

Chylothorax in Dogs

What is chylothorax?

Chylothorax is a condition in which a milky, white fluid called *chyle* accumulates around the lungs in the chest cavity (also called the thoracic cavity or *thorax*). Chyle is a normal bodily fluid that originates as a clear fluid in tissues throughout the body where it is called *lymph*. Lymph from all of the body's organs slowly collects into a system of vessels called *lymphatic* vessels. The lymph from the intestines contains large amounts of fat, and once it mixes with lymph from other organs in the larger lymphatic vessels, the fluid takes on its final milky color and is called chyle. The last and largest of these vessels is called the *thoracic duct* and, itself, empties into one of the major veins near the heart. Here, chyle is delivered into the blood system where fat and other contents can be redistributed to the body.

The abnormal accumulation of chyle in the thorax reduces the amount of space in which the lungs can expand, making it difficult to breathe. In addition, the presence of chyle is irritating to the outer surface of the lungs. This eventually causes the lungs to become scarred, an irreversible change that further reduces their ability to inflate with air. This is called *fibrosing pleuritis* and is an unfortunate and inevitable consequence if chylothorax cannot be resolved.

Identifiable causes of chylothorax include heart disease, cancer in the chest cavity, and in rare instances, trauma (this is a more common cause of chylothorax in people). As discussed below, diagnostic testing is performed to search for one of these conditions. Frequently, however, no underlying cause can be found. In these cases, the final diagnosis is termed *idiopathic* chylothorax, or chylothorax of undetermined origin. Unfortunately, the majority of cases of chylothorax fall into this latter category.

How is chylothorax diagnosed?

The presence of fluid inside the chest cavity is typically suspected from the **history** provided and the **physical examination**. Affected dogs may have been noted to be breathing harder and more quickly than normal. Less specific changes may include decreased appetite and activity level. Weight loss may have been noted as well, likely due to both reduced appetite and the increased energy required to breathe. During examination, the sounds of the heart and lungs are quieter than usual in the lower parts of the chest where the fluid has settled.

Chest x-rays may be used to confirm both the presence and the quantity of fluid in the thorax. They also provide important information about the size of the heart, and may reveal other abnormalities such as masses in the chest cavity. Finally, chest x-rays are the best test to monitor the amount of fluid present over time. For example, if some sort of treatment is initiated (see below), repeat chest x-rays are crucial in assessing the response to therapy and guiding its adjustment if necessary.

Ultrasound examination of the heart (an **echocardiogram**) is used to definitively rule heart disease in or out as the cause of chylothorax. Ultrasound of the remainder of the chest cavity is performed to search for potentially cancerous masses. If one is seen, the ultrasound image can frequently be used as a guide to obtain a sample of the mass for microscopic analysis.

Either with or without the aid of ultrasound, a sample of the fluid is obtained from the chest cavity and sent to the laboratory. Microscopic and chemical analysis of this fluid is necessary to prove that it is truly chyle, and may also identify cancer cells if present. Finally, screening blood work is performed, along with urine analysis if possible. These provide information as to other concurrent conditions that may be present, and also yield baseline data before medications are used.

How is chylothorax treated?

Treatment often begins with *thoracocentesis*, or physical removal of fluid from the chest cavity using a needle and syringe. This can provide immediate relief and dramatic improvement in symptoms. It is also during this procedure that a fluid sample is collected for laboratory analysis. Occasionally, sedation is necessary to provide optimal safety during thoracocentesis.

If a specific cause is identified by one of the above diagnostic tests, then treatment is aimed accordingly. For example, medication may be prescribed for heart disease, or surgical removal of a cancerous mass may be recommended. Unfortunately, treatment of idiopathic chylothorax continues to be challenging, and sometimes unrewarding. No medical therapy has yet been shown to consistently improve or resolve chylothorax. Similarly, while different surgical techniques may be used in an attempt to treat this condition, their effectiveness remains unproven.

What is the prognosis? What should I watch for?

Long-term prognosis depends on the success of therapy if it is attempted, and whether or not fibrosing pleuritis is present. If chylothorax can be resolved, and if there is no significant scarring of the outer surfaces of the lungs, then complete return to normal may occur. Unfortunately, some dogs have already developed fibrosing pleuritis at the time of initial diagnosis. For such dogs, and for those that do not respond favorably to therapy, the prognosis is poor due to progressive compromise of the lungs' ability to expand.

It is important to watch for symptoms that may indicate recurrence or worsening of chylothorax. These may include **lethargy, weakness, loss of appetite, intolerance to activity or exercise, rapid or labored breathing**, and episodes of **fainting or collapse**. If any of these are noted, please contact either your regular veterinarian or the Cardiology Service at Veterinary Specialty Services as soon as possible to discuss an appropriate plan. If you feel that the problem should not wait and requires immediate attention, then an emergency visit is warranted.