

## Chylothorax in Cats

### Definition

Chylothorax is a relatively uncommon disorder in the cat whereby lymph fluid (chyle) accumulates in the pleural cavity. This small cavity lies between the lungs and the inner lining of the chest wall. Normally, only about a teaspoon of clear fluid is present in this space. The purpose of the fluid is to keep the surface of the lungs slippery so that they don't adhere to the chest wall.

When a diagnosis of chylothorax is made, two abnormalities have developed.

1. A pleural effusion is present. This means that an abnormal amount of fluid has accumulated in the pleural space. The significance of this fluid accumulation is in the cat's inability to completely expand the lungs. The chylous fluid takes up space and forces the cat to breathe rapidly and often deeply, trying to expand its lungs. In some cases, this situation stresses the cat to the point of respiratory failure and death.

2. The normally clear fluid in the pleural space has been replaced by a milky-white fluid from the lymph ducts. This is a unique fluid in both appearance and in composition. The lymphatic ducts are somewhat similar to the vessels known as arteries and veins. However, instead of carrying blood, they carry lymph fluid from the lymph nodes to the heart. The chyle is very irritating to the pleural and makes it sticky. This prevents the lungs from sliding easily when breathing, making it not only difficult but uncomfortable for the cat to breathe. If the chyle remains in the space long enough it can cause thickening and stiffening of the normally very thin and flexible membrane, and may cause adhesions which prevent the chest and lungs from expanding later.

### Contributing factors

Heart disease is the most common cause of chylothorax in the cat. However, some cats will develop a leak in the lymph ducts, allowing lymph (chyle) to leak into the pleural space.

### Clinical signs

The main clinical sign of chylothorax is labored breathing. However, this finding is common to all cases of pleural effusion. Some cats appear to be "holding their breath" because there is a delay between inspiration and expiration. Interestingly, coughing is the first sign of chylothorax in some cats; it is not typically found with other causes of pleural effusion. This can be important because there are relatively few causes of cough in the cat as compared to the dog.

In some situations, clinical signs of the underlying disease (i.e., tumor, heart failure) may overshadow those of the pleural effusion. Occasionally, owners note no abnormalities other than depression or exercise intolerance. This is because fluid gradually accumulates in the pleural space, and the cat is able to adapt for awhile.

### Diagnosis

Several tests must be performed to achieve a diagnosis of chylothorax.

1. Thoracic radiography (chest X-ray). This will confirm the presence of fluid in the pleural space but does not characterize the type of fluid.

2. Fluid analysis. A small amount of fluid must be obtained from the chest cavity for analysis. First, it is inspected for color. Chyle is typically white or light pink in color. Next, chemical tests can be used to determine the triglyceride (fat) content of the fluid; it is typically high when the fluid is chyle. Finally, when examined under the microscope, it is found to have large numbers of lymphocytes (a type of white blood cell found in lymphatic fluid). Additionally, the fluid may be cultured for bacteria but it is virtually always sterile.

Once the presence of chylothorax is confirmed, additional tests will be performed in an attempt to identify an underlying cause. Such tests include routine blood work, additional chest and abdominal radiographs, tests for leukemia virus and immunodeficiency virus, cardiac tests, and heartworm testing.

## Treatment

Improvement of the cat's respiratory status is the first goal of therapy. Fluid can be drained from the pleural space with a syringe and needle. Unfortunately, in almost all cases the fluid will reform, and a drain tube will need to be surgically implanted to facilitate daily drainage. This tube may be left place until chyle accumulation stops.

If heart disease is suspected, diagnostic tests can be performed to evaluate the heart and treatment prescribed. This often controls or slows the accumulation of the chyle.

If fluid is still accumulating after 1-2 weeks, thoracotomy (exploratory chest surgery) may be recommended to search for the underlying cause or to repair a torn thoracic duct which will not heal. If the cause is trauma, most cats will heal on their own, and surgery may not be needed.

In long-term management, a low-fat diet may be helpful in reducing the fat content of the pleural fluid. This can make it easier for the fluid to be absorbed. A homeopathic medicine called Rutin has been shown to be beneficial in some cases of chylothorax. Rutin is available at most health food stores. Consult your veterinarian for the correct dose for your cat.

## Prognosis

Chylothorax is a serious and potentially fatal disease. The prognosis is generally grave except in situations where four conditions are met:

1. *Respiration is stabilized.* The cat must be able to withstand the initial diagnostic procedures and subsequent placement of a chest drainage tube. The accumulated fluid severely compromises respiration; as such, some cats die before sufficient fluid can be removed to improve their respiratory status.
2. *The underlying disease must be identified and successfully treated.* In many cases, an underlying cause cannot be identified. If the cause can be identified, it must be treatable.
3. *The underlying disease must not recur.* Chylothorax is likely to recur if the underlying disease cannot be identified and treated. When this is the case, the cat must be closely monitored for return of respiratory difficulty. In certain circumstances, the cat may be referred to a veterinary surgical specialist for placement of a special shunt, or drain. Results of such surgery are variable and management of the shunt tube can be time-consuming and fraught with difficulty.
4. *Resolution of the disease must occur before secondary complications develop.* Chyle is irritating to delicate tissue that lines the pleural cavity. After it begins to accumulate, permanent adhesions can develop in the chest due to scar tissue. This process is called fibrosing pleuritis. Once it is present, prognosis is very poor, even if the underlying disease has been successfully treated.