

VENTRICULAR SEPTAL DEFECT

BASICS

OVERVIEW

- 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
- “Ventricular septal defect” is a type of heart birth defect due to an abnormal communication between the two ventricles
- One of the most common congenital (present at birth) heart malformations in cats; less common in dogs
- Also known as “VSD”

GENETICS

- Greater likelihood of having ventricular septal defect is recognized in certain breeds; no genetic transmission has been established

SIGNALMENT/DESCRIPTION of ANIMAL

Species

- Dogs and cats

Breed Predispositions

- English bulldog, English springer spaniel, basset hound, Akita, West Highland white terrier, Lakeland terrier

Mean Age and Range

- Most defects detected during routine examination of puppies and kittens

SIGNS/OBSERVED CHANGES in the ANIMAL

- Usually no clinical signs
- Heart murmur or abnormal heart sounds may be heard when listening to the heart with a stethoscope
- Femoral pulses usually are normal
- Gums and moist tissues of the body (known as “mucous membranes”)—usually pink, unless high blood pressure in the lungs (known as “pulmonary hypertension”) causes a right-to-left flow of blood through the ventricular septal defect, leading to decreased oxygen in the blood (known as “hypoxemia”)
- May have signs of left-sided congestive heart failure, such as exercise intolerance, fainting (known as “syncope”), and cough; “congestive heart failure” is a condition in which the heart cannot pump an adequate volume of blood to meet the body’s needs
- Rapid heart rate (known as “tachycardia”), difficulty breathing (known as “dyspnea”), and short, rough snapping sounds (known as “crackles”) heard when listening to the heart with a stethoscope may be evident if left-sided congestive heart failure occurs

CAUSES

- Congenital (present at birth) disease; may have a genetic basis

TREATMENT

HEALTH CARE

- Clinical signs are related to congestive heart failure (in which the heart cannot pump an adequate volume of blood to meet the body’s needs); most patients can be treated as outpatients

ACTIVITY

- Restrict if animal has congestive heart failure (in which the heart cannot pump an adequate volume of blood to meet the body’s needs)
- No need to restrict activity in pets without clinical signs (known as “asymptomatic patients”) with small ventricular septal defects

DIET

- Moderate sodium restriction recommended for pets with congestive heart failure (in which the heart cannot pump an adequate volume of blood to meet the body’s needs)

SURGERY

- Consider surgical repair of the ventricular septal defect; requires heart-lung (cardiopulmonary) bypass for defects associated with a large shunt—cardiopulmonary bypass presently is performed at a small number of veterinary centers
- Consider pulmonary artery banding as a means to control signs and to improve the patient’s condition, but not to cure the ventricular septal defect (known as a “palliative procedure”) for patients with moderate or large shunts and congestive heart failure (in which the heart cannot pump an adequate volume of blood to meet the body’s needs)

- Transcatheter correction of ventricular septal defect has been reported; the therapeutic role of this technique is yet to be determined

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.

- Treatment of pets with congestive heart failure (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 (known as “diuretics,” such as furosemide) and heart medications (such as enalapril and digoxin)

FOLLOW-UP CARE

PATIENT MONITORING

- Periodic echocardiographic (use of ultrasound to evaluate the heart and major blood vessels) or X-ray evaluation suggested for patients without clinical signs

PREVENTIONS AND AVOIDANCE

- Breeding affected animals is not recommended

POSSIBLE COMPLICATIONS

- Left-sided congestive failure (in which the heart cannot pump an adequate volume of blood to meet the body's needs)
- Bacterial infection of the lining of the heart (known as “bacterial endocarditis”)
- High blood pressure in the lungs (pulmonary hypertension)
- Irregular heart beats (known as “arrhythmias”)

EXPECTED COURSE AND PROGNOSIS

- Patients with small shunts may have a normal life span; some ventricular septal defects may not cause clinical signs
- Coexistent heart abnormalities worsen the prognosis
- Patients with obvious congestive heart failure (in which the heart cannot pump an adequate volume of blood to meet the body's needs) may live 6 to 18 months with medical treatment
- The development of high blood pressure in the lungs (pulmonary hypertension) and reversal of blood flow (right to left through the ventricular septal defect) is uncommon

KEY POINTS

- Definitive surgical correction of ventricular septal defect is not widely available
- If congestive heart failure (in which the heart cannot pump an adequate volume of blood to meet the body's needs) develops, the condition is terminal, even with medical care
- Patients with obvious congestive heart failure may live 6 to 18 months with medical treatment

