

## Liver Disease in Cats

The liver, the largest organ in a cat's body, is located just behind her diaphragm. It performs a huge number of tasks in the body. Some of these important jobs are:

- Helping to clean the blood by **removing toxins**.
- **Producing bile**, a substance that is stored in the gall bladder once it's made by the liver. The bile is then released into the GI tract. It contains toxins that are removed from the body through the stool. It also includes substances that help with the digestion of fats and certain vitamins.
- **Converting sugars to glycogen** and storing them until they are needed.
- Producing substances that are necessary to **promote proper blood clotting**.

When the liver is damaged enough to experience decreased function, the result is liver disease.

### What Causes Feline Liver Disease?

Liver disease in cats can be the result of a number of different processes. Some of these conditions result in acute, or sudden, liver dysfunction while some result in chronic, or long-term and progressive liver disease. Below are some of the most common causes of liver disease in cats.

- **Hepatic lipidosis** is the most common cause of liver function in cats. When a cat, especially an overweight one, stops eating for any reason, she is at risk of developing hepatic lipidosis, or *fatty liver disease*. This is a result of her body using her fat stores for energy. Because cats have evolved to use mostly protein for energy, their livers are not equipped to handle large amounts of fat, and liver failure can result from this fat mobilization. Generally, around two weeks of eating half of her normal amount is necessary for a cat to develop hepatic lipidosis. Some of the common things that cause cats to stop eating, ultimately resulting in hepatic lipidosis are:
  - Stress.
  - Pancreatitis.
  - Diabetes.
  - The presence of other liver conditions such as cholangiohepatitis.
  - Cancer.
- **Cholangiohepatitis or cholangitis** is the second most common cause of liver disease in cats. This condition occurs when there is inflammation in the bile duct system and the liver. There are three types cholangiohepatitis. These types and their causes are:
  - **Neutrophilic cholangiohepatitis** is caused by infection of the bile ducts with bacteria that have migrated from the intestines.
  - **Lymphocytic cholangiohepatitis** is suspected to be an immune-mediated condition.
  - **Cholangiohepatitis caused by liver flukes** is a third, rare type of cholangiohepatitis in cats.

Some cats have concurrent pancreatitis and inflammatory bowel disease along with cholangiohepatitis. This condition is sometimes called "triaditis."

- **Toxoplasmosis** is a protozoa that can infect cats and sometimes results in liver disease.
- **Toxic hepatopathy** is liver failure caused by toxins. This is usually the result of the cat's ingestion of something poisonous to her, such as human medications. Tylenol is a very common cause of liver failure in cats. Because the intestinal blood supply goes directly to the liver for cleaning, ingested toxins can easily affect liver cells quickly after consumption.
- **Feline infectious peritonitis (FIP)** is a virus that affects cats and can result in liver failure.
- **Amyloidosis** is a disease process in which abnormal protein deposits are created within a cat's body. These can occur in the liver and cause liver disease. Amyloidosis is more common in certain cat breeds, such as Siamese.
- **Portosystemic shunt** is a malformation of the cat's system that she is born with. Blood from the intestinal tract bypasses the liver abnormally, so it isn't detoxified by the liver. Because of this, toxins build up in the bloodstream and result in illness.
- **Cancer** can cause liver disease in cats. The most common is lymphoma, but there are other cancers that can affect the feline liver as well.

#### What Are the Signs of Liver Disease in Cats?

- **Decreased appetite.** Liver disease can result in decreased or absent appetite in cats. Cats can also stop eating for some other reason, and this can result in hepatic lipidosis, which decreases appetite even further.
- **Weight loss.** This may be gradual or sudden. Cats with hepatic lipidosis have a fairly rapid weight loss.
- **Ascites.** The build-up of fluid in the abdomen (or ascites) occurs in the advanced stages of liver disease. Ascites is the result of increased pressure in the portal vein of the liver due to the malfunction of the organ.
- **Listlessness.** Cats with liver disease are often lethargic. They feel ill from the build-up of toxins in the bloodstream, and usually do not want to move around or play normally.
- **Vomiting and diarrhea.** Increased frequency vomiting and diarrhea is a sign of many illnesses in cats, including liver disease.
- **Increased water consumption and increased urination (PU/PD).** Cats with liver disease often begin drinking more water and urinating more. This is also a common sign of kidney disease, thyroid disease, and several other conditions in cats.
- **Dark urine.** An abnormally dark urine may occur in cats with liver disease as a result of the increased bilirubin present in the system. This may be mistaken for infection or blood by the owner.
- **Seizures.** The build-up of toxins in the bloodstream due to liver disease may eventually affect the brain, resulting in behavior changes and seizures. This condition is called *hepatic encephalopathy*.

#### Diagnosis of Feline Liver Disease

If your cat is showing any signs of illness that are consistent with liver disease, your veterinarian will first take a thorough history from you and perform a physical examination. During the exam, the

doctor may notice icterus (yellow coloring) in the whites of your cat's eyes, her skin, or her gums. An enlarged liver or fluid in the abdomen may also be detected, as well as signs of dehydration such as sunken eyes and tacky gums. Your veterinarian may then order some of the following tests to confirm the presence and type of liver disease:

- **General blood work:** There are certain changes that are commonly seen in the blood results of cats with liver disease. These include the following:
  - Increased liver function values: alanine aminotransferase (**ALT**), aspartate transaminase (**AST**), alkaline phosphatase (**Alk Phos**).
  - Decreased blood urea nitrogen (**BUN**) level.
  - Decreased **albumin** may be present in cats with liver disease because the liver isn't able to produce a normal amount of this protein.
  - Increased **bilirubin** is often present as liver disease progresses in cats. Bilirubin is a byproduct of the normal destruction of red blood cells in the body. Its increase may signal that the liver isn't able to clear these byproducts out like it normally would.
  - Increased **cholesterol** may be present in cats with liver disease.
- **Bile Acids Test:** If there are indications of liver disease on your cat's general blood work results but her bilirubin level is normal, your veterinarian may order a bile acids test. Your cat will need to stay at the veterinary clinic for a few hours and have blood samples taken before and after she eats a meal. Increased bile acids present in the blood after the meal indicated liver dysfunction.
- **Thyroid test:** Cats may experience increased liver function values secondarily to hyperthyroidism, an overactive thyroid gland. Your veterinarian may want to order a blood test for hyperthyroidism to rule this out.
- **FELV, FIV, and toxoplasmosis tests:** Your veterinarian may wish to learn if one of these feline illnesses is contributing to your cat's liver disease.
- **X-rays** of a cat with liver disease may show an enlarged or misshapen liver or the presence of excess fluid (ascites) in the abdomen.
- **Abdominal ultrasound** can help diagnose a portosystemic shunt or liver tumor.
- **Fine needle aspirate** may be done in conjunction with an abdominal ultrasound. A small needle is inserted into your cat's liver, using the ultrasound to guide its placement, and some cells are removed to be examined under the microscope. This can sometimes lead to a diagnosis of the exact liver condition that is present.
- **Biopsy** may be necessary to diagnose some cases of feline liver disease. An abdominal surgery is done, and a piece of the liver is removed to be studied in the lab.

### Treatment of Liver Disease in Cats

Treatment of feline liver disease depends on the cause.

- Portosystemic shunts may be **surgically corrected**.
- Hepatic lipidosis requires **aggressive nutritional support**, often in the form of a stomach tube or force-feeding.

- **Antibiotics** are used in acute neutrophilic cholangiohepatitis cases and to treat toxoplasmosis.
- **Corticosteroids** may be used in chronic neutrophilic cholangiohepatitis cases.
- **Supportive therapies** such as intravenous fluids, appetite stimulant and anti-nausea medications, and specially-formulated diets may all be useful in the treatment of feline liver disease, depending on its cause.
- **Ursodiol** is a medication that helps improve the flow of bile acids through the bile ducts, thus increasing the liver's ability to more properly deal with toxins.
- **Taurine** is an amino acid that must be supplied in a cat's diet. Sick cats that aren't eating well may need to have it supplemented.
- **Vitamin B12 ,Vitamin K and Vitamin E** may need to be given to cats that with liver disease because they aren't able to process certain vitamins properly.

### Questions to Ask Your Veterinarian If Your Cat Is Diagnosed with Liver Disease

- **What is the prognosis for my cat?** The long-term prognosis for cats with liver disease varies depending on the cause. The liver is regenerative, and proper function can be restored in some cases. The underlying cause of the liver disease must be determined and corrected while supportive care is provided in order for the cat's condition to improve.
- **Are there holistic treatment options that we can explore for treating liver disease in my cat?**
  - **S-adenosylmethionine (Same)** is a dietary supplement that is transformed to *glutathione* in a cat's body. This substance is a powerful antioxidant that protects liver cells from further damage caused by the build-up of toxins during liver disease. Same also aids in the secretion and movement of bile acids out of the liver and is converted to substances that act as anti-inflammatories as well.
  - **Milk thistle** is an herb with strong anti-inflammatory effects. Milk thistle contains silymarin, which may be able to block the entry of toxins into the liver and remove them from the body, mitigating further liver cell damage.
  - **Other herbs** that may be helpful in liver disease include choline, carnitine, arginine, boswellia, burdock, dandelion root, licorice, nettle, Oregon grape, red clover, turmeric, yellow dock, and maitake mushrooms. Consult your holistic veterinarian for information on these.
  - **Acupuncture and chiropractic care** may be useful in stimulating your cat's appetite, fighting nausea, and providing support during liver disease treatment.

### Is there a special diet that I should feed my cat?

Dietary therapy is important in the treatment of the pet with liver disease. High quality and highly digestible carbohydrates are recommended to supply energy for the pet. Lower quality carbohydrates are not digested and are fermented by the colonic bacteria. This increases the colonic bacteria which in turn increases the break down of protein and increases ammonia produced. This is absorbed by the body and contributes to toxicity in pets with liver disease. Frequent feedings of high quality simple carbohydrates such as white rice and potatoes are recommended. Vegetables act as a source of complex carbohydrates and provide fiber; the fiber helps bind intestinal toxins and promotes bowel

movements to remove these toxins (by-products of protein digestion and bacterial fermentation of undigested foods) from the body.

Proteins provided by the diet must be of high biological value to reduce the production of ammonia, a by-product of protein digestion. Many commercial foods contain proteins that are not of high biological value and may also contain excess vitamin A, copper, and bacterial endotoxins, all of which contribute to the clinical signs in pets with liver disease. Unless your doctor recommends protein restriction normal amounts of protein should be fed as protein is needed by the liver during repair.

Cats require higher protein diets and it may be more beneficial to cats to feed them diets based on milk-based proteins although most cats prefer meat-based diets. A homemade diet should be balanced by a veterinary nutritionist as cats have special needs for amino acids particularly taurine. Often force feeding of cats with liver disease is needed, as many pets develop anorexia (refuse to eat.) For example, cats with hepatic lipidosis (fatty liver disease) often refuse to eat. Force feeding these cats is essential to help heal the liver and correct the underlying problem. Many of these cats may require a feeding tube until they are eating on their own.

by Dr. Jan Huntingford - July 2, 2015

<http://www.petwellbeing.com/blog/cats/understanding-liver-disease-in-cats>