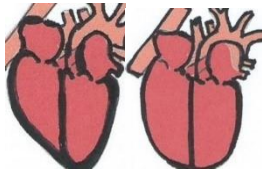


Dilated Cardiomyopathy



Dilated Cardiomyopathy (DCM) is the second most common disease affecting the heart in dogs. It is a disease that affects the heart muscle (cardio= heart and myo= muscle and pathy= disease) resulting in dilation of the chambers and thinning/weakening of the heart muscle on either the left, right or all 4 chambers. It usually affects medium to large or giant breed dogs and some spaniels. Typically, the age of onset is between 4-10 years of age and male dogs are more commonly affected. Cats fed on an all-inclusive vegetarian diet can be affected due to low blood taurine levels (an essential amino acid found in meat).

What are the causes and effects of dilated cardiomyopathy?

Certain breeds, including the Boxer, Doberman Pinschers, Irish Wolfhounds, Great Danes and Cocker Spaniels are prone to developing primary DCM which is thought to be hereditary or when a gene mutation occurs which alters the muscle structure. Secondary causes can damage the muscle. These include low thyroid hormones; myocarditis (inflammation of heart muscle) due to viral infections/parasites, toxins and trauma; dietary deficiencies of taurine, L-Carnitine (essential amino acids only found in meat protein); and some chemotherapy drugs. Once the muscle is diseased, the walls will become thin and contractions will weaken. Cardiac output (amount blood pumped with each beat) will drop resulting in lower blood pressure. Initially, the body tries to adapt to the lower blood pressure by increasing the volume of circulating blood, by retaining water and salt, and the heart rate goes up. The heart in turn will adapt to the increased volume of blood by increasing in size (dilate). This dilation can stretch the valves in the heart leading to a leak between the leaflets. This backflow causes turbulence which is heard as a low intensity murmur. The cycle of dilation and fluid retention will eventually lead to excess fluid build-up in veins and lungs resulting in signs of congestive heart failure. In some cases, the diseased muscle will be more excitable, leading to irregular heartbeats.

What are the signs of heart failure?

In the early stages of the disease, the animal will not show any outward signs of disease. This is known as occult or pre-clinical DCM and can last for some time. As the disease progresses, the heart will no longer be able to adapt to the changes and clinical signs of heart failure will develop. You may notice your pet will not exercise as well as before and becomes lethargic or weaker. As fluid starts to build up in the lungs your pet may become breathless and will breathe more rapidly and with more effort, and may also cough. They are not likely to eat well and may drink more than usual. Weight loss and reduced muscle mass (cardiac cachexia) can also occur in the end stages. If arrhythmias (irregular heart beat) are present, your pet may have episodes of weakness or even collapse (fainting). This may be the only sign you see in some breeds such as the Doberman and Boxers. Sadly, some arrhythmias can cause sudden cardiac arrest (heart

attack) without any warning, leading to sudden cardiac death. If they develop right side heart failure, the abdomen may distend with fluid.

How do you diagnose dilated cardiomyopathy?

Your vet may first hear an arrhythmia, murmur or a gallop when they listen to your pet's heart at routine vaccinations. Others cases may develop clinical signs. It is important to investigate these changes as soon as possible. It is best to refer your pet to a cardiologist to make the diagnosis. The best test available to check the dog for DCM is a heart scan. This is a non-invasive ultrasound test which looks at the size of the heart and assesses the muscle function and wall thickness. It can also identify any leaking valves. X-rays of the chest will help to identify dogs in heart failure. A resting ECG is an electrical trace of the heart rhythm and is used to detect any irregular heartbeats. A Holter monitor records the heartbeat and rhythm of the heart over 24 hrs and is used in cases to try determining causes of collapse, response to medication and for breed screening in certain breeds known for arrhythmias.

In all cases, routine bloods will be performed to assess kidney function, liver changes and electrolytes (salts) and, in some cases, parasite and viral tests can be performed. Troponin-I is a cardiac muscle enzyme found in blood which is released when the heart muscle is damaged. This can be run when an infection is suspected. Pro - BNP is another blood test which can assess if the heart is dilated. Conclusive diagnosis lies with post mortem sampling of heart muscle as biopsies are difficult and unreliable in a live patient.

How do you treat dilated cardiomyopathy?

In primary cases the underlying disease cannot be treated or reversed. In the preclinical stage, studies have shown that starting a drug, pimobendan, will extend the preclinical phase and onset of heart failure by improving the heart contractions. Signs of heart failure can be managed with a combination of medications including oral or injectable diuretics (furosemide) to remove excess fluid; ACE inhibitors (benazepril) and spironolactone which reduces salt and fluid retention and fibrosis. When arrhythmias are detected, anti-arrhythmic drugs (drugs used to regulate heart beats) may help to reduce the number and frequency of the irregular beats and hopefully reduce the risk of sudden cardiac death. Dietary supplements such as L-carnitine, Taurine and omega fish oils may also help. Special diets lower in salt is also recommended in cases who are at risk of congestive heart failure.

What is the prognosis for DCM?

Long term prognosis may vary between different breeds. In Primary DCM the preclinical phase can progress slowly but once congestive heart failure has developed, the life expectancy drops to less than 6 months. In more severe cases, they may only live for a few weeks and can die suddenly from a fatal arrhythmia. In some breeds they may live for 1-2 years. Secondary causes will carry a more favourable prognosis if the underlying disease is treated early on. In these cases, the heart muscle should recover.

Can I prevent DCM?

It is important to not breed from a dog with DCM. Breed screening schemes are available in certain large breeds. Ask the breeder if they have done any screening in the breeding pair before purchasing your new pet. Always have your pet checked yearly at annual vaccinations for any new murmurs or weight loss. All new low-grade murmurs should be investigated in large breeds. In high risk breeds it is recommended to screen your pet yearly from the age of 3 years onwards usually by 24-hr Holter and heart scan. Vaccinations may reduce risk of viral myocarditis. Treat secondary causes as early as possible. In cancer patients on certain medication, your vet will routinely monitor your pet heart for signs of toxicity. Always feed your cat a meat based commercial diet to prevent taurine deficient DCM.

How can I monitor my pet at home?

Monitor your pets' overall attitude, tolerance to exercise and changes to muscle mass. Monitor and record your pets' sleeping respiratory rate and effort. Watch their chests for rise and falls as they breathe. One rise and fall equals one cycle. Count the number of cycles in 15 seconds and times by 4 to get the minute rate. Normal dogs have a sleeping respiratory rate of less than 30. Please see your vet if your pet develops the following:

- Heavy or laboured breathing with signs of distress
- Consistently elevated sleeping respiratory rate above 40
- Coughing
- Fainting, weakness, staggering or collapse
- Exercise intolerance or lethargy
- Unexplained weight loss or muscle wasting
- Swollen abdomen