



EAST COAST VETERINARY CARDIOLOGY

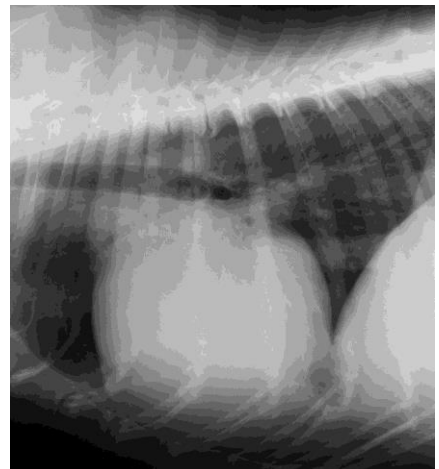
Pericardial Disease

There are a variety of diseases which can affect the heart sac (called the pericardium) in animals. The pericardium is a rigid membrane that helps to lubricate the myocardium, protects the heart from infections and forming adhesions, helps to maintain the heart in a fixed location and helps to regulate the output from both ventricles. Despite all these benefits, the pericardium can be surgically removed without significant ill-effects in animals.

In young animals, a peritoneopericardial diaphragmatic hernia (PPDH) is the most common pericardial disease encountered. This is a congenital malformation where there is a defect present in the diaphragm allowing communication of abdominal cavity with the pericardial space. In some older animals, herniation can occur secondary to trauma. Some animals with PPDH will be asymptomatic but others will develop signs related to the abdominal organs that herniate into the pericardial space – signs can include labored breathing, vomiting, anorexia, weight loss, coughing and lethargy. PPDH is diagnosed from diagnostic imaging such as a thoracic radiograph and an echocardiogram. Treatment may be recommended and requires surgical correction of the defect (herniorrhaphy).

The most common form of acquired pericardial disease is pericardial effusion. This refers to accumulation of fluid within the pericardial space. There are many causes in dogs – cancers, trauma, foreign body, inflammatory disorders such as pericarditis, bleeding disorders such as coagulopathy, heart failure, infections and idiopathic (no identifiable cause). In cats, pericardial effusion is typically associated with heart failure with cancer being the second most common cause. Significant pericardial effusion will cause cardiac tamponade with signs of acute lethargy, collapse, labored breathing, pale mucous membranes and can result in sudden death. If the development of effusion is gradual, signs may be less severe with lethargy, exercise intolerance and abdominal distension noted.

In dogs, the two most common causes are cancer and idiopathic causes. There are several cancers which can cause effusion (due to bleeding from the tumour), but a malignant cancer called hemangiosarcoma is most common. This cancer originates generally from the right atrium. Heart base tumors can also cause effusion – these are cancers which grow along the great vessels. They are not generally as aggressive as hemangiosarcoma and are often associated with better long-term outcomes. Idiopathic pericardial effusion has no identifiable cause and has been reported more



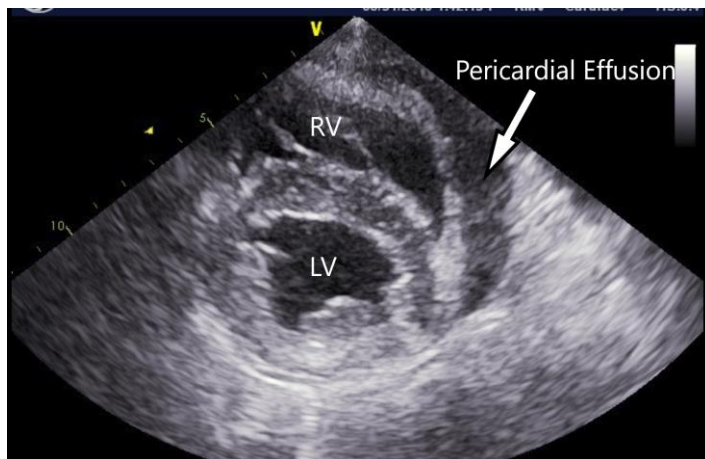
often in Golden Retrievers. It is felt that this may represent an inflammatory disorder. A diagnosis of idiopathic pericardial effusion can be presumed only after all other causes of pericardial effusion have been excluded. It is then generally definitively diagnosed from histopathology of the pericardium following surgery to remove the heart sac (pericardiectomy). When left untreated, chronic idiopathic pericardial effusion can lead to constrictive pericardial disease where the pericardium restricts the filling and normal performance of the heart.

Pericardial effusion is typically diagnosed via echocardiography and may allow for determination of a cause for the pericardial effusion (evaluate for presence of cardiac masses or other forms of heart disease). Thoracic radiographs can be suggestive of the presence of pericardial effusion when an enlarged, rounded (globoid) heart is noted (the thoracic radiograph above shows a very rounded and globoid appearing heart due to pericardial effusion).

When pericardial effusion is acute with signs of cardiac tamponade (weakness, collapse, shock like signs), pericardiocentesis is indicated. This is a procedure where a needle is introduced into the pericardial space to evacuate the fluid to allow the heart to fill and therefore pump more effectively. When performed properly, this is considered a safe procedure.

For animals with underlying idiopathic pericardial effusion or pericarditis, surgery to remove the pericardium is required. This is called pericardiectomy. This procedure may also be warranted in animals with heart base tumors that are bleeding intermittently causing cardiac tamponade.

The prognosis of pericardial effusion depends on the cause. If no identifiable cause is found (idiopathic pericardial effusion), long term prognosis is good following pericardiectomy. In one study, 72% of dogs with idiopathic pericardial effusion were alive at 18 months following surgery. If pericardial effusion is related to a heart base cancer, survival of over 2 years was reported in dogs who had a pericardiectomy performed. When effusion is related to a right atrial mass (hemangiosarcoma), prognosis is grave.



Key Points

The most common pericardial disease in a young animal is a peritoneopericardial diaphragmatic hernia (PPDH).

The most common acquired pericardial disease is pericardial effusion.

There are many causes of pericardial effusion – it can be secondary to bleeding cancers, CHF, infections, foreign bodies, coagulopathies, inflammation or idiopathic causes.

In cats the most common cause of pericardial effusion is CHF. In dogs, the most common causes are cancer or idiopathic pericardial effusion.

Echocardiography is used to diagnose pericardial effusion and further evaluate potential causes.

Some animals may benefit from surgical removal of the pericardium called a pericardiectomy.

