

Premature Ventricular Contractions

What Are Premature Ventricular Contractions?

Premature ventricular contractions (VPCs or PVCs) are irregular beats that originate from the heart's pumping chambers (ventricles). These beats interrupt the normal regular (sinus) rhythm, and result in irregularity to the heart rhythm. Although single PVCs are not life-threatening, they may indicate the presence of underlying heart disease, or when they become more severe can cause rapid and dangerous increases in heart rate (ventricular tachycardia).

What Causes Premature Ventricular Contractions?

PVCs can occur secondary to a variety of causes, most concerning being cardiac disease. PVCs are most commonly seen in dogs with Dilated Cardiomyopathy, but can also occur in the later stages of disease with Myxomatous Mitral Valve Degeneration. PVCs and other ventricular arrhythmias can also occur with no evidence of underlying structural heart disease.

The workup for PVCs can be frustrating, because PVCs can also occur secondary to conditions unrelated to the heart. Most commonly they can occur secondary to gastrointestinal disease, systemic disease, and pain.

How Are Premature Ventricular Contractions Diagnosed?

Most commonly, your veterinarian will hear an irregular heart rhythm and recommend an electrocardiogram (ECG) to assess the heart rhythm. The ECG will enable your veterinarian to determine whether the irregular rhythm is due to PVCs. Following this diagnosis, there are several additional recommended tests.

- *Echocardiography*: Echocardiography (heart ultrasound) is recommended to make sure that there is no evidence of structural cardiac disease causing the abnormal heart rhythm.
- *24 Hour Holter Monitor*: Single PVCs usually do not require treatment, however a Holter monitor will determine whether the frequency or severity of the PVCs warrant anti-arrhythmic medication, and make sure that there is no evidence of ventricular tachycardia, which is a life threatening heart rhythm.
- *Systemic Workup*: If there is no evidence of cardiac disease, a systemic workup to look for other causes is recommended. This may include:
 - *Full Bloodwork (CBC, Chemistry Panel, Urinalysis)*
 - *Chest X-rays*
 - *Abdominal Ultrasound*

How are Premature Ventricular Contractions Treated?

The treatment for PVCs is highly dependent on the underlying cause and the severity of the PVCs. Most commonly, when only single PVCs are present, no treatment is required. However, if a Holter monitor detects more severe irregularities, an anti-arrhythmic medication (such as Sotalol, Atenolol, or Mexilitine) will be prescribed.

If it is determined that the PVCs are occurring secondary to other systemic causes, treatment is usually not recommended and the PVCs typically resolve with treatment of the underlying disease.

What is the Prognosis?

The prognosis depends on the underlying cause of the PVCs. However, single PVCs alone should not cause clinical signs or complications, but may require monitoring with time. However, it is important to determine whether PVCs are an early sign of more severe cardiac disease that may require treatment. PVCs due to systemic disease typically resolve on their own, and cause no further problems.