



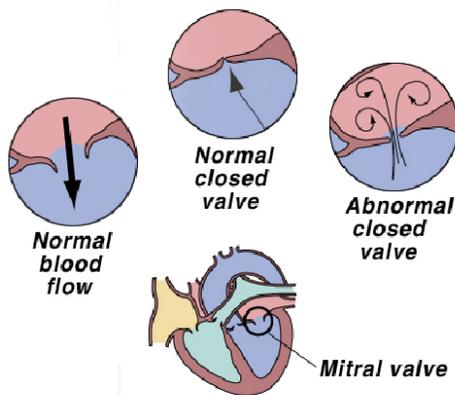
## Degenerative Atrioventricular (AV) Valve Disease in Dogs

### Understanding degenerative AV valve disease

Degenerative AV valve disease has many synonyms, including chronic valve disease (CVD), endocardiosis, and mitral valve disease (MVD). The disease develops in the middle to later stages of a dog's life and is characterized by thickening and degeneration of the leaflets of the mitral and/or tricuspid valves. In general, the mitral valve is more commonly affected in dogs. The underlying cause for valvular degeneration is still unclear, but ongoing studies at major veterinary teaching facilities are aimed at its identification. Any dog can develop degenerative AV valve disease. The disease is more common in toy and small breed dogs, in particular:



- *Cavalier King Charles Spaniel*
- *Chihuahua*
- *Dachshund*
- *Miniature Poodle*
- *Pomeranian*
- *Yorkshire Terrier*



### Consequences of valvular degeneration

Thickening and degeneration of AV valve leaflets leads to poor coaptation, or closure, of the leaflets during cardiac pumping. The end result is *regurgitation*, or backwards flow of blood, into the corresponding atrium during cardiac pumping, and a subsequent decrease in the amount of blood appropriately pumped to the body. Over time, the body's natural response to this decrease in flow is retention of sodium

and water. These actions lead to increased blood volume, heart enlargement, and circulatory congestion. If circulatory congestion is severe, fluid can leak into the surrounding tissues, a syndrome known as *congestive heart failure (CHF)* (for more

information see our educational brochure *Heart disease and congestive heart failure*). Advanced disease may also lead to abnormal cardiac rhythms, pulmonary hypertension or rarely, rupture of the left atrium itself.

### **Diagnosis**

Detection of AV valve disease generally begins with auscultation of a heart murmur on physical examination in an asymptomatic dog. Identification of a heart murmur of particular timing, quality and location is sufficient to accurately diagnosis degenerative AV valve disease in most dogs, particularly in breeds considered at high risk for the disease (see page 1). Radiographs (x-rays) and echocardiography (cardiac ultrasound) are not required for diagnosis in many cases, but provide valuable information about cardiac structure and function as the disease progresses, which often aids in selecting appropriate therapy.

### **Treatment**

Since the cause of disease is not yet known, prevention or slowing of the valvular degeneration itself is not currently possible. Treatment is generally withheld until the development of congestive heart failure. Surgical therapies for degenerative valve disease such as open-heart valve repair or replacement have thus far proven unsuccessful in dogs due to high surgical risk, cost, and need for cardiopulmonary bypass, which is not commonly practiced in veterinary medicine. Exploration of less invasive means of valve replacement in dogs is currently underway. Heart transplantation is not performed in animals.

### **Do all dogs with degenerative AV valve disease develop congestive heart failure?**

No. For reasons that remain unknown, some dogs with degenerative AV valve disease do not develop significant cardiac enlargement or clinical illness during their lifetime. Unfortunately it is not possible to predict whether an individual dog will fall into this category ahead of time.

### **Prognosis**

Since not all dogs with degenerative AV valve disease go on to develop congestive heart failure, prognosis for asymptomatic dogs is difficult to predict. Once a dog has developed congestive heart failure, however, remaining lifespan is often approximated at 6-18 months, with much individual variation. Cavalier King Charles Spaniels tend to develop a form of the disease characterized by early onset and rapid progression to congestive heart failure. The disease tends to progress more rapidly in large breed dogs, as well. Development of complications such as cardiac arrhythmias, pulmonary hypertension, or rupture of cardiac chambers worsens prognosis.