

PERICARDIAL EFFUSION

(FLUID BUILD-UP BETWEEN THE HEART AND THE SAC SURROUNDING THE HEART)

BASICS

OVERVIEW

- Fluid build-up between the heart and the sac surrounding the heart (known as “pericardial effusion”) with resulting compression of the heart (known as “cardiac tamponade”)
- The sac surrounding the heart is the “pericardial sac” or “pericardium”
- “Effusion” is the medical term for the fluid that builds up within body cavities
- The heart of the dog or cat is composed of four chambers; the top two chambers are the right and left atria and the bottom two chambers are the right and left ventricles

SIGNALMENT/DESCRIPTION of ANIMAL

Species

- Dogs
- Uncommon in cats

Breed Predislection

- Golden retrievers and German shepherd dogs are more likely than other breeds to have cancer of the right atrium (known as “right atrial hemangiosarcoma”) and to develop fluid build-up of unknown cause (so called “idiopathic pericardial effusion”)
- Short-nosed, flat-faced (known as “brachycephalic”) breeds are more likely than other breeds to develop aortic body tumors (tumors that develop from specialized cells that detect changes in oxygen and carbon dioxide levels in the blood, the cells are located in the aorta [main artery of the body] at the base of the heart)

Mean Age and Range

- Middle-aged to older dogs

Predominant Sex

- Male dogs may be more likely than female dogs to develop fluid build-up of unknown cause (idiopathic pericardial effusion)

SIGNS/OBSERVED CHANGES in the ANIMAL

- Long-term (chronic) fluid build-up between the heart and the sac surrounding the heart (pericardial effusion) often causes fluid build-up in the abdomen (known as “ascites”)
- Sluggishness (lethargy)
- Lack of appetite (known as “anorexia”)
- Weakness
- Exercise intolerance
- Abdominal enlargement or distension
- Breathing distress
- Fainting (known as “syncope”) or collapse

Sudden (Acute) Pericardial Effusion

- Pale gums and moist tissues of the body (known as “mucous membranes”) or the pink color of the gums is slow to return when the gums are blanched by finger pressure (known as “poor capillary refill time”)
- Weak pulses
- Weakness, fainting (syncope), collapse
- Rapid breathing (known as “tachypnea”) and/or rapid heart rate (known as “tachycardia”)

Long-Term (Chronic) Pericardial Effusion

- Enlargement or distension of the jugular veins (located in the neck)
- Fluid build-up in the abdomen (ascites)
- Muffled heart sounds
- Weak pulses
- Pale gums and moist tissues of the body (mucous membranes) or the pink color of the gums is slow to return when the gums are blanched by finger pressure (poor capillary refill time)
- Rapid breathing (tachypnea) and/or rapid heart rate (tachycardia)

CAUSES

- Tumors or cancer (such as hemangiosarcoma), heart-base tumor, tumor or cancer of the thyroid gland (known as “thyroid adenoma” or “adenocarcinoma”), mesothelioma, and cancer that has spread (known as “metastatic cancer”), and lymphoma in cats
- Unknown cause (idiopathic pericardial effusion)
- Blood-clotting disorder (known as a “coagulopathy”)—poisoning with a vitamin K-antagonist rodenticide (such as warfarin); decreased number of platelets in the blood (known as “thrombocytopenia;” “platelets” and “thrombocytes” are

names for the normal cell fragments that originate in the bone marrow and travel in the blood as it circulates through the body; platelets act to “plug” tears in the blood vessels and to stop bleeding); and other blood-clotting disorders

- Infection—feline infectious peritonitis (FIP); fungal infection (coccidioidomycosis); bacterial infection/inflammation of the sac surrounding the heart (known as “pericarditis”)
- Congenital (present at birth) disorders—pericardioperitoneal diaphragmatic hernia (condition in which defects exist in the lower part of the diaphragm [the muscular partition between the chest and abdomen] and the sac surrounding the heart [pericardial sac], allowing abdominal organs [such as the stomach, small intestines, liver] to move into the space between the heart and pericardial sac)
- Tear or trauma to the left atrium or heart
- Congestive heart failure; “congestive heart failure” is a condition in which the heart cannot pump an adequate volume of blood to meet the body’s needs
- Foreign body
- Inflammation of the sac (pericardial sac or pericardium) around the heart, characterized by thickening of the sac (condition known as “constrictive pericarditis”) with development of scar tissue

TREATMENT

HEALTH CARE

- Fluid build-up between the heart and the sac surrounding the heart (pericardial effusion) with resulting compression of the heart (cardiac tamponade) warrants immediate tapping and draining of the space between the heart and the sac surrounding the heart (procedure known as “pericardiocentesis”)
- Repeated pericardiocenteses may be needed; surgery may be indicated in selected dogs
- Pericardiocentesis rarely is required in treatment of the cat
- Unless the patient has marked dehydration, administration of fluids generally is not required or recommended for treatment of long-term (chronic) build-up of fluid in the space between the heart and the sac surrounding the heart (pericardial effusion)
- Administer oxygen to dogs with rapid breathing (tachypnea) or signs of circulatory instability

SURGERY

- Surgical removal of part of the sac around the heart (sac is the “pericardium;” procedure is a “pericardectomy”) may be useful in the treatment of fluid build-up between the heart and the sac surrounding the heart (pericardial effusion) accompanying heart-base tumors and may prolong survival
- If fluid build-up is of unknown cause (idiopathic pericardial effusion)—may respond to tapping and draining the space between the heart and the sac surrounding the heart (pericardiocentesis); surgical removal of part of the sac around the heart (pericardectomy) is indicated for recurrent fluid build-up
- Some tumors may be treated surgically

MEDICATIONS

Medications presented in this section are intended to provide general information about possible treatment. The treatment for a particular condition may evolve as medical advances are made; therefore, the medications should not be considered as all inclusive.

- Drugs should not be used in place of tapping and draining the space between the heart and the sac surrounding the heart (pericardiocentesis)
- Medications to remove excess fluid from the body (known as “diuretics”)—may help reduce fluid build-up in the abdomen (ascites), but may lead to side effects and patient weakness
- Vitamin K—indicated for patients with rodenticide-anticoagulant (such as warfarin) poisoning
- Antibiotics are indicated in animals with infection/inflammation of the sac around the heart (infectious pericarditis)
- Chemotherapy—may be useful to treat fluid build-up (effusion) caused by lymphoma; usually ineffective in the treatment of other tumors (such as atrial hemangiosarcoma and heart-base tumor); doxorubicin-based chemotherapy following surgical removal of a tumor involving the right atrium has been shown to increase survival times, but dogs rarely survive more than 6 months following surgery
- Steroids administered by mouth or injection (known as “systemic administration”) or within the sac surrounding the heart (known as “intrapericardial administration”)—may be useful in dogs with fluid build-up of unknown cause (idiopathic pericardial effusion)
- Azathioprine (a chemotherapeutic drug used to decrease the immune response) can be considered for recurrent fluid build-up of unknown cause (idiopathic pericardial effusion)

FOLLOW-UP CARE

PATIENT MONITORING

- Electrocardiogram (“ECG,” a recording of the electrical activity of the heart)—advised during first 24 hours of tapping and draining the space between the heart and the sac surrounding the heart (pericardiocentesis), as the procedure often leads to irregular heart beats (known as “arrhythmias”)

- Fluid build-up between the heart and the sac surrounding the heart (pericardial effusion) may recur at any stage; follow-up examination and performance of an echocardiogram (use of ultrasound to evaluate the heart and major blood vessels) at 10 to 14 days and every 2 to 4 months are recommended to detect recurrent fluid build-up of unknown cause (idiopathic pericardial effusion)

POSSIBLE COMPLICATIONS

- Low blood pressure (known as “hypotension”) or shock
- Air in the space between the lungs and chest wall (known as “pneumothorax”), irregular heart beats (arrhythmias), and tears or cuts into the heart muscle during the procedure to tap and drain the space between the heart and the sac surrounding the heart (pericardiocentesis)

EXPECTED COURSE AND PROGNOSIS

- Right atrial hemangiosarcoma—poor; tumor is highly malignant, usually not able to remove it surgically at time of diagnosis, and it is minimally responsive to chemotherapy
- Chemodectoma—fair; slow-growing tumor, late to spread (metastasize); surgical removal of part of the sac around the heart (pericardectomy) often resolves clinical signs; survival of up to 3 years has been reported following pericardectomy
- Prognosis is good with fluid build-up of unknown cause (idiopathic pericardial effusion); approximately 50% of cases resolve after 1 or 2 procedures to tap and drain the space between the heart and the sac surrounding the heart (pericardiocentesis); surgical removal of part of the sac around the heart (pericardectomy) is often curative in persistent cases

KEY POINTS

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