

# Mitral/Tricuspid Regurgitation Due to Myxomatous Heart Valve Disease

## ABOUT THE DIAGNOSIS

This disorder affects the hearts of adult dogs. In the dog, as in humans, the mitral valve is a trapdoor type of structure inside the heart that separates the two chambers (left atrium and left ventricle) of the left side of the heart; the tricuspid valve likewise separates the chambers of the right side of the heart (right atrium and right ventricle). These one-way valves ensure that the heart functions efficiently by preventing backflow of blood each time the heart contracts. As a result, properly-functioning mitral and tricuspid valves ensure that all the blood that enters the heart moves through correctly and into the circulation.

This heart valve disorder has many names: “endocardiosis,” “degenerative valvular disease,” and “myxomatous valve degeneration” are some of the more common synonyms. The different names refer to the same process: an abnormal thickening and distortion of the heart valves that occurs in some adult or older dogs. It can be thought of as a form of premature aging of the heart valve tissue.

Small-breed dogs are most commonly affected by this condition, although it can sometimes occur in larger dogs. In about two-thirds of the cases, the mitral valve alone is affected; in about one-third, both the mitral and tricuspid valves are affected; and rarely is the tricuspid valve alone involved. With time, affected valves fail to seal well when they close, allowing a small amount of blood to leak back to the heart chamber where it just came from (atrium), rather than moving forward into the circulation. This inefficiency has two drawbacks: it compromises the amount of blood moving forward and into the body’s circulation to nourish the organs, and it increases the pressure inside the atrium (the chamber emptying into the ventricles). Overall, a poorly functioning heart valve means that the heart has to work harder than normal to keep up the normal circulation.

In the early stages of myxomatous valve disease, the only symptom is the presence of a heart murmur. The turbulence created by blood leaking through the distorted valve creates the sound heard as a murmur, which is a coarse, hissing sound heard with every heartbeat (using a stethoscope) as opposed to the normal, thumping “lub-dub” sound of the healthy heart. This is often the only sign that this condition is present. It is common for a heart murmur to be a surprising or unexpected finding because myxomatous heart valve disease is well-tolerated in its early and intermediate stages and in fact, in some dogs it never progresses to more advanced stages of disease. However, myxomatous heart valve disease tends to very gradually get worse, and over time, an increasingly greater amount of blood is sent back to the atrium. If this process continues to the point that the body’s ability to adapt is exceeded, then the circulation becomes disrupted, causing fluid retention within the lungs (pulmonary edema) and associated symptoms: labored breathing, coughing, and intolerance of exercise. This is called “congestive heart failure.” It is a somewhat misleading term because it does not mean that the heart has “failed” in the sense of stopping. Rather, it means the heart is failing to meet the body’s circulatory requirements, and as a result, the circulation is disturbed in such a way as to cause fluid pooling, typically in the lungs.

When congestive heart failure develops as a result of myxomatous mitral or tricuspid valve disease, a heart murmur usually has been known to be present for a long time—at least several months and often a few years. Once a dog develops heart enlargement

secondary to this disease, there is strong evidence that starting pimobendan will slow the progression of disease, even if there is no evidence of congestive heart failure. Many types and brands of specialty or prescription dog foods are marketed for heart disease but none of these has any proven benefit when myxomatous valve disease exists in this asymptomatic, “heart murmur-only” state, and premature feeding of some cardiac diets has been linked to acceleration, rather than slowing, of the disease process. Some common-sense guidelines for the general care of dogs that have myxomatous heart valve disease include:

- Avoiding or reducing intense physical exercise, because the heart is under the greatest strain when it is forced to beat quickly.
- Preferring lower-intensity, on-leash walks for physical activity, as long as the dog does not show signs of exhaustion or difficulty keeping up that might indicate too much activity.
- Avoiding treats or foods that are rich in salt, which causes fluid retention and favors the development of congestive heart failure.
- Beginning a weight-loss diet if your dog is overweight, as 40% of pet dogs in North America are. An excess of body weight means unnecessary extra work for the heart.

Overall, worsening heart valve function with time can lead to congestive heart failure. When it occurs, congestive heart failure may cause a dog to have trouble breathing. Dogs should be brought to the veterinarian as soon as changes in the breathing pattern or loss of stamina is first noticed. As the disease progresses, more advanced signs can develop. The gums may take on a bluish or gray color due to lack of oxygen, the belly may become distended with fluid, and the dog often will be very inactive, or seem unable to get comfortable. Episodes of fainting can even occur. Fortunately, many dogs with myxomatous heart valve disease never even develop congestive heart failure and have just a heart murmur and no other symptoms for their natural, normal life spans.

## LIVING WITH THE DIAGNOSIS

Myxomatous heart valve disease is a process that gets progressively worse. However, it can be years after the detection of a heart murmur before congestive heart failure occurs. Periodic screening of systemic blood pressure, chest x-rays and/or echocardiography (heart ultrasound) is usually recommended to follow disease progression and to identify diseases that may further impair heart function (high blood pressure). The recommended frequency of these tests varies with the stage of valve disease and individual patient.

If your dog with myxomatous heart valve disease shows symptoms of congestive heart failure (see above), a variety of medications can be used to control the symptoms. As the disease progresses, medical management can become more complex, using additional medications and higher dosages.

The long-term outlook for dogs with myxomatous heart valve disease but no symptoms of congestive heart failure is good: many dogs tolerate the myxomatous heart valve disease unknowingly for the rest of their lives, whereas some others develop congestive heart failure after several months or more. Overall, dogs with myxomatous heart valve disease and no observable outward symptoms beyond the heart murmur live for years (average 3 to 5 years, with tremendous variation meaning that a large proportion of these dogs live a normal life span).

The long-term outlook once congestive heart failure has occurred in a dog with myxomatous heart valve disease is guarded to fair.

These dogs require medication (pills) daily and periodic checkups with the veterinarian. The life span after the onset of congestive heart failure is extremely variable and depends on the severity of the valve problem and the dog's response to medication. Dogs may live from days to years after developing congestive heart failure, with an average of less than 12 months.

## TREATMENT

As mentioned above, once valve disease leads to heart chamber enlargement, pimobendan is recommended. As the disease continues to evolve and gradually worsen over time, congestive heart failure may develop. Management of congestive heart failure includes the use of medications, low-salt diets, and exercise restriction. The first medication usually prescribed is a diuretic ("water pill") to evacuate retained fluid. Fluid accumulation in the lungs is one of the factors that cause the labored breathing and cough associated with heart disease. Furthermore, vasodilator drugs can be used for helping to reduce the workload of the heart. As your pet's heart disease worsens, several other medications may be added to treat specific problems. Severe heart failure may require hospitalization and oxygen therapy until your pet's condition can be stabilized. The goal of this treatment is to find a combination of medications that makes your dog comfortable and results in a good quality of life.

## DOs

- Give all medications exactly as directed.
- If congestive heart failure develops, restrict your pet's exercise to leash walks.
- If your pet is overweight, start a weight reduction program.
- If your pet's breathing rate increases or is ever persistently over 40 bpm, contact a veterinarian immediately.

## DON'Ts

- Do not feed salty treats.
- Do not overdo physical activity with your dog. Myxomatous heart valve disease is *not* a type of heart disease that exercise will improve. Leash walks and mild to moderate degrees of activity, as tolerated by your dog, are ideal.
- Do not be alarmed if you notice your dog's heartbeat seems irregular when your dog otherwise seems to feel fine. Healthy dogs often have an irregular-sounding heart rhythm (respiratory sinus arrhythmia) that is simply a normal variation related to their breathing. Advanced stages of myxomatous mitral valve disease can cause truly irregular, chaotic heartbeat rhythms, however, and screening for this is part of what your veterinarian does when listening to the heartbeat with a stethoscope. If any uncertainty exists, he/she can recommend an EKG to determine whether there is reason for concern.

## WHEN TO CALL YOUR VETERINARIAN

- If your dog is receiving cardiac medications and shows lack of appetite, lethargy/sluggishness, vomiting, or diarrhea (signs of intolerance to the medication), because these can be signs of an unrelated problem, or signs of intolerance to the medication, or signs of inadequate medication.
- If your dog's symptoms become worse or reappear, an adjustment in medication dosage may be needed.

## SIGNS TO WATCH FOR

- Coughing or difficulty breathing.
- Restlessness, inability to get comfortable, especially if accompanied by labored breathing.
- Exercise intolerance, especially stopping mid-walk, out of breath, when the same amount of exercise used to be manageable without any difficulty.
- In advanced disease:
  - Bluish or gray gums.
  - Swollen belly.
  - Fainting spells or severe weakness.

## ROUTINE FOLLOW-UP

- The frequency of follow-up examinations depends upon the severity of your dog's condition. Dogs with no symptoms or mild symptoms should be evaluated every 6 to 12 months. More severely affected dogs should be examined after 2 to 3 weeks initially and then approximately every 2 to 6 months depending on the individual case.

*Other information that may be useful: "How-To" Client Education Sheet:*

- How to Count Respirations and Monitor Respiratory Effort

Practice Stamp or Name & Address

Also available in Spanish.