathy knows when to withhold his/her physical exertion level.

WHEN TO CALL YOUR VETERINARIAN

- If you cannot keep a scheduled appointment.
- If you are unable to give medication as directed.
- If you are concerned about a recurrence of symptoms.

SIGNS TO WATCH FOR

- As indicators of illness that could be the first sign of dilated cardiomyopathy: watch for weakness, lethargy, coughing, exercise intolerance, or collapse/fainting.
- As signs of intolerance to medication or onset of another unrelated problem: watch for general signs of illness, which include vomiting, diarrhea, changes in appetite and weight, and changes in behavior such as hiding more than usual and aggressiveness.

ROUTINE FOLLOW-UP

- Because this is a genetically-programmed disease that worsens to varying degrees over time, follow-up appointments are necessary to monitor progress, to determine if treatment should be adjusted, and to assess the impact of the heart problem on the rest of the body.

Other information that may be useful: "How-To" Client Education Sheets:

- How to Count Respirations and Monitor Respiratory Effort

Practice Stamp or Name & Address