

Liver Disease in Cats – Causes, Symptoms and Treatment

 www.cat-world.com.au/liver-disease-in-cats.html



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Feline liver disease at a glance:

About: Liver disease is defined as any condition which damages the liver, which leads to an inability to perform many of its vital functions. It can be chronic or acute.

Causes: There are a number of causes of liver disease including ingestion of toxins, fatty liver disease, portosystemic shunt, tumours, and toxoplasmosis.

Symptoms: Jaundice (yellow eyes and gums), drooling, lethargy, neurological disorders such as seizures.

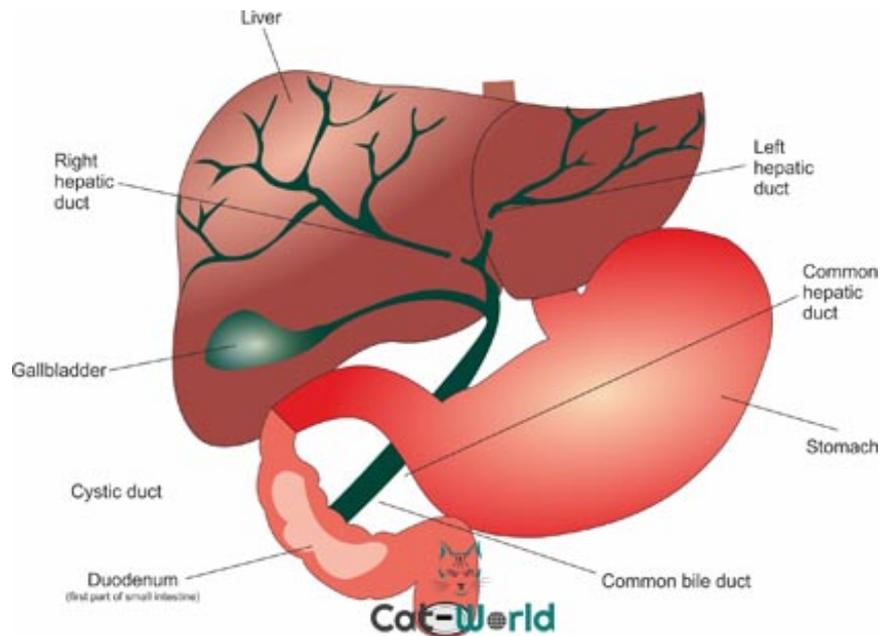
Treatment: This depends on the underlying cause but may include surgery, nutritional support, antibiotics and supportive care.

Also known as **hepatic disease**, liver disease is a collection of diseases all of which result in damage to the liver leading to impaired function.

The liver is the largest internal organ of the body and it is responsible for a number of metabolic, functional and detoxification processes. It is located in the abdomen, under the diaphragm. The liver is the only organ in the body that is capable of regenerating itself and has an amazing functional reserve with up to 70% of the functional mass impaired before symptoms may present.

Your cat's liver is divided into sections (*lobes*), each of which is made up of thousands of structural and functional units (*hepatic lobules*).

Two blood vessels enter the liver. The hepatic portal vein contains de-oxygenated blood from the spleen, pancreas, and digestive system and the hepatic artery contains oxygen-rich blood from the lungs.



Functions performed by the liver

- Metabolises drugs and medications.
- Processes nutrients from the blood and removes waste products.
- Produces and secretes bile, which aids digestion and absorption of fats. Bile is a greenish-yellow fluid which consists of bile acids and waste products such as bilirubin.
- Breaks down hemoglobin creating metabolites that are added to bile as pigment (bilirubin).
- Produces specific enzymes which aid digestion of food.
- Converts most sugars into glycerine which it stores up as glycogen until required.
- Stores fat-soluble vitamins A, D, E and K which need bile in order to be absorbed by the body. The liver also stores iron, copper, and zinc.
- Production of all blood clotting factors with the help of vitamin K.
- Manufacture of certain hormones such as *insulin-like growth factor 1 (IGF-1)* which stimulates growth, angiotensinogen regulates blood pressure and thrombopoietin which regulates the production of platelets.
- Regulating chemicals in the blood.
- Balances the hormones estrogen and testosterone.
- Produces certain proteins for blood plasma including albumin, fibronectin, and globulins.
- Processes hemoglobin for its iron content.
- The liver changes ammonia, a toxic by-product of protein metabolism into urea, which is excreted in the urine.

What is liver disease?

Liver disease develops when the liver is damaged, leading to a loss of function. It can be

acute (sudden onset) or chronic (slow and progressive). Liver disease can occur in cats of any age although in younger cats it's most often caused by a portosystemic shunt or toxic hepatopathy (ingestion of toxins or drugs). Primary cancers are usually seen in cats who are 10 years or older.

There are several causes of liver disease in cats, which include:

Hepatic Lipidosis:

(Idiopathic hepatic lipidosis or fatty liver disease)

Hepatic Lipidosis is the most common type of liver disease in the cat and occurs when your cat becomes anorexic (stops or reduces the amount of food he is eating), the body begins to use fat stores as fuel. These fat stores are sent to the liver, to be broken down to supply nutrients. Unfortunately, the liver sometimes becomes overwhelmed and is unable to process this fat as quickly as necessary, leading to a build-up of fat in the liver, which interferes with normal liver function.

Cholangitis:

(Inflammatory liver disease)

The second most common form of liver disease which is caused by a number of related inflammatory and or infectious disorders of the liver and/or the biliary tract. Cholangitis relates to infection or inflammation of the bile duct and cholangiohepatitis is inflammation of the biliary system and by extension the liver. Causes of infection may often include FIP, Pancreatitis, inflammatory bowel disease (IBD), bacterial infection, parasitic infection (including toxoplasmosis).

Damage by toxins:

(Toxic hepatopathy)

As the liver is responsible for processing toxins from household cleaners, insecticides, plants, drugs and other toxins, it is vulnerable to damage when the cat consumes or is exposed to toxic substances (known as *hepatotoxins*). There are too many possible toxins to list in this article, but some common ones include excess amounts of vitamin A and iron, Naphthalene (found in mothballs), Methimazole, Xylitol, Diazepam, Effexor, Acetaminophen and Aspirin to name a few.

Toxoplasmosis:

Caused by intracellular protozoa known as *Toxoplasma gondii*, most infected cats will show no symptoms of infection, however in some cases damage to various organs can occur, including the liver. This is most often in immunocompromised cats such as those with FIV.

Tumours:

There are many different types of tumour which affect the liver. *Primary* liver cancer (originating in the liver) is uncommon in cats, *hepatocellular carcinoma* and *bile duct*

tumours are the most common. Primary liver tumours make up only 1-3% of cancers in cats. Most malignant tumours of the liver are *secondary*, meaning they originate from some other site and spread to the liver. Benign tumours are far more common in cats.

Portosystemic shunt:

(Liver shunt)

Portosystemic shunts are abnormal communications between the portal and systemic venous system which allows intestinal blood to be delivered to the systemic circulation prior to hepatic detoxification. A shunt means that blood bypasses the liver, resulting in blood not being detoxified by the liver and a rise in toxins. Portosystemic shunts may be congenital or acquired, most shunts in cats are congenital (known as CPSS) and cats demonstrate clinical signs within 12 months of age.

Symptoms

Symptoms may vary depending on what has caused liver disease, and symptoms can often be vague and non-specific. Early symptoms of liver disease are a loss of appetite (anorexia) and weight loss.

As the liver becomes more damaged, further symptoms develop, such as:

- **Jaundice (icterus):** Signs of jaundice are yellowing of the eyes, skin and mucous membranes. This is caused by *hyperbilirubinemia*, high levels of bilirubin in the blood. Bilirubin is a yellow bile pigment that is produced by the breakdown of red blood cells.
- **Ascites** (abdominal effusion) – Build up of fluid in the peritoneal cavity caused by portal hypertension (high blood pressure) in the portal vein of the liver.
- **Polyuria** (increased urination)/polydipsia (increased thirst).
- **Hepatomegaly** (enlargement of the liver) or **microhepatica** (small liver).
- Muscle wasting
- **Drooling**, due to nausea.
- Lethargy
- Diarrhea
- Vomiting
- **Dark coloured** but clear urine caused by the presence of bilirubin.
- Bad breath
- Melena (dark tarry stools) due to the liver losing its ability to produce clotting factors resulting in internal bleeding.
- Neurological – A build-up of toxins due to the liver no longer functioning properly can lead to neurological disorders such as seizures and changes in behavior.
- Coma

Diagnosis

Your veterinarian will perform a physical examination of your cat and obtain a medical history from you including any current medical conditions he may have, medications he's on and exposure to toxins. Several tests will be necessary including biochemical profile,

complete blood count, and urinalysis. These may reveal:

- **Complete blood count:** May reveal the presence of poikilocytes, which are abnormally shaped red blood cells. Anemia may also be present. Reduced white blood cells or platelets may indicate portal hypertension.
- **Urinalysis:** To look for ammonium biurate crystals if your cat has a portosystemic shunt and/or bilirubin in the urine.
- **ALT and AST tests:** Changes to the liver enzymes ALT (alanine aminotransferase) and AST (aspartate aminotransferase). The ALT test determines the level of this enzyme in the blood, which increases when damage to the liver cells has occurred. AST is an enzyme in skeletal and cardiac muscle cells, the brain and red blood cells. Elevated AST in the blood is also an indicator of liver disease, although as it is found in other organs, it is not as specific for liver cell injury as elevations in ALT.
- **Bilirubin:** This is a major breakdown product of red blood cells. When red blood cells wear out they are trapped in the spleen and destroyed, releasing bilirubin into the blood. This type of bilirubin is called unconjugated. This bilirubin is transported in the blood to the liver, where it is taken up and conjugated (joined with glycuronic acid). This conjugated form may either be stored in the liver cells or excreted into the bile. Bilirubin levels are increased in cats with liver disease, gallbladder disease or have excessive destruction of red blood cells (known as hemolysis).
- **Blood urea nitrogen:** Low blood urea nitrogen (BUN), albumin, glucose, cholesterol which reflect the liver's inability to metabolise urea and glucose or produce albumin or cholesterol.

Other tests he may perform include:

- **Bile acids tolerance test:** This involves taking a blood sample from your cat and then feeding him a fatty meal. Two hours later, a second blood sample is taken. When a cat eats, bile is released into the small intestine to assist with the digestion of fats (lipids). The bile is then absorbed by the intestine and returned back to the liver where it is removed from the bloodstream. In a cat with liver disease, this process doesn't occur as efficiently and levels of bile remain high in the blood.
- **Ultrasound:** An ultrasound can give your veterinarian an idea of the size and shape of your cat's liver and gallbladder, and detect gallstones and biliary obstruction (blockage of the flow of bile from the liver). Abnormal vessels may be seen on an ultrasound. Intrahepatic (inside the liver) are more easy to see on ultrasound than extrahepatic (outside the liver) vessels.
- **X-Ray and/or ultrasound:** An x-ray may be taken to give your veterinarian an idea of the size and shape of your cat's liver. An X-ray may also detect the presence of tumours and blockages in the bile duct.
- **Biopsy:** A liver biopsy is taken to determine the exact type of liver disease. This may be done at the same time as the ultrasound.
- **Serologic Testing:** Testing for diseases such as FeLV, FIV, FIP, and toxoplasmosis may be taken as these diseases are associated with some liver disorders in cats.
- **Coagulation tests:** To evaluate the ability of the cat's blood to clot.

Treatment

Treatment depends on the cause of liver disease.

Hepatic Lipidosis:

- Intensive nutritional support. Most frequently this involves feeding a calorie dense, high protein food via a feeding tube either directly into the stomach or esophagus. This type of feeding will usually be required for 6 – 8 weeks.
- Appetite stimulants for cats who are well enough to eat by themselves but anorexic.

Cholangitis/cholangiohepatitis complex:

- If the cause is bacterial, antibiotics will be prescribed.
- Immunosuppressive drugs such as corticosteroids may be given to reduce inflammation.

Damage by toxins:

- Aggressive decontamination is required to treat toxicity in cats. This includes removal of toxins from the body such as inducing vomiting or gastric lavage (stomach pumping) or activated charcoal to prevent further absorption. Enemas may also be performed during treatment.

Tumours:

If possible, surgical removal of malignant and benign tumours. Primary liver tumours don't respond well to chemotherapy.

Portosystemic Shunt:

- Surgical ligation if physically and financially possible.
- A low-protein prescription diet.

In addition to the above treatments, all cats with liver disease will require supportive care. This may include:

- Medications to control nausea.
- Fluid and electrolyte therapy to correct dehydration and electrolyte imbalances.
- Antibiotics to treat any underlying bacterial infection.
- Vitamin K to help with clotting.
- If clotting disorders do occur, a plasma transfusion may be necessary.

Prevention:

Hepatic lipidosis is often caused by a cat's refusal to eat, obesity also predisposes a cat to this disease. When changing your cat's diet, do so slowly by mixing a small amount of the new food in with the old. Gradually increase the new food while decreasing the old food over a period of 5-7 days. Closely watch your cat for signs of appetite loss during this time.

Only administer medications prescribed by a veterinarian and always monitor for side effects.

Keep all medications, household cleaners, and other toxins away from your cat in a locked cupboard. I also recommend using natural products such as white vinegar when cleaning as much as possible. The fewer chemicals in the home the better for all of us.

Be diligent when it comes to plants and cut flowers in your home. Many are highly toxic to cats, some cause liver damage, others cause kidney damage. Regardless of the organ(s) affected, pet owners need to be diligent when it comes to plants and flowers. Read here for more information on [plants which are toxic to cats](#).