

ATRIOVENTRICULAR VALVE ENDOCARDIOSIS

BASICS

OVERVIEW

- “Atrioventricular valve” refers to the heart valves between the top chamber (known as the “atrium”) and the bottom chamber (known as the “ventricle”) of the heart; two atrioventricular valves are present in the heart—one on the right side of the heart and one on the left side of the heart
- “Endocardiosis” is the medical term for long-term (chronic) formation of excessive fibrous tissue of the atrioventricular valves
- The heart of the dog or cat is composed of four chambers; the top two chambers are the right and left atria and the bottom two chambers are the right and left ventricles; heart valves are located between the right atrium and the right ventricle (tricuspid valve); between the left atrium and the left ventricle (mitral valve); from the right ventricle to the main pulmonary (lung) artery (pulmonary valve); and from the left ventricle to the aorta (the main artery of the body; valve is the aortic valve)
- The atrioventricular valves are the tricuspid valve (right side) and the mitral valve (left side)
- “Atrioventricular valve endocardiosis” is a long-term (chronic) disease characterized by a decline in the function or structure of the tricuspid and/or mitral valves, leading to inability of the valves to work properly (known as “valvular insufficiency”) and congestive heart failure; “congestive heart failure” is a condition in which the heart cannot pump an adequate volume of blood to meet the body’s needs

GENETICS

- Not established

SIGNALMENT/DESCRIPTION of ANIMAL

Species

- Mainly dogs, but may be seen in old cats

Breed Predispositions

- Typically small breeds
- Highest prevalence—Cavalier King Charles spaniel, Chihuahua, miniature schnauzer, Maltese, Pomeranian, cocker spaniel, Pekingese, fox terrier, Boston terrier, miniature poodle, toy poodle, miniature pinscher, and whippet

Mean Age and Range

- Onset of congestive heart failure at 10 to 12 years of age, although may detect a murmur several years earlier; Cavalier King Charles spaniels typically affected much earlier (6 to 8 years of age); “congestive heart failure” is a condition in which the heart cannot pump an adequate volume of blood to meet the body’s needs

Predominant Sex

- Males are 1.5 times more likely to have atrioventricular valve endocardiosis than are females

SIGNS/OBSERVED CHANGES in the ANIMAL

Asymptomatic Valve Disease (pet has no clinical signs of heart-valve disease)

- Heart murmur
- As the disease progresses, the heart murmur typically gets louder and radiates more widely; with severe disease, the murmur may decrease in frequency and loudness

Mild Congestive Heart Failure (condition in which the heart cannot pump an adequate volume of blood to meet the body’s needs)

- Coughing; exercise intolerance; and difficulty breathing (known as “dyspnea”) with exercise

Moderate Congestive Heart Failure

- Coughing; exercise intolerance; and difficulty breathing (dyspnea) at all times

Severe Congestive Heart Failure

- Severe difficulty breathing (dyspnea); profound weakness; abdominal swelling or distention; productive coughing (that is, coughing up pink, frothy fluid); standing with the elbows away from the body in an attempt to increase lung capacity (known as “orthopnea”); bluish discoloration of the skin and moist tissues (known as “mucous membranes”) of the body caused by inadequate oxygen levels in the red-blood cells (condition known as “cyanosis”); and fainting (known as “syncope”)

CAUSES

- Unknown (so called “idiopathic disease”)

TREATMENT

HEALTH CARE

- Treat patients that need oxygen support as inpatients; if stable, patients may be treated at home, where they may be less stressed
- Oxygen therapy as needed for low levels of oxygen in the blood (known as “hypoxemia”)

ACTIVITY

- Absolute exercise restriction for patients with clinical signs
- Stable patients receiving medical treatment—restrict exercise to leash walking; avoid sudden, intense exercise

DIET

- A salt-restricted diet is recommended, if tolerated, for a pet in congestive heart failure; “congestive heart failure” is a condition in which the heart cannot pump an adequate volume of blood to meet the body’s needs
- Low levels of sodium in the blood (known as “hyponatremia”) may develop as congestive heart failure progresses and in patients fed severely salt (sodium)–restricted diets in conjunction with medications to remove excess fluid from the body (known as “diuretics”) and certain heart medications (angiotensin-converting enzyme [ACE] inhibitors)
- If the pet develops low levels of sodium in the blood (hyponatremia), switch to a less salt (sodium)-restricted diet (such as kidney or geriatric diet)

SURGERY

- Surgical heart valve replacement and purse-string suture techniques to reduce the area of the opening of the mitral valve have been used; experience with these techniques is limited, but surgical repair may be an option when access to a cardiovascular surgeon and heart-lung bypass (known as “cardiopulmonary bypass”) are available

MEDICATIONS

Medications presented in this section are intended to provide general information about possible treatment. The treatment for a particular condition may evolve as medical advances are made; therefore, the medications should not be considered as all inclusive.

- Recommended treatment depends on stage of the disease

Asymptomatic Patients (pet has no clinical signs of heart-valve disease)

- No treatment may be needed, if patient has no indication of heart enlargement identified through diagnostic tests

Mild or Moderate Congestive Heart Failure (condition in which the heart cannot pump an adequate volume of blood to meet the body’s needs)

- Medications to remove excess fluid from the body (diuretics)—furosemide
- Heart medications, such as ACE inhibitors (examples are enalapril and benazepril), digoxin, calcium channel blockers, β -blockers, nitroglycerin ointment
- Spironolactone, while typically used for its diuretic effect in combination with other diuretics, has been shown to have a positive influence as heart disease progresses

Severe Congestive Heart Failure

- Oxygen—administered in an oxygen cage or through a nasal catheter
- Medications to remove excess fluid from the body (diuretics)—furosemide

Medications to Dilate or Enlarge Blood Vessels (Known as “Vasodilators”)

- Enalapril or [benazepril](#)
- [Hydralazine](#)
- Nitroglycerin ointment or injectable
- Sodium nitroprusside
- Pimobenden used alone or in combination with other vasodilators and/or digoxin

Medications that Improve Heart-Muscle Contraction (Known as “Positive Inotropes”)

- [Digoxin](#)
- Pimobenden
- Dobutamine
- Dopamine
- β -blockers (such as carvedilol)

FOLLOW-UP CARE

PATIENT MONITORING

- Take a baseline chest X-ray when a heart murmur is first detected and every 6 to 12 months thereafter to document progressive enlargement of the heart
- After an episode of congestive heart failure (condition in which the heart cannot pump an adequate volume of blood to meet the body’s needs), check pet weekly during the first month of treatment; may repeat chest X-rays and an electrocardiogram

(“ECG,” a recording of the electrical activity of the heart) at the first weekly checkup and on subsequent visits, if any changes are seen on physical examination

- Monitor blood work (blood urea nitrogen [BUN] and creatinine) when medications to remove excess fluid from the body (diuretics) and ACE inhibitors are used in combination
- Monitor serum potassium levels when spironolactone (another diuretic) and ACE inhibitors are used together, especially when combined with digoxin

POSSIBLE COMPLICATIONS

- Inflammation of the lining of the heart (known as “endocarditis”) because of bacteria infecting the diseased mitral valve

EXPECTED COURSE AND PROGNOSIS

- Progressive deterioration (degeneration) of valve changes and heart-muscle function occurs, necessitating increasing drug dosages
- Long-term prognosis depends on response to treatment and stage of congestive heart failure (condition in which the heart cannot pump an adequate volume of blood to meet the body’s needs)

KEY POINTS

- Atrioventricular valve endocardiosis is a progressive disease
- It is important to dose all medications consistently and to provide diet and exercise management
- If the pet develops worsening clinical signs or experiences unexpected changes in condition, notify the veterinarian immediately

