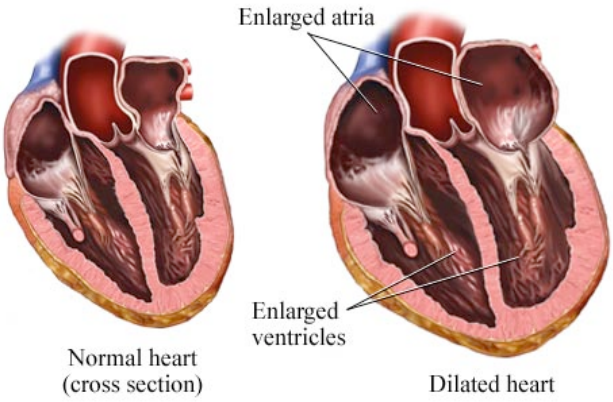
DILATED CARDIOMYOPATHY

Dilated Cardiomyopathy (DCM) is a disease affecting the heart muscle. It usually occurs in large and giant breeds of dog such as Doberman Pinschers, Boxers, Newfoundlands, Great Danes and Irish Wolfhounds. English and American Cocker Spaniels can also be affected despite being smaller breeds.

The heart muscle weakens and cannot pump properly, slowing blood flow and reducing oxygen supply to the body. This prompts fluid retention, increasing blood volume and stretching the heart, which normally makes the heart pump more strongly. However the diseased heart cannot respond and hence all the chambers become dilated. Eventually the circulation slows so much that fluid leaks out of the blood vessels into the lungs (pulmonary oedema) and the abdomen (ascites). This is known as congestive heart failure.



What causes DCM?

The majority of cases have no known cause (termed idiopathic), which usually develops in middle-aged or older dogs. Occasionally viral infections or toxins may damage the heart, contributing to disease. Cats can develop DCM due a dietary deficiency of the protein taurine, however this is unlikely if they are fed a balanced commercial diet.

What are the clinical signs of DCM?

Early signs usually include reduced ability to exercise, or collapse. This can either be due to the weakened heart muscle failing to pump, or an abnormal heart rhythm (arrhythmia). In certain breeds such as Dobermans and Boxers, arrhythmia predominates in early disease despite otherwise normal heart muscle function. This can cause fainting (usually during exercise or excitement) or even sudden death. For this reason arrhythmia detected during routine examinations (such as vaccinations) should always be investigated in pre-disposed breeds.

Boxers suffer almost exclusively from arrhythmia and have a form of cardiomyopathy arising from the right side of the heart, rather than the left as in other breeds. This has led to the name “Arrhythmogenic Right Ventricular Cardiomyopathy” (ARVC), which is now commonly referred to as “Boxer Cardiomyopathy”. (See www.boxerbreedcouncil.co.uk/cm.htm for more information).

In more advanced disease, signs of congestive heart failure include coughing (especially first thing in the morning) or breathlessness, reduced appetite and weight loss, or general lethargy and depression.

How is it diagnosed?

- An **electrocardiogram (ECG)** is used to monitor electrical activity of the heart, and gives important information about rate and rhythm.
- For those dogs who appear to be normal in the clinic but are experiencing collapse episodes during walks, small digital monitors called **Holter monitors** can be fitted. This means an ECG can be recorded for 24 hours (or longer) and shows what the heart rhythm is doing at any time of day, and most importantly, during a collapse if one occurs whilst the dog is wearing it.

- **Radiographs ("X-Rays")** are used to evaluate the heart size within the chest, and look for evidence of fluid build up within the lungs.
- **Echocardiography (cardiac ultrasound)** is the most useful diagnostic tool, allowing real time assessment of the heart as it beats. It is painless and non-invasive, although does require a little hair to be clipped from the chest wall on either side.

Can dogs be screened for DCM?

Some breed clubs (eg. Boxers, Newfoundlands and Irish Wolfhounds) recommend heart screening by auscultation (listening with a stethoscope), ECG or ultrasound scan, which can help to identify heart defects and also DCM in the early stages.

Treatment

Patients with early disease (known as pre-clinical or occult DCM) may need treatment to control dangerous arrhythmia or to slow heart rate. Commonly used drugs include digoxin (Lanoxin), sotalol (Beta Cardone), diltiazem, or amiodarone. Repeat Holter ECGs help to monitor response to treatment, and in some cases blood tests are needed to check the drug dose is correct (this is very important when using digoxin and amiodarone).

Where the heart muscle is failing, dogs may benefit from drugs which improve pumping ability and optimise the circulation, such as the ACE-Inhibitors benazepril (Fortekor) and ramipril (Vasotop). Pimobendan (Vetmedin) improves circulation but also increases heart muscle contraction. It may also be helpful in delaying the onset of congestive heart failure in patients with DCM.

Dietary supplements can sometimes be beneficial; some spaniel breeds show improved heart function when supplemented with proteins taurine or L-carnitine. Additionally boxers with ARVC can have a significant improvement in their heart rhythm when supplemented with fish oils.

Diuretics (such as frusemide and spironolactone) are used in congestive heart failure, to remove excess fluid collecting in the lungs or abdomen. They may cause your dog to drink and urinate more frequently than usual.

Ongoing care of patients with DCM.

Patients with pre-clinical disease should be allowed to continue life as normal, however monitoring is important and check-ups are usually recommended every 3-6 months. The pre-clinical phase can last months or even years in some cases.
In cases of more advanced disease with congestive failure then more frequent reassessments are needed to make sure treatment is optimal and to ensure your dog is as comfortable as possible. DCM does **not** usually cause pain (such as angina), however ongoing breathlessness and coughing in advanced disease can be very distressing and tiring.

Measuring your dog's breathing rate at home when resting (but not sleeping) is a useful guide to control of heart failure. Less than 30 breaths per minute is ideal.

Please contact us immediately if your dog suddenly develops breathing difficulties, coughing, pale or blue-ish coloured gums or tongue, restlessness, and fainting or collapse.

Listed below are some useful websites which can provide you with some further information.
www.vetmedin.co.uk/about_canine_heart_disease.php
www.vet.upenn.edu/departments/csp/cardiology/brochures
www.dobermannbreedcouncil.co.uk/cardio.html