



**Ettinger: Textbook of Veterinary Internal
Medicine, 7th Edition
Canine Valvular Insufficiency and
Congestive Heart Failure
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What is valvular insufficiency?

Valvular insufficiency occurs when damaged and thickened valves develop within the heart of small and midsize dogs. Valve problems are unusual in larger-breed dogs and in cats but they may develop. In the small breeds of dogs, valvular insufficiency begins in midlife and progresses slowly. The disease is associated with thickening and shortening of the valve components that separate the upper (atria) from the lower (ventricles) parts of the heart. Remember, normally blood flows in only one direction. If the valves fail to close completely when the heart contracts, blood moves forward but some leaks backward. Clinical signs vary depending on whether the right and/or left side of the heart is affected and whether heart enlargement presses on the windpipe. Fluid accumulates when the heart fails to pump enough blood to the body and instead the blood is transmitted backward from the heart to the lung or body.

What are the signs of valvular insufficiency?

Owners of pets with valve problems see inappropriate panting, heavy breathing, diminished exercise ability, fatigue, cough, and occasionally fainting. The cough usually starts at night and progresses to daytime as well, particularly when associated with exercise. Retching and nonproductive gagging follow the cough. When the right side of heart is affected, fluid may accumulate around the lungs, making it difficult to breathe, and in the abdomen, making it swell.

What tests are needed?

Abnormal heart sounds heard with a stethoscope suggest the need for an electrocardiogram (ECG) to identify heart enlargement or irregularities of the heart's rhythm. Radiographs (x-rays) can demonstrate heart enlargement and/or inappropriate fluid accumulation. Blood testing can identify hormonal, kidney, or other internal medical problem. An ultrasound examination (echocardiography) accurately pictures enlarged heart chambers, abnormalities of valve structure, and the heart's pumping ability. These tests assess heart function and severity of the disease and identify the need for therapy.

What is the treatment?

A number of treatments are used for pets with valvular heart disease, including exercise restriction. Walking is good exercise. Digitalis is a medication used to strengthen the heart and to treat some irregularities of its rhythm. It maintains a slower and more effective heart muscle contraction. Signs of digitalis excess include loss of appetite, lethargy, vomiting, and diarrhea. ECG monitoring permits the veterinarian to

supervise the pet's progress. Diuretic agents are commonly given to remove excess water accumulation from the body and can cause increased water drinking and urination. Diuretics can induce weakness, dehydration, and blood salt abnormalities. Alterations in electrolyte (salt) levels are identified through periodic testing of the pet's blood. Angiotensin-converting enzyme inhibitors (ACEIs) are drugs that improve the body's ability to reduce salt and water retention, to reduce high blood pressure, and to limit the effect of hormones that adversely affect heart muscle. Given in excess, ACEI drugs cause malaise, blood salt disturbances, loss of appetite, and possibly kidney damage. Antiarrhythmic agents may be given to stabilize the cardiac rate and rhythm. Drugs to decrease blood pressure and nutritional supplements may be required for specific conditions.

To control the symptoms of heart failure, low-salt (sodium) diets may be suggested. The kidney normally removes excess sodium, but this does not occur as effectively in heart failure. Commercial low-salt diets, varying from moderate to extreme restriction, are effective in preventing salt and water retention. These diets are recommended only after heart failure has been diagnosed. A modest reduction in salt intake may be indicated before the onset of heart failure. If the pet refuses to eat a commercial diet, low-salt foods can be prepared by the owner under veterinary direction. Mixing low-salt diets with regular (high-salt) diets or feeding snacks high in sodium is not recommended.

Longevity and quality of life in dogs with this disease vary with the severity of the valve damage and the amount of blood leakage into the upper chambers of the heart. Concurrent medical conditions, age, and the physical status of the pet play a large role in determining the animal's prognosis. Clinical signs are progressive, and although they may be decreased, they never entirely resolve. Medical therapy can enhance the quality of life of the pet as well as increase life expectancy. Dogs with left-sided valvular heart disease treated with medication and a low-salt diet have an average life expectancy of about 9 months from the time heart failure begins. Abdominal fluid accumulation and body emaciation are signs of right-sided heart failure. Regularly removing the extra fluid may increase life expectancy. Surgical replacement of the valves is not an option in dogs at this time.