

Pericardial effusion in dogs

What is pericardial effusion?

The heart is enclosed with a thin, two-layered membranous sac, the *pericardium*. A small volume of fluid exists in the space between the two layers of the pericardium under normal circumstances. *Pericardial effusion* refers to the accumulation of much larger volumes of fluid in this space.

Consequences of pericardial effusion

Pericardial effusion causes compression of the heart, reducing its ability to fill. *Cardiac tamponade* can occur, causing circulatory collapse. Severely low blood pressure, abnormal heart rhythms (cardiac arrhythmias) and death can follow.

Pericardial effusion is a cardiac emergency.

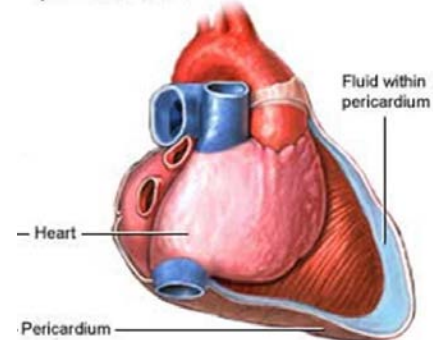
What are the clinical signs of pericardial effusion and how is it diagnosed?

Dogs with pericardial effusion typically develop a sudden onset of lethargy, weakness or collapse in less than 24 hours. In some cases, the signs may develop more slowly over a few days. Abdominal distension may occur secondary to congestion of abdominal organs or free abdominal fluid, all of which occurs secondary to compression of the heart. Pericardial effusion is suspected based on patient history and examination. Thoracic radiographs (x-rays) can identify enlargement of the cardiac silhouette. Screening ultrasound of the chest confirms the presence of fluid around the heart.

What causes pericardial effusion?

- Pericardial effusion in dogs most commonly occurs secondary to *neoplasia (cancer)*. Less commonly, it occurs secondary to bleeding disorders, rupture of cardiac chambers, congestive heart failure, or trauma. If no cause is identified during the initial evaluation, pericardial effusion is considered *idiopathic (cause undetermined)*. Unfortunately, some dogs with 'idiopathic' pericardial effusion do have cancer that is not initially detectable.
- An echocardiogram (cardiac ultrasound) by a veterinary cardiologist is the gold standard method by which it is determined if cancer of the heart is the cause of pericardial effusion. The most common forms of cardiac cancer identified are hemangiosarcoma (HSA), chemodectoma (also known as *heart base mass* or *aortic body tumor*), and mesothelioma.
- Golden retrievers and German Shepherds are particularly prone to *hemangiosarcoma*.
- Brachycephalic (short-faced or short-headed) breeds such as Pugs, Boston Terriers, Boxers, and Bulldogs, are more likely to develop *chemodectomas* (heart base masses)
- *Mesothelioma* is often microscopic and not detectable via ultrasound. Some dogs with "idiopathic" pericardial effusion are diagnosed with mesothelioma later on via other diagnostic tests.

Compression of the heart due to fluid accumulation within the pericardium



Immediate treatment

Immediate treatment is required to stabilize a patient with pericardial effusion. This is achieved by *pericardiocentesis*, or removal of the fluid from the pericardial space. This procedure requires sedation and advancement of a needle between the ribs into the chest. Supportive care and monitoring are provided for 24-48 hours thereafter in most patients.



Echocardiogram of a dog displaying pericardial effusion

Follow-up treatment and prognosis

Long-term treatment and prognosis for dogs with pericardial effusion are variable and dependent on the cause. If cancer is present, referral to a veterinary oncologist is recommended to discuss treatment options.

For dogs with pericardial effusion secondary to cancer, the type of cancer identified dictates prognosis:

- ◆ Unfortunately, prognosis for hemangiosarcoma is poor because the tumor has a high rate of *metastasis* (spread to other organs).
 - Surgical removal or debulking of the tumor is possible in a small number of patients, but not curative. Survival time with surgery alone is 4-6 weeks. Survival time for surgery followed by chemotherapy is approximately 6 months. Thus, surgery is not advised unless follow-up chemotherapy is part of the treatment plan.
 - Survival time with chemotherapy alone is approximately 4 months but avoids hospitalization and discomfort associated with surgery.
 - Removal of the pericardium (*pericardiectomy*) is NOT recommended with cardiac hemangiosarcoma.
- ◆ Heart base masses/chemodectomas are slow growing tumors that have a relatively low rate of metastasis. Dogs may live many months before the pericardial effusion recurs after the initial drainage procedure. Surgical removal of the tumor is not possible. If/when the pericardial effusion recurs in these dogs, surgical removal of the pericardium (*pericardiectomy*) is advised and has been shown to significantly improve survival.
- ◆ Dogs with idiopathic effusion may also live for many months before the effusion recurs. If/when it does recur, pericardiectomy is recommended, which improves long-term survival. In some of these cases, biopsy of the pericardium at the time of pericardiectomy reveals that cancer is in fact present in the form of mesothelioma.

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