

VETERINARY VOICE: Tips of the Trade

Critical Care – Pericardial Effusion

What is pericardial effusion and why does it occur?

When fluid collects within the pericardial sac, it is called pericardial effusion. If enough fluid collects within the sac over a short period of time, it can cause cardiac tamponade. During cardiac tamponade, the fluid puts pressure on the heart to the point that the chambers of the heart cannot expand to fill with blood. If they cannot fill with blood, the heart cannot pump blood to the rest of the body.

Pericardial effusion can be idiopathic or occur for a number of reasons including: bleeding, bacterial or viral infection, heart failure, low blood protein (albumin) levels, coagulopathies, left atrial rupture in dogs with mitral valve disease or cats with severe CHF, neoplasia of heart, heart base, or pericardium

- Right atrial hemangiosarcomas, chemodectomas, lymphosarcoma, other carcinomas
- Infectious pericarditis (Coccidioidomycosis, Actinomyces, Nocardia)

What are the clinical signs?

- General signs of illness: weakness, lethargy, intolerance to exercise, dyspnea, and decreased appetite.
- In some specific cases, including patients in cardiac tamponade, you may also notice fainting episodes, distention of the belly, or difficulty breathing.
- Muffled heart sounds
- Poor pulse quality, liver enlargement, or pleural and/or peritoneal effusion

Diagnostics?

- **Thoracic radiographs:** globular cardiomegaly; possibly pleural effusion or ascites
- **Echocardiogram:** confirm pericardial effusion and possibly identify underlying cause like right atrial mass or heart based tumors
- **Pericardial fluid analysis:** cytology is not usually helpful in differentiation of neoplastic effusion from inflammatory effusions except sometimes for lymphoma or septic inflammation; pH of pericardial fluid < 7.0 suggestive of inflammation pH > 7.4 suggestive of neoplasia

Treatment?

Removing even a small amount of fluid via pericardiocentesis in a patient experiencing cardiac tamponade helps relieve the pressure around the heart. The heart rate decreases and the pulse quality improves making the patient feel better. IV fluids at shock doses may be required if hypotension is present. Diuretics and venodilators are contra-indicated because they reduce ventricular filling predisposing to hypotension. After successful pericardiocentesis, 1 or 2 doses of furosemide will help enhance renal excretion of sodium.

Complications?

Complications: puncture or laceration of the heart, lung or major blood vessels, introduction of air, infection or cancer to the remainder of the chest. The benefits from performing pericardiocentesis usually outweigh the potential complications. The fluid that was present around the heart may return over a period of days to months. If pericardiocentesis needs to be repeated, pericardectomy is recommended to allow the fluid to continually drain into the thoracic cavity.

Prognosis

Prognosis is highly dependant on the underlying cause. It is generally favorable with idiopathic hemorrhagic pericardial effusion, guarded with infectious pericarditis, and poor to grave with neoplasia.

Questions?

The Veterinary Specialty Center of Tucson has a board-certified criticalist caring for critical cases every day of the week. They are also available to answer questions or accept referrals 7 days a week. The critical care service is open 24 hours a day and is staffed by highly trained doctors and technicians at all times. Board-certified criticalists have four additional years of training after veterinary school and are certified by the American College of Veterinary Emergency and Critical Care to assure competency in advanced veterinary critical care.

Critical Care Experts:
Heather Connally,
MS, DVM, DACVECC
Stacy Armstrong,
DVM, DACVECC