

## **DIAGNOSIS AND TREATMENT OF PERICARDIAL EFFUSION**

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Pericardial effusion is the accumulation of fluid in the sac around the heart. There are multiple causes of pericardial effusions in dogs, but the most common reasons are “idiopathic pericardial effusions” or tumours (haemangiosarcoma , chemodectoma ,mesothelioma , lymphoma, rhabdomyosarcoma , thyroid adenocarcinoma,...). Mild effusions can also be seen with right- sided congestive heart failure, left atrial tear and occasionally with congenital lesions such as pericardioperitoneodiaphragmatic hernia. Infectious pericarditis is extremely rare in the dog (mostly FB migration). The fluid can be watery (hydropericardium), bloody (hemopericardium) or pus-like (pyopericardium). The pericardium is distendable, but only to a limited extent. When the sac is maximally stretched with fluid, further accumulation of fluid will start compressing the heart (also called “tamponade”). As a result, no blood can return to the heart, and very little is pumped out of the heart, causing typical clinical signs.

Dogs with pericardial effusion are often exercise-intolerant, show signs of weakness and sometimes lose their appetite. Idiopathic pericardial effusions build up insidiously (most cases develop over a period of days to a few weeks) and therefore the clinical signs are often overlooked. Tumours tend to bleed more acutely, and therefore these animals are often presented collapsed with pale mucous membranes.

Idiopathic pericardial effusion occurs primarily in medium to large breed dogs, with Golden Retrievers and Labrador retrievers most commonly affected. Other breeds like St-Bernards, Newfoundland dogs and German Shepherds have also been reported, together with many other breeds. The age varies from 1-14 years (average of 6 years), and males are more commonly affected than females.

The clinical findings associated with pericardial effusion include: reduced palpable apex beat and muffled heart sounds, forward failure (tachycardia, lethargy, weak pulses) and right-sided congestive heart failure (ascites, jugular distension). Pericardial effusion should be distinguished from the more common dilated cardiomyopathy because treatment and outcome are completely different.

The diagnosis of pericardial effusion is made on the basis of the clinical examination, electrocardiography, thoracic radiography and

echocardiography. ECG can show the presence of pathognomic electrical alternans in up to 30 % of the cases. On radiography, the cardiac shadow loses its outline and becomes very enlarged and globular in shape. There is obvious caudal vena cava congestion, and often pleural effusion and ascites. Dilated cardiomyopathy and some congenital defects may occasionally produce similar radiographic findings, making definite diagnosis difficult by radiography alone. Echocardiography has been established as the most sensitive test for diagnosing PE in the dog and is very important to rule out tumours.

Treatment for pericardial effusion consists of drainage of the effusion under local anaesthesia. The technique will be discussed in detail during the lecture. Medical therapy is never of benefit. The obtained fluid will be analysed for malignancy because a normal echocardiogram does not always exclude the absence of tumour. However neoplastic cells are rarely found and one has to be aware that it is impossible to differentiate reactive mesothelial cells from neoplastic mesothelial cells. Several contradictory reports with regards to the value of the pH of the PE exist and the author does not routinely recommend this.

In case of idiopathic pericardial effusion 50 % of the animals will have a second episode and subtotal pericardectomy is strongly recommended at

that stage, because 75 % will have a third episode. Subtotal pericardectomy is most commonly performed by thoracotomy but keyhole surgery is an option. However window pericardectomy should be avoided because of the constrictive effects of the remainder of the pericardium. Once the pericardial sac has been removed, the prognosis is very good for those animals with idiopathic PE and most animals will have a normal lifespan. Occasionally Golden Retrievers will develop a chronic inflammatory pleural effusion after pericardectomy and might warrant repetitive thoracocentesis.

### **Suggested Readings:**

Gidlewski J, Petrie JP. Therapeutic pericardiocentesis in the dog and cat. Clin Tech Small Anim Pract. 2005 Aug;20(3):151-5.

Shaw SP, Rush JE Canine pericardial effusion: diagnosis, treatment, and prognosis. Compend Contin Educ Vet. 2007 Jul;29(7):405-11.

Stafford Johnson M, Martin M, Binns S, Day MJ. A retrospective study of clinical findings, treatment and outcome in 143 dogs with pericardial effusion. J Small Anim Pract. 2004 Nov;45(11):546-52.

**Take home message:**

The triad of clinical signs associated with pericardial effusion are very pathognomic. It should therefore be distinguished from the more common dilated cardiomyopathy because treatment and outcome are completely different. Prognosis really depends on the underlying disease.

## MCQ

Which of the following clinical signs is not compatible with the diagnosis of pericardial effusion.

- a. **Pulmonary oedema**
- b. Ascites
- c. Pleural effusion
- d. Jugular distension
- e. Weak pulses

Which of the following drugs is contra-indicated for the emergency treatment of pericardial effusion

- a. Furosemide
- b. Corticosteroids
- c. ACE-inhibitor
- d. Pimobendan
- e. **All of the above**