

Heart rhythm disturbance (atrial fibrillation)



There are many different heart problems that can affect dogs. Some of these affect the rhythm of the heart beat and one such condition is atrial fibrillation. This is most commonly seen in large and giant breeds of dog but can be seen in smaller dogs associated with heart disease. Atrial fibrillation does not cause any specific signs so it is unlikely that you will identify this as a cause of illness in your pet. However, any heart disease should be taken very seriously and an early visit to your veterinarian can help to achieve a good outcome.

What is atrial fibrillation?

Atrial fibrillation is one type of disturbance of the normal heart rhythm (dysrhythmia). To understand this condition we first need to know how the normal heart functions:

In the normal heart electrical activity is initiated from a natural pacemaker in the heart and follows a set path around the heart muscle. As the electrical activity moves through the muscle the muscle begins to contract. The electrical signals move in an ordered way like a wave over the heart surface from the chambers at the top of the heart (atria) to the lower chambers (ventricles). As the electrical signals pass through the heart muscle contracts in a synchronised fashion, like squeezing a tube of toothpaste. The heart is divided into a left and right side and there are 2 chambers on each side (one atrium and one ventricle, linked together through a valve). In the normal heart the upper chambers (the atria) contract first squeezing the blood out of the atria and into the main pumping chambers, the ventricles. When the ventricles are full they begin to contract to pump blood around the body (from the left side of the heart) or around the lungs (from the right side).

Atrial fibrillation normally occurs in enlarged hearts where the atrial muscle is already stretched. Damage to the muscle caused by the stretching can make it more likely that a spontaneous electrical pulse will be generated in an area outside the pacemaker. In atrial fibrillation there is disruption of the normal electrical activity throughout the atria resulting in random and chaotic atrial muscle contractions and preventing normal atrial contraction. The electrical pathways in the ventricles are still intact, allowing the ventricular muscle to contract in an organised manner but because the electrical signals that the ventricles receive from the atria are random and so much more frequent and chaotic than normal the ventricles often do not have time to contract and relax before a new signal arrives telling them to contract again. Hence the contractions are not regular and there is a variable time between each heart beat. When you listen to a heart in atrial fibrillation you hear an erratic 'jungle drum beat' rather than the regular 'lup-dup' sound. Some people say that atrial fibrillation sounds like shoes in a tumble dryer.

Atrial fibrillation is normally a rapid heart rhythm and because the ventricles are contracting so often they do not have time to fully fill with blood between each beat. The amount of blood leaving the heart is therefore reduced and this poor blood supply can result in signs of lethargy and exercise intolerance and even exacerbate heart failure.

Why has my dog got atrial fibrillation?

Atrial fibrillation is much more common in large and giant breeds of dog and in these breeds may even occur with an apparently normal heart. This may be due to the fact that these giant dogs naturally have such large hearts. In smaller breeds of dogs atrial fibrillation usually only occurs in dogs with enlargement of the upper chambers of the heart (the atria). This enlargement of the heart can be caused by a variety of diseases but most commonly is caused by some congenital heart diseases (where the heart develops abnormally from birth), and dilated cardiomyopathy (DCM) or leaky heart valves (mitral valve disease) in older animals.

A few drugs (most notably digoxin, which may be used in the treatment of some heart diseases) can also cause atrial fibrillation. If your dog is receiving any medication make sure you mention this to your vet even if you think they already know.

How would I know if my dog has atrial fibrillation?

In large and giant breed dogs atrial fibrillation may occur in apparently normal animals and there may be no outward signs of disease. Often in these breeds the condition is detected at a routine examination at the vets for an unrelated problem or at a routine health check. If underlying heart disease is present then

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you may first notice signs of this. Signs of heart disease can vary but may include: unwillingness to exercise; coughing at night or breathlessness on exercise.

How will my vet know that my dog has atrial fibrillation?

Your vet will probably recognise that your dog has an abnormal heart rhythm when they listen to your dog's heart. However, in order to confirm the diagnosis an ECG examination is essential to distinguish it from other types of abnormal heart rhythm. An ECG is a simple test which records the electrical activity from your dog's heart. If atrial fibrillation is detected then other tests are indicated to look for underlying heart disease. These tests will almost certainly include X-rays and ultrasound examination of the heart but sometimes blood tests are also required.

Even for a vet, it is very difficult to accurately assess heart rate in atrial fibrillation without an ECG. This is because some of the heart beats are so weak that they are very hard to hear with a stethoscope and do not result in a pulse that is strong enough to feel.

What is the treatment for atrial fibrillation?

Although in people there are some treatments specifically aimed at converting the heart rhythm back to normal this is rarely undertaken in dogs. If there is an underlying heart disease then this requires management. Provided the heart rate is not too fast, dogs can perform reasonably well despite atrial fibrillation. If the average heart rate is rapid in a dog with atrial fibrillation, specific medications will be required to reduce the heart rate. If the heart rate can be maintained at a roughly normal rate and the ventricles are able to fill properly before contraction they can deliver an adequate blood supply to the body tissues. In large or giant breed dogs with atrial fibrillation that is not too fast and no evidence for a heart condition can be found (this is sometimes referred to as "lone" atrial fibrillation), periodic retesting of heart size and function will be required. This is because in some of these dogs, especially Irish Wolfhounds, the atrial fibrillation is a warning that development of dilated cardiomyopathy is likely at some stage in the future (although it is much harder to predict when it will become obvious - this may be months or years from the time the atrial fibrillation was first detected).

Will my dog get better?

It is unusual for dogs with atrial fibrillation to ever go back to having a normal heart rhythm. However, those dogs with "lone" atrial fibrillation (no detected underlying heart disease) sometimes live many years after diagnosis with no signs of disease, although they should be monitored periodically by your vet.

The outcome is not so good for those dogs with an obvious underlying heart problem. In these cases the heart disease is often severe enough that the dog will require cardiac medications for life and life span will be reduced.

If you have any concerns about our dog contact your own vet for further advice.

If you want any other information on health issues concerning your dog please contact your local Veterinary Surgeon.