

My dog is coughing - could it be his heart?

The basics: The heart is a pump. The left half of the heart pumps blood that's just filled up with oxygen from the lungs to the body. The right half takes the blood that's been depleted of oxygen and is coming back from the body and pumps it back into the lungs. If the pump stops working properly, blood pressure falls. Several things happen to try and compensate: The kidneys retain water to increase the amount of blood in the blood vessel to try and bring blood pressure up like that. The heart beats faster, trying to compensate for feeble contractions by doing more of them. Eventually the compensatory responses aren't enough anymore. That's when your dog shows signs of heart failure.

Some signs of heart failure are caused by the fluid retention: If the pump doesn't work there's effectively a traffic jam in the blood vessels. Now, as you know blood consists of cells suspended in fluid. If the cells aren't pumped, they have to go slower - like cars in rush hour traffic. The fluid is like the passengers during a bad traffic jam. It can leave the blood vessels and leak out into the tissues, looking for another way around the hold up. If fluid leaks into the lung tissue, the dog will become breathless (initially only on walks, later at rest), and develop a soft cough that's usually worst at night. He may also not want to lie on his side anymore, preferring to sleep on his tummy. (This position maximizes lung expansion.) If the right half of the heart is worst affected, fluid will leak out of the vessels into the body. It can leak into the abdomen, which can look like your dog has just become quite fat (but if you look carefully, it's only the tummy that's rounder). If it leaks into the space between the lungs and the body wall she'll become breathless but will hardly ever cough. If it leaks under the skin, his legs will start looking puffy and he may develop a wedge of fluid under the chest or under the skin of his belly. If you put pressure on an affected area, you'll see your fingerprint remaining for some time. Sometimes the fluid will leak into a combination of spaces.

If the pump doesn't work, the other signs you'll see is of the cells running out of oxygen. The dog will be less able / willing to run on a walk, she may faint, her gums may go pale during exercise but then go pink again when she stops.

Lastly you may notice signs of the heart working faster - his heart rate may increase (Note that normal resting heart rate in dogs varies from 60-180 beats per minute, so is generally higher than in humans and is generally higher the smaller the dog is. Heart rate will also increase with excitement and exercise.) may become irregular, or she may start losing weight despite eating her normal amount of food. The weight loss is called cardiac cachexia and happens because the heart needs to use a great deal more energy to pump the same amount of blood.

All the above signs may be caused by other diseases as well, but the more of these abnormalities appear together in one patient, the more likely it becomes that the heart is the culprit.

Many small dogs have a heart murmur for months or years before developing signs of heart failure. Usually your vet will tell you about the murmur when he does her yearly check-up prior to her booster. Soft murmurs can only be heard with a stethoscope, but loud murmurs can be felt if you put your hands on either side of her chest just behind the elbow (it feels like sand rushing through your hands) or in extreme cases may even be heard without a stethoscope. Heart murmurs usually develop when a heart valve starts to leak. The valves thicken at the edges and don't seal properly. This means that when the heart contracts, the blood can leak backwards rather than just being pumped forwards into the arteries. When the valve problem is advanced, 80% of the blood from each pump can go backward rather than forward. You can appreciate that the heart will get tired - because it has to pump five times rather than once to shift the same volume of blood. Your vet will call it mitral valve disease or myxomatous valvular degeneration. This is the most common heart problem in older small breed dogs like Dachshund, Yorkies, Toy Poms, Jack Russells. The good thing is that you often have years between the onset of the murmur and your pet developing signs of heart failure.

The bad thing is that he may start coughing BEFORE he goes into heart failure - because one of his heart chambers (the left atrium) enlarges dramatically and starts irritating the bronchi (the pipes that take the air into the lungs). This cough sounds different from the typical heart failure cough: instead of being soft and worse at night, it is loud and harsh, may sound like kennelcough and is often triggered by excitement or pulling on the lead. Little dogs also often develop other diseases like chronic bronchitis or a collapsing windpipe that also make them cough. It can be tricky to determine what the main cause of the cough is.

Vets have a rule of thumb for guessing the heart disease in adult dogs: if you can pick the dog up with one hand, it probably has a heart valve problem. If you need 2 hands to pick him up he probably has a heart muscle problem. It is called dilated cardiomyopathy. The muscle gets weak and loses the ability to pump effectively. The problem with big dogs is that they often don't give you a clue that they're going to develop heart trouble in the future - because they often don't have a heart murmur. This means that if a big dog develops a cough that sounds like kennel cough but it's not gone in 3 weeks, there could be trouble. Don't ignore it and do get him checked out. Some dogs with dilated cardiomyopathy faint - particularly Boxers and occasionally Dobermans. This is because they develop a particular sort of heart rhythm disruption. The different large and giant breeds all have particular quirks to their version of dilated cardiomyopathy eg Irish Wolfhounds may have a heart rhythm disturbance called atrial fibrillation for years before developing signs of heart

failure. Dobermans tend to have rapidly progressing disease and rarely live 6 months beyond diagnosis. Cocker Spaniels often live for several years with the same disease and American Cocker Spaniels can sometimes be cured of dilated cardiomyopathy with amino acid supplements. Golden Retrievers, German Shepherds, Newfoundlands and Dalmatians are other breeds that have an increased risk of developing dilated cardiomyopathy.

If your vet has found a murmur but your dog is currently well you can help by

- making sure he maintains his waistline: fat dogs' hearts have to pump even harder to supply the extra tissue. The fat also encroaches on the space for the lungs - so they can't expand as much. This means that they have to breathe faster to get oxygen into the blood
- making sure you keep his teeth clean: little dogs are prone to developing large globs of tartar on their teeth. The tartar harbours bacteria which hurt his gums, loosen the teeth and can also spread elsewhere. Having a sore mouth is painful for him and unpleasant for you (having to inhale his dragon breath every time he pants near you) - but you want to avoid anaesthetizing your dog to clean his teeth when he has heart failure. So get your vet or vet nurse to show you how to clean his teeth and keep those pearly whites clean
- practice taking is breathing rate: you want to know how many breaths he takes in a minute when he's **resting**. You're interested in how low it can go. What are the minimum breaths he needs to keep his blood full of oxygen when he's asleep? Obviously he'll pant after exercise, if he's hot or excited. If this resting breathing rate starts increasing over a few days, you have evidence for your vet that there's probably a problem with his lungs. This is important for 2 reasons. The first that this information can help your vet determine whether the cough is caused by heart disease or not. The second is that once you're sure he has heart problems, you can tell by his resting breathing rate when he is getting into trouble and may need his medication adjusted.