

# Chylothorax in Cats - Our Feline Friends Don't Like This Milk!

In a previous post, I reviewed pleural space disease. If you recall, these ailments cause fluid and/or air to abnormally accumulate between the lungs and the chest wall. There are many potential reasons for fluid to collect in the pleural space. There are even different types of fluid. This week, I share information about one of the more common types of fluid - chyle - found in this location to cause a condition called chylothorax. Happy reading!



Photo by Jean Beaufort

## Chylothorax - What is it?

The chest or thoracic cavity contains many vital structures, most notably the lungs and heart. When a cat (or you) breathes in, the chest wall expands outward and the diaphragm contracts. These movements decrease the pressure in the

anatomic location called the pleural space. The resultant negative pressure in the chest cavity allows the lungs to expand and fill with oxygen-rich air. We call the pleural space a *potential* space because there is minimal fluid (<5 mLs) and no air in this location under normal circumstances. As mentioned earlier, several disease processes cause larger volumes of fluid to accumulate in this potential pleural space. When this happens, the lungs can't expand as much, and thus the body can't take in oxygen normally.

Chyle is one of the types of fluids that can abnormally accumulate in the pleural space. Chyle is a white-to-light pink milky fluid (i.e.: looks like plain or strawberry milk) that contains fat (to give the milky appearance) and lymph(atic) fluid. The latter is extra fluid draining between the cells of the body that typically flows into lymph vessels and through lymph nodes. When something compromises the flow on lymph fluid in the body, it can accumulate in the pleural space.

## **Chylothorax - What causes it?**

There are many potential causes for chyle to accumulate in the pleural space. Major possibilities include:

- Heart disease
- Trauma
- Heartworm infestation
- Fungal disease
- Tumors in the chest cavity

Interestingly, we can't determine the cause in more than 50% of cats. We call this form idiopathic chylothorax, as the term idiopathic is the scientific way of saying, "we don't know why!"

## **Chylothorax - What does it look like?**

Cats with pleural effusion classically breathe rapidly and shallowly. They also frequently cough. Pet parents bring their cats to the hospital for labored breathing. These patients are truly at risk for sudden death because of their respiratory distress. Watch the video below to see the classic shallow & rapid breathing pattern of cats with chylothorax.

Other clinical signs commonly associated with chylothorax are:

- Lethargy
- Depression
- Appearance of intermittently breath holding
- Reduced (or loss of) appetite
- Exercise intolerance

Interestingly, some cats with chylothorax appear relatively stable. If pleural fluid accumulates slowly, then affected cats can adapt and compensate until the fluid accumulates to a critical volume, eliciting respiratory distress.

## **Chylothorax - How is it diagnosed?**

Documentation of pleural fluid is relatively straightforward. A patient's history and physical examination provide major clues about the site of cat's respiratory distress. For example, a cat breathing rapidly with shallow breathes strongly supports the presence of pleural space disease. A veterinarian will listen to the heart and lungs with a stethoscope. Normal lung and heart sounds are typically muffled when fluid and/or air has accumulated abnormally in the pleural space.

To confirm the presence of pleural fluid, the veterinarian will perform radiographs (x-rays) of the chest cavity and/or a procedure called a thoracocentesis to collect fluid from the pleural space. Evaluation of pleural fluid is required to determine if the fluid is, indeed, chyle. Once the presence of chyle is confirmed, additional testing will be recommended, potentially including:

- Blood & urine screening to assess major organ function
- Screening for feline leukemia virus (FeLV) and feline immunodeficiency virus (FIV)
- Heartworm antigen and antibody screening
- Heart ultrasound examination (called echocardiography)
- Heart muscle testing (i.e.: proBNP)
- Culture of pleural fluid for bacterial and fungal infections
- Abdominal imaging (radiographs/x-rays +/- sonography)
- Advanced imaging of the chest cavity (i.e.: CT scan)

Partnering with a board-certified veterinary internal medicine specialist can be invaluable for developing a logical and cost-effective diagnostic plan for a patient

with chylothorax.

## **Chylothorax - How is it treated?**

The initial priority for cats living with chylothorax is ensuring they can breathe comfortably. Such initial stabilization requires provision of supplemental oxygen and performing a thoracocentesis to remove pleural fluid. The rate at which fluid re-accumulates in the pleural space is variable, and may happen within 24 hours. Some patients require the placement of a temporary chest tube (called a thoracostomy tube) to facilitate fluid drainage.

Once affected patients are stable, then a thorough diagnostic investigation should proceed as efficiently as possible. It is imperative to identify a possible cause of chylothorax because until such a process is treated, fluid will continue to accumulate. Unfortunately for more than 50% of affected cats, we won't find an underlying cause. For these pets living with idiopathic chylothorax, both medical and surgical interventions are available. Major medical therapies include feeding a low-fat diet (~6% on a dry matter basis) and supplementing with a supplement called rutin. A low-fat diet is recommended to reduce blood triglyceride levels. Rutin reportedly stimulates special cells called macrophages to remove fat from chyle and may reduce the overall volume of lymph fluid in circulation.

Surgery is recommended for patients who fail to adequately respond to medical management. Several surgical interventions have been employed in patients with chylothorax, including:

- Thoracic duct ligation - The thoracic duct transports lymphatic fluid in the chest cavity. Ligating (closing off) this vessel successfully reduces or resolves chylothorax in up to 40% of cats. Watch the video below to see this procedure performed.
- Pleuroperitoneal shunting - In this technique, a special drain is placed to allow fluid to drain from the pleural space to the abdominal cavity. Unfortunately, this technique is not often successful, and is not currently recommended in cats.
- Thoracic duct ligation with pericardectomy - The pericardium is the sac

that surrounds the heart. When this sac is removed, lymphatic fluid flows more efficiently. When pericardectomy is combined with thoracic duct ligation, chylothorax resolves in up to 80% of affected cats. Watch the video below to this procedure.

Partnering with a board-certified veterinary surgeon is recommended if surgery is needed for cats living with chylothorax.

## **Chylothorax - What is fibrosing pleuritis?**

Remember the pleural space is a potential one. That means a large volume of fluid as occurs with chylothorax is abnormal. Chyle readily irritates the surface of the lungs called visceral pleura. With chronic irritation, the lungs scar (called fibrosis) and can't expand normally. Removal of this scar tissue (a process called decortication) is fraught with potential life-threatening complications. Thus, the best course of action to prevent fibrosis pleuritis is to aggressively diagnose and treat it as quickly as possible.

## **The take-away message about chylothorax in cats...**

Chylothorax is the presence of fat-laden lymph fluid in the pleural space. There are many potential causes, but unfortunately one is not identified in more than 50% of cats. Prompt identification, stabilization, and treatment are essential for maximizing the likelihood of a positive outcome.

To find a board-certified internal medicine specialist, please visit the American College of Veterinary Internal Medicine.

To find a board-certified veterinary surgeon, please visit the American College of Veterinary Surgeons.

Wishing you wet-nosed kisses,

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