

Degenerative atrioventricular (AV) valve disease in dogs

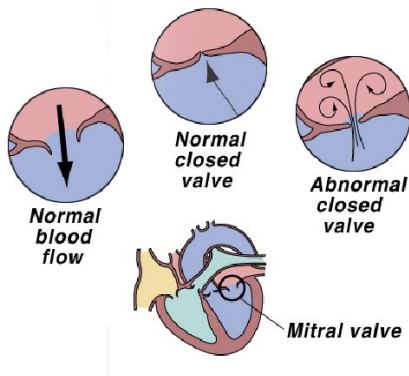
[also commonly referred to as: *myxomatous mitral valve degeneration (MMVD)*,
mitral valve disease, chronic valve disease, and endocardiosis]

What is degenerative AV valve disease?

Degenerative AV valve disease is the most common form of heart disease in dogs, particularly in toy, small and medium-sized breeds. The disease usually develops during middle to older age. The cause is not completely understood, but likely involves a genetic factor.

Some of the breeds most commonly affected by this disease include:

- Cavalier King Charles Spaniel
- Chihuahua
- Dachshund
- Miniature/Toy Poodle
- Pomeranian
- Yorkshire Terrier
- Maltese
- Shih Tzu
- Cocker spaniels



Degenerative AV valve disease results in thickening of the leaflets of the mitral and tricuspid valves. This causes poor closure of the valve leaflets, which in turn results in *regurgitation* (backwards flow of blood) into the atrial chambers during cardiac pumping. Chronic cardiac dysfunction results in retention of sodium and water, increased blood volume and heart enlargement. Eventually, circulatory congestion can occur, which is leakage of fluid into the surrounding tissues or body cavities, a syndrome known as *congestive heart failure (CHF)*. Advanced disease may also lead to abnormal cardiac rhythms, pulmonary hypertension or rupture of the left atrium itself.

Although the disease progresses over time, the rate of progression of disease is highly variable among dogs. In a minority of dogs, the disease may not progress at all.

Stages of degenerative AV valve disease

The American College of Veterinary Internal Medicine (ACVIM) currently recognizes five basic stages of degenerative AV valve disease. Your veterinary cardiologist will inform you of which stage your dog is in. The stage will change as the disease progresses. Dogs in stages A, B1, and B2 generally display no symptoms of the disease.

Stages:

- A: Breeds predisposed to the disease, but without evidence of disease yet
- B1: Dogs with valvular degeneration but without any evidence of heart enlargement
- B2: Dogs with valvular degeneration and secondary heart enlargement
- C: Dogs with congestive heart failure secondary to valvular degeneration whose symptoms are highly responsive to treatment
- D: Dogs with congestive heart failure whose symptoms are becoming more difficult to control with treatment (i.e. end-stage disease)

How is degenerative AV valve disease diagnosed?

The initial step in the diagnosis of degenerative AV valve disease is the identification of a new heart murmur (turbulent blood flow) on physical examination in a dog during middle or older age, particularly of small size or predisposed breed. Upon identification of a murmur, an echocardiogram (cardiac ultrasound) by a board-certified veterinary cardiologist is recommended. Thoracic radiographs (x-rays of the chest cavity) and NT-proBNP levels (blood test) may provide important additional information as well depending on the stage of disease present.



Echocardiogram of a dog with a thickened mitral valve

What is the treatment for degenerative AV valve disease?

Treatment options depend directly on the patient's stage of disease¹. It is not currently possible to prevent or slow the degeneration/thickening of the valve itself, thus no treatment is recommended for predisposed breeds prior to developing the disease itself (stage A). There is also no evidence to support medication for dogs who have the disease, but do not yet have heart enlargement (stage B1).

However, medication to slow the progression of heart enlargement is recommended in most patients with stage B2 disease. This is determined from the results of the echocardiogram, radiographs, and/or NT-proBNP testing.

Once a patient develops congestive heart failure (stage C, usually requires thoracic radiographs for diagnosis), additional therapies are necessary to relieve the symptoms the patient is experiencing and maintain good quality of life. These include diuretics and medications that improve cardiac function, among others. The most common symptoms of congestive heart failure include labored/rapid breathing, coughing, lethargy, and fainting.

There are also nutritional considerations for dogs in stages B2, C, and D. Please see the informational brochure entitled "Nutrition and Diet in Dogs and Cats with Heart Disease" for more information.



Chest radiograph demonstrating congestive heart failure in a dog with degenerative AV valve disease

Surgical valve repair (open-heart surgery) for degenerative valve disease in dogs has recently been developed. Although the results appear to be successful, an extremely limited number of veterinary institutions in the world have developed this specialized technique and the procedure may be cost-prohibitive for most pet owners. Please speak with your dog's cardiologist if this is an option you would like to learn more about. Heart transplants are not currently performed in pets.

Prognosis

Since not all dogs with degenerative AV valve disease go on to develop congestive heart failure, prognosis for dogs in the earliest stages of disease is difficult to predict. Once a dog has developed congestive heart failure, however, remaining lifespan is approximately 12-18 months with treatment. Development of complications such as cardiac arrhythmias, pulmonary hypertension, or rupture of cardiac chambers generally worsens prognosis.

A recent veterinary study documented a 74% improvement in survival time for dogs whose congestive heart failure treatment was under the guidance of a veterinary cardiologist working together with primary care veterinarians².

References:

1. Atkins C, Bonagura J, Ettinger S. Guidelines for the diagnosis and treatment of canine chronic valvular heart disease. *K Vet Intern Med* 2009; 23: 1142-1150.
2. Lefbom BK, Peckens NK. Impact of collaborative care on survival time for dogs with congestive heart failure and revenue for attending primary care veterinarians. *J Am Vet Med Assoc.* 2016 Jul 1; 249(1): 72-6.

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