HOUSE & JACKSON
VETERINARY HOSPITAL

PLEURAL EFFUSION

What is Pleural Effusion?

"Pleural" refers to the pleural cavity; the "pleural cavity" is the space between the lungs and chest wall—normally the space is very small, unless fluid builds up in it. "Effusion" is the medical term for the fluid that builds up within body cavities. "Pleural effusion" is an abnormal accumulation of fluid within the space between the lungs and chest wall (pleural cavity).

What causes Pleural Effusion?

High Hydrostatic Pressure

- Pressure of blood within the capillaries; as blood flows through the capillaries, hydrostatic pressure causes fluids to leave the blood and enter the tissues
- Congestive heart failure (CHF); "congestive heart failure" is a condition in which the heart cannot pump an adequate volume of blood to meet the body's needs
- Over hydration (excessive fluid in the body)
- Tumours or cancer within the chest

Low Oncotic Pressure

- Pressure exerted by dissolved compounds in blood plasma that stay within the circulating blood to help maintain circulating blood volume
- Low levels of albumin (a type of protein) in the blood (known as "hypoalbuminemia")—occurs in protein-losing enteropathy and nephropathy (conditions in which proteins are lost from the body through the intestines [enteropathy] or kidneys [nephropathy]) and liver disease

Abnormalities of Blood Vessels (Vascular Abnormalities) or Vessels That Transport Lymph (Known as "Lymphatic" Abnormalities)

- Infectious disease—bacterial, viral, or fungal
- Tumours or cancer (such as mediastinal lymphoma; tumour of the thymus [known as a "thymoma"]; mesothelioma; primary lung tumour, and cancer that has spread [known as "metastatic cancer"])
- "Chylothorax" is an accumulation of chyle in the space between the chest wall and lungs (pleural cavity); "chyle" is a milky to slightly yellow fluid composed of lymph and fats taken up from the intestines and eventually transferred to the circulation through the thoracic duct; "lymph" is a watery fluid that contains white-blood cells that travels through lymphatic vessels—it transports lymphocytes (a type of white-blood cell) and fats from the small intestines to the blood stream; the "thoracic duct" is the main lymph vessel of the body—it crosses the chest near the spine, and empties into the venous circulation
- Chylothorax may develop from lymphangiectasia (condition characterized by dilation of the lymphatic vessels resulting from blockage or obstruction of lymphatic vessels); congestive heart failure (condition in which the heart cannot pump an adequate volume of blood to meet the body's needs); blockage of the cranial vena cava (main vein that returns blood from the body to the heart); cancer; fungal infections; heartworm disease; defect or tear in the diaphragm (the muscular partition between the chest and abdomen) that allows abdominal contents (such as the liver, stomach, or intestines) to enter the chest (condition known as a "diaphragmatic hernia"); twisting of a lung lobe (known as a "lung-lobe torsion"); or trauma
- Diaphragmatic hernia (defect or tear in the diaphragm [the muscular partition between the chest and abdomen] that allows abdominal contents [such as the liver, stomach, or intestines] to enter the chest)
- Blood in the space between the lungs and chest wall (pleural cavity; condition known as "hemothorax"), such as from trauma, cancer, or a blood-clotting disorder (known as a "coagulopathy")
- Twisting of a lung lobe (lung-lobe torsion)
- Blood clots to the lungs (known as "pulmonary thromboembolism")
- Inflammation of the pancreas (known as "pancreatitis")

Clinical Signs

- Depend on the fluid volume in the space between the lungs and chest wall (pleural cavity), rapidity of fluid accumulation, and the underlying cause
- Difficulty breathing (known as "dyspnoea"); breathing often is shallow
- Rapid breathing (known as "tachypnea")
- Standing with the elbows away from the body in an attempt to increase lung capacity (known as "orthopnoea")
- Open-mouth breathing
- Bluish discoloration of the skin and moist tissues (known as "mucous membranes") of the body caused by inadequate oxygen levels in the red blood cells (discoloration known as "cyanosis")
- Exercise intolerance
- Sluggishness (lethargy)
- Lack of desire to eat (known as "in appetence")
- Cough
- Muffled or inaudible heart and lung sounds in the lower chest, heard when listening to the chest with a stethoscope

Treatment

Health Care

- First, perform a medical procedure to tap the chest (known as a "thoracentesis") and to remove fluid from the space between the lungs and chest wall (pleural cavity) to relieve breathing distress; if the pet is stable after thoracentesis, outpatient treatment may be possible for some diseases
- Most pets are hospitalized because they require intensive management, such as indwelling chest tubes (for example, in pets with build-up of pus in the space between the lungs and chest wall [condition known as a "pyothorax"] or those that have had chest surgery)
- Preventing further build-up of fluid in the space between the lungs and chest wall (pleural cavity) requires treatment based on a definitive diagnosis
- Placement of a shunt to drain fluid from the space between the lungs and chest wall (pleural cavity) and into the abdominal cavity (shunt known as a "pleuroperitoneal shunt") may relieve clinical signs in pets with pleural effusion that does not respond to medical treatment

Activity

Depends on underlying disease

Diet

Depends on underlying disease

Surgery

Surgery is indicated for management of some causes of fluid build-up in the space between the lungs and chest wall (pleural effusion), such as for tumours/cancer, diaphragmatic hernia repair, lymphangiectasia, foreign-body removal, and twisting of a lung lobe (lung-lobe torsion)

What Medications are available?

Treatment varies with underlying specific disease.

Medications to remove excess fluid from the body (known as "diuretics") generally are reserved for pets with diseases causing fluid retention and volume overload (such as 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).

Possible Complications

- Depend on underlying disease
- Fluid build-up within the lungs as the lungs are re-inflated or re-expanded (known as "re-expansion pulmonary oedema") may develop after fluid in the space between the lungs and chest wall (pleural effusion) is removed

Follow Up Care

X-ray (radiographic) evaluation is key to assessment of treatment in most pets. Where possible avoid any trauma.

Expected Prognosis

Expected prognosis varies with underlying causes, but usually guarded to poor.

In a study of 81 cases of fluid build-up in the space between the lungs and chest wall (pleural effusion) in dogs, 25% recovered completely and 33% died during or were euthanized immediately after completing diagnostic evaluation.