



Heart Murmur

What is a heart murmur?

A heart murmur is the sound heard when there is turbulence in the blood flowing through the heart and out of its major blood vessels. No heart murmur is normal, with murmurs of increasing loudness and severity given an increasing score from 1 (very mild) to 5 (extremely loud).

What causes a heart murmur?

The most common murmur is caused by leaky valves, particularly those between the atria (at the top) and the ventricles (at the bottom of the heart). One or both of these valves starts to shrivel and scar at its ends, resulting in blood being forced backwards under pressure through the gap that occurs and causing marked turbulence. This disease is called **endocardiosis**, it has no known cause and it is progressive (cannot be stopped).

There are a few congenital abnormalities (abnormalities that an animal can be born with) that can cause a heart murmur. The most common is a Patent Ductus Arteriosus (failure of the connection between the aorta and pulmonary artery to close after birth, causing blood to shunt to one side of the heart to the other).

Another cause of a heart murmur is Heartworm disease.

What are the symptoms?

Because blood is being forced back the wrong way, past the leaky valve(s), blood has great

difficulty getting into the heart – resulting in high back pressure and a dramatic increase to blood flow around the body. This high back pressure causes fluid to leak out of the blood system into the tissues causing congestion; hence the term **Congestive Heart Disease**.

In the lungs the fluid (*pulmonary oedema*) will cause a cough that initially is heard during or after a rest or sleep and often ends with a gag or a 'retch'. As the disease progresses, the cough worsens and is heard throughout the day and night.

The disrupted blood flow through the lungs and the presence of fluid reduces the lungs' efficiency to oxygenate the blood causing decreased exercise tolerance and increased panting.

The liver also swells and its function is compromised. Blood flow to the kidneys is reduced causing a build up of toxic wastes in the blood and eventual kidney failure. Swollen upper intestine and stomach lining may cause vomiting and in the large intestine, diarrhoea.

The heart muscle begins to stretch under the ongoing and increasing workload, getting weaker as it gets larger and thinner.

Can Congestive Heart Disease be treated?

Yes. Although we cannot directly treat the underlying endocardiosis, treatment is available for Congestive Heart Disease. If treatment can be started early, then organ damage can be delayed resulting in a longer

and higher quality life. There is currently no evidence showing that treatment started **before** the onset of clinical signs is more beneficial.

Additional treatment is required sometimes, to manage the existing damage to other vital organs. Sometimes this may involve the feeding of a specific diet to minimize the workload on a specific organ.

How do you find out what treatment is required?

There are several tests that are advised to determine the extent of the existing disease and, hence, determine the most appropriate course of treatment.

1) Blood Test and Urinalysis.

A full blood profile and urinalysis is advised to specifically determine compromise to a variety of bodily organs. In particular the kidneys and liver.

2) Chest X-rays.

Required to accurately determine the degree and type of heart enlargement, to determine the degree and extent of *pulmonary oedema*, any secondary lung disease and the possibility of cancer.

3) Cardiac Ultrasound (Echocardiography)

Used to determine the specific aetiology for the murmur (of which can affect treatment) and assess the severity of the disease. Specific things that are assessed include chamber size and wall thickness. Additionally, this is the test of choice for congenital defects (abnormalities an animal is born with).

4) Electrocardiogram (E.C.G.)

An E.C.G. detects which areas of the heart muscle is enlarged and to what degree, if the heart muscle is not getting enough oxygen (*ischaemia*), any damage that has resulted (myocardial infarction – *heart attack*), and any disruption this is causing to the normal electrical rhythm of the heart.

5) Heartworm Blood Test.

If your dog has not been receiving Heartworm preventative medication *every month*, then Heartworm disease is a possible cause of a heart murmur. The treatment for Heartworm disease is completely different from that of congestive heart disease.

What is the treatment?

As stated previously, there is no evidence to suggest that starting treatment before the onset of clinical signs will delay the onset of damage to the heart and other organs.

Once symptoms are present, treatment depends on the severity of clinical signs and the extent of disease in the various organs affected. This is where the above mentioned tests are important. Specific treatment for other organ (liver, kidneys) compromise is given as indicated.

FORTEKOR is an A.C.E. Inhibitor and is a tablet that is given once daily. It inhibits the 'Angiotensin Converting Enzyme', of which is a component of the blood pressure regulating system, therefore helps reduce the resistance to blood flow around the body, improves the blood flow to the vital organs, reduces the blood pressure and reduces fluid retention. FORTEKOR is given for the rest of your dog's life, and may have to be increased to twice daily dosage in more advanced cases.

VETMEDIN is a capsule that is administered twice daily. VETMEDIN increases heart muscle strength without increasing the energy and oxygen demand. VETMEDIN is also a vasodilator that reduces the workload on the heart and improves heart efficiency.

FRUSAMIDE is a diuretic that may be required depending on the amount of *pulmonary oedema* and other body fluid that is present. The dose rate is often varied depending on the amount of fluid present.

LANOXIN is necessary in more advanced cases where the heart rate needs to be slowed and heart strength increased. Regular blood testing of Lanoxin levels is necessary.

AMINYLLIN for lung congestion, to open up the airways and improve lung function and blood oxygenation.

Some congenital abnormalities can be treated with special surgical techniques, of which require referral to a special cardiac surgeon.

On Going Management.

In advanced cases, your dog may initially require hospitalisation. In less advanced cases, the first revisit is 7 days after commencing on VETMEDIN or FORTEKOR to ascertain response to treatment. If your dog requires no other treatment, then the next revisit is scheduled for 1 to 3 months, after which revisits are required every 6 months to check the stage and progression of the heart disease and to allow re-prescription of your dog's medication.

Monitoring the amount of coughing and resting respiratory rate (number of breathes per minute whilst at rest) once treatment has been initiated. This will help determine the treatment response. Coughing should decrease and the resting respiratory rate should be below 30 breaths per minute if a positive response to treatment has been achieved.

If the initial blood test indicated there was already damage to internal organs, subsequent tests are advised to determine if organ damage has been limited and that treatment is reducing the build up of waste products in the blood from kidney and liver compromise.

If the E.C.G. showed changes in the heart function, a repeat E.C.G. may be necessary to monitor response to treatment and thus to more accurately fine tune or add on treatment.

Exercise.

In dogs whose heart murmur was detected before clinical signs became evident, you may not have noticed any decrease in your pet's ability to run and play. However your pet's heart function is partially compromised and

we recommend that you moderate the exercise. Most importantly, avoid extremes of exercise.

In more advanced cases, less and less exercise tolerance will be noticed. It is much more advisable to provide shorter walks of increased frequency – depending on your pet's capabilities. Always avoid distressing your pet, and if possible stop for rests or pick up and carry it if needed. Monitor your pet's gum colour, amount of panting, coughing or gagging and stop if becoming excessive.

Dogs pant to cool down, and dogs with congestive heart disease have compromised lungs and lung circulation and are more susceptible to heat stress. Always provide a cool environment and avoid walking on hot days.

Diet.

The ideal diet must minimize the workload placed on the body organs that are already compromised by the poor heart function and be low in salt to help minimize fluid retention.

A high quality protein diet reduces the workload on the kidneys, moderated fat and highly digestible diets reduce the liver's workload, specifically balanced carbohydrates maintain a normal gut bacterial population and reduce both liver and kidney workloads and minimise diarrhoea.

Because additional blood volume must be pumped around surplus tissue, and the body's muscle have to work harder to carry the extra burden, overweight dogs' hearts are placed under much more duress than dogs of ideal weight. ***Owners of overweight dogs are strongly advised to place their dogs on a safe weight loss programme.***

We can advise on the most appropriate diet for your pet's individual requirements.

Prognosis.

Most dogs, when an accurate and early diagnosis is made and appropriate treatment commenced, lead a normal life for many

years. Eventually, however, the progression of the disease will require additional treatments which will continue to provide increased quality and length of life for your much loved pet.

At some stage, hopefully only after you have had many wonderful years with your pet, the disease may eventually deteriorate into congestive heart failure. A sudden major heart

attack occasionally may occur or other organ failure, but rest assured we will be there to help as much as we possibly can, and to assist in any major decisions as they confront you.

As always, never hesitate to discuss your pet's condition with us at the veterinary surgery.