SOUTH CAROLINA VETERINARY SPECIALISTS & EMERGENCY CARE
State of the Art Care, In the Heart of the State

Hepatic Lipidosis

What is the liver and what does it do?

The liver is a remarkable and complex organ located in the very front of the abdomen, behind the diaphragm. The liver is responsible for metabolism and storage of nutrients, processing toxins and drugs, synthesizing proteins and other compounds, and forming and secreting bile to aid in digestion. The portal vein is a blood vessel that brings absorbed digested nutrients from the intestines to the liver for further processing and storage. Blood percolates through the liver before entering into the body as a whole.

- *Bile* is a greenish substance secreted into the small intestine via the gall bladder and bile ducts that contains compounds that aid in digestion of fats; certain drugs or toxins may also be excreted this way
- *Albumin* is the major blood protein made by the liver that helps with a wide array of functions in the body
- *Coagulation factors* are proteins made in the liver that work with platelets and blood vessels to help the blood to clot

What is hepatic lipidosis (HL) and why does it occur?

HL is the accumulation of fat in the liver cells as fat is mobilized from the body stores for energy. HL occurs as a *secondary* phenomenon in cats that become anorexic and lose significant amounts of weight. Ultimately, the accumulation of fat in the liver cells leads to liver failure and cats become much sicker with complications of the liver disease. Overweight cats are at particular risk of developing HL. HL is seen extremely rare in dogs.

- *Anorexia* is a loss of appetite that may result from environmental changes that cause an animal to stop eating or medical conditions, such as pancreatitis, diabetes, inflammatory bowel disease, metabolic diseases, or cancer, that may contribute to a decline in appetite

What clinical signs does HL cause?

HL is a secondary condition. For that reason, the clinical signs that develop in an individual case vary depending on the underlying disease.

Common signs include:

- Lethargy
- Jaundice
- Anorexia

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Less common signs include:

- Ascites
- Hepatic encephalopathy
- Vomiting

- *Jaundice* is the yellow coloration that develops in the tissues from the increase in bilirubin occurring in liver disease
- *Ascites* is the build-up of fluid in the abdomen associated with low albumin levels in liver failure or increased pressure in the portal system
- *Hepatic encephalopathy* is the neurological changes that occur with liver failure as the liver becomes less able to remove toxins, drugs and metabolites from the blood. Dullness, lethargy, seizures, and blindness are the most common clinical signs observed.

What laboratory changes does HL cause?

HL typically causes many changes on laboratory tests. Ultimately, laboratory tests are required to help confirm the diagnosis of HL and provide prognostic information.

Common laboratory changes include:

- Increase bilirubin
- Elevated liver enzymes
- Coagulation abnormalities
- Increased bile acids

Less common laboratory changes include:

- Low albumin
- Low Cholesterol
- Low urea nitrogen
- Low blood glucose

- *Albumin, cholesterol, BUN and blood glucose* are all compounds normally made by the liver; they can decline in liver failure
- *Coagulation abnormalities* are problems clotting blood that results from deficiencies in vitamin K in HL patients
- *Bile acids* are compounds that normally do not enter the systemic blood supply, but rather circulate between the liver, intestines, and portal vein; the systemic levels increase in HL because of the liver dysfunction

What testing is recommended for HL patients?

There are three main goals in evaluating patients with HL. First, the diagnosis must be confirmed; secondly, the underlying condition must be determined; and finally, prognostic and complicating factors must be evaluated.

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Patients evaluated for HL may need the following tests:

- Chemistry profile
- Complete Blood Count (CBC)
- Urinalysis
- Chest radiographs
- Coagulations testing
- Abdominal ultrasound
- Liver Aspirate or biopsy

- *Abdominal ultrasound* is a non-invasive test that uses sound waves to create images of internal organs and structures; this is performed to look for a shunt and to evaluate for underlying disease
- *Liver aspirate or biopsy* is done to confirm the diagnosis of HL. The liver cells in HL patients are laden with fat that is visible under the microscope
- *Chest radiographs* (or x-rays) are performed to evaluate for underlying disease
- Depending on what other underlying conditions may be identified, other tests may be recommended

What complications can arise in patients with HL?

The major complication of HL is the anorexia and wasting that occurs. Without therapy, this leads to worsening of the HL and ultimately proves fatal. Because the liver makes factors that help to clot the blood, *coagulation abnormalities* can arise in HL patients that result in bleeding or bruising. In severe forms of liver failure in HL patients encephalopathy and ascites can also arise (see above).

What treatment options are available for HL?

HL is considered a treatable condition. However, without aggressive therapy it is often fatal. Because the clinical signs are often very severe, aggressive medical care is required. Supportive care including fluids (for rehydration support), vitamin K (for coagulation abnormalities), and medications that improve liver healing and function, are often used.

The most important part of therapy is getting nutrition into the patient. Without this, the changes in the liver cannot be reduced. For some patients, this is accomplished with a combination of appetite stimulants and liver-protective medications. However, for most patients this requires the placement of a short term feeding tube to provide nutritional support. These feeding tubes are placed through the neck (into the esophagus) or side of the body (into the stomach), depending on the case. Liquid or pureed diets are fed through these tubes. With time, HL patients eventually begin to eat on their own and the tube feeding is stopped. Tubes are often needed for two to six weeks and can then be removed. While the thought of a feeding tube is objectionable to many pet owners at first, they are easy to use and are well tolerated by most cats. They are a simple and life-saving step.

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Once animals recover from the bout of HL, there is generally little, if any follow-up therapy required unless there are other underlying conditions to be treated.

Figure 1: Feeding though an esophageal tube

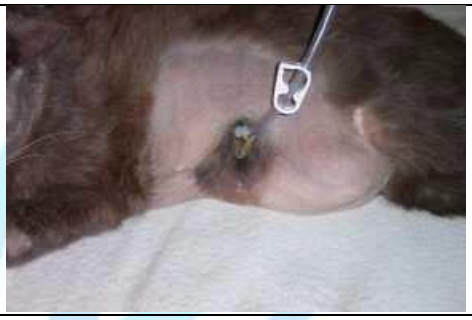

Figure 2: Gastric feeding tube

What sort of long-term monitoring is recommended for HL patients?

Follow-up will depend on the nature and severity of the illness that an individual experiences. Most patients will need regular rechecks in the one to two months after initial diagnosis. Once the patient has recovered, however, there is no specific follow-up required unless other conditions must also be treated.

What is the prognosis with HL?

With aggressive therapy, the prognosis in HL cases is excellent with the majority of animals making a complete recovery and being cured. Only the most severely affected animals or animals with other complicating factors will die from this illness. The specifics of your case will be discussed at the time of your visit.