



CHOLANGITIS / CHOLANGIOHEPATITIS

What is Cholangitis/Cholangiohepatitis?

“Cholangitis” is inflammation of the bile duct or the biliary tree “Cholangiohepatitis” is inflammation of biliary structures and surrounding liver tissue.

Cholangitis/cholangiohepatitis syndrome occurs more commonly in cats; it is classified as “suppurative” or “nonsuppurative” (lymphoplasmacytic, lymphocytic), “granulomatous,” or “lymphoproliferative” (transition to lymphoma) based on microscopic examination of biopsy samples.

“Suppurative” refers to the presence of pus in the affected tissue; “nonsuppurative” refers to an inflammatory process that is not characterized by the presence of pus—in cholangitis/cholangiohepatitis syndrome. The inflammatory process is characterized by the presence of lymphocytes and plasma cells (so-called “lymphoplasmacytic” disease) or lymphocytes (so-called “lymphocytic” disease). Lymphocytes are a type of white blood cell that are formed in lymphatic tissues throughout the body—lymphocytes are involved in the immune process; plasma cells are specialized white blood cells; plasma cells are lymphocytes that have been altered to produce immunoglobulin, an immune protein or antibody necessary for fighting disease.

Overview of the Liver & Gallbladder

The liver is the largest gland in the body; it has many functions, including production of bile (a fluid substance involved in digestion of fats); bile ducts begin within the liver itself as tiny channels to transport bile—the ducts join together to form larger bile ducts and finally enter the extrahepatic or common bile duct, which empties into the upper small intestine; the system of bile ducts is known as the “biliary tree”.

The gallbladder is the storage unit for bile; bile is stored until it is needed for fat digestion

How common is it?

It is known to be uncommon in dogs and common in cats such as *Himalayan*, *Persian*, and *Siamese breeds*. Suppurative cholangitis/cholangiohepatitis syndrome can occur anywhere between the age range of 0.4–16 years of age, but mostly seen in young to middle-aged cats. Nonsuppurative cholangitis/cholangiohepatitis syndrome can occur anywhere between the age range, 2–17 years of age but mostly seen in middle-aged cats. Furthermore, male cats are more likely to be affected by cholangitis/cholangiohepatitis than female cats.

What causes the syndrome?

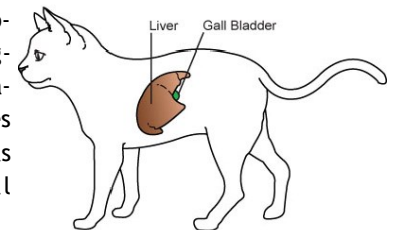
Suppurative Cholangitis/Cholangiohepatitis Syndrome

Bacterial infection—most common in cats: *E. coli*, *Enterobacter*, *Enterococcus*, β -hemolytic *Streptococcus*, *Klebsiella*, *Actinomyces*, *Clostridia*, and *Bacteroides*; also rarely associated with toxoplasmosis; dogs: intestinal bacterial opportunists (bacteria that usually do not cause disease, but are able to cause disease because the pet’s body and/or immune system has been weakened by some other disease process); rare cases with *Campylobacter*, *Salmonella*, and *Leptospira*.

The condition may be seen following blockage of the extrahepatic or common bile duct (extrahepatic bile duct obstruction) and diseases in which flow of bile is decreased or stopped (known as “cholestasis”).

Nonsuppurative Cholangitis/Cholangiohepatitis Syndrome

Co-existent disorders—inflammation of the gallbladder (known as “cholecystitis”); presence of hard, solid material in the bile duct or gallbladder (known as “cholelithiasis”); inflammation of the pancreas (known as “pancreatitis”); blockage of the extrahepatic or common bile duct (extrahepatic bile duct obstruction); inflammatory bowel disease; long-term (chronic) inflammation of the tissue spaces in the kidneys (known as “chronic interstitial nephritis”) in cats.



Clinical Signs

Suppurative cholangitis/cholangiohepatitis syndrome

Most severe clinical illness characterized by “acute abdomen” (sudden onset of severe abdominal pain), fever, often less than 5 days in duration; associated with blockage of the extrahepatic or common bile duct (known as “extrahepatic bile duct obstruction”).

- Sudden (acute) illness or shock
- Fever & Dehydration
- Lack of appetite or anorexia
- Vomiting; painful abdomen
- may have yellowish discoloration to the gums and other tissues of the body known as “jaundice” or “icterus”
- generalized bacterial infection known as “sepsis”

Nonsuppurative cholangitis/cholangiohepatitis syndrome

Illness usually occurs greater than 3 weeks in duration and may have signs of illness for months to years. Signs include:

- Lethargy
- Vomiting
- Lack of appetite, anorexia and weight loss
- Few physical abnormalities other than enlarged liver, known as “hepatomegaly”
- Thickened intestines with inflammatory bowel disease (IBD)
- Variable yellowish discoloration to the gums and other tissues of the body (jaundice or icterus)
- Rare fluid build up in the abdomen, known as “abdominal effusion” or “ascites”



Decreased number of bile ducts (known as “ductopenia”) associated with nonsuppurative cholangitis/cholangiohepatitis syndrome in cats can cause signs such as:

- Increased appetite (known as “polyphagia”) due to reduced bile flow with poor digestion of fats and presence of large amounts of fat in the stool
- Due to the inability to digest the fat (known as “steatorrhea”) leading to decreased levels of fat-soluble substances (such as vitamin K1, essential fatty acids, vitamin E)
- Unkempt coat and variable hair loss on the sides of the chest.
- Variable pale or greyish coloration to the stools. This is due to the lack of bile pigments that cause the normal brown colour of bowel movements .

What are the associated risks?

Suppurative cholangitis/cholangiohepatitis syndrome

Possible blockage of the extrahepatic or common bile duct (extrahepatic bile duct obstruction); diseases in which flow of bile is decreased or stopped (cholestasis); infections elsewhere in the body.

Nonsuppurative cholangitis/cholangiohepatitis syndrome

In cats—inflammatory bowel disease; inflammation of the pancreas (pancreatitis); blockage of the extrahepatic or common bile duct (extrahepatic bile duct obstruction); possibly long-term (chronic) inflammation of the tissue spaces in the kidneys (chronic interstitial nephritis).

How can it be treated?

Suppurative cholangitis/cholangiohepatitis syndrome

Those showing signs of sudden (acute) illness characterized by fever, painful abdomen, abnormal white blood cell count will need hydration support and antibiotics. If the pet has a blockage of the extrahepatic or common bile duct (extrahepatic

bile duct obstruction) or inflammation of the gallbladder (cholecystitis) surgery is the next step. The antibiotics should be continued for at least 4-8 weeks and to treat the syndrome with medications (such as ursodeoxycholic acid) to improve the secretion of bile until liver enzyme values.

Nonsuppurative cholangitis/cholangiohepatitis syndrome

Cats with clinical signs of disease will need fluid therapy, as necessary; diagnostic evaluations and a liver biopsy (administer vitamin K1 before liver biopsy). After resolution of sudden (acute) crisis, provide lifelong treatment is necessary to alter the immune system (known as “immune-system modulation”) as well as antioxidant and liver-protective therapy.

Both forms of cholangitis/cholangiohepatitis syndrome may require your pet to have a blood transfusion following surgery or biopsy. It is also recommended to supplement fluids with B vitamins, potassium chloride, and potassium phosphate, as needed but to avoid dextrose supplements.

What is the surgical procedure?

There are 3 type of procedures which could be carried out dependent on the individuals severity of the syndrome:

- Surgical removal of the gallbladder (known as “cholecystectomy”) is carried out if the pet has inflammation of the gallbladder (cholecystitis).
- A “cholecystoenterostomy². This surgical procedure is to produce a new connection between the biliary tree and the small intestines. May be needed in pets with blockage of the extrahepatic or common bile duct (extrahepatic bile duct obstruction).
- Surgical removal of stones in the gallbladder (stones known as “choleliths”)

Nutritional Requirements

Nutritional support is needed to avoid hepatic lipidosis. Feed a balanced high-protein, high-calorie feline diet and supplement water-soluble vitamins (such as vitamin B). “hepatic lipidosis” is a disease in which fats and lipids (compounds that contain fats or oils) accumulate in the liver as a possible complication of lack of appetite (anorexia).

Antigen-restricted diet should be provided for those with existent inflammatory bowel disease.

If the pet has severe decrease in bile ducts (ductopenia), abnormal absorption of fat (known as “fat malabsorption”), or long-term (chronic) inflammation of the pancreas (pancreatitis) causing abnormal digestion of food (known as “maldigestion”) a fat-restricted diet is recommended.

In some cases some pets may require feeding tubes; feeding through intravenous fluids (known as “parenteral nutrition”) although this is usually rare.



What medications are available?

Suppurative Cholangitis/Cholangiohepatitis Syndrome

Antibiotics that kill bacteria against intestinal bacterial opportunists. This is for bacteria that usually do not cause disease, but are able to cause disease because the pet's body and/or immune system has been weakened by some other disease process. Amoxicillin-clavulanic acid (Clavamox) or enrofloxacin combined with Metronidazole.

Modify antibiotics, based on bacterial culture and sensitivity reports.

Nonsuppurative Cholangitis/Cholangiohepatitis Syndrome

- Steroids—*Prednisolone*; long-term (chronic) therapy usually needed.
- *Metronidazole*—in combination with prednisolone, especially if the pet has co-existent inflammatory bowel disease.
- Cats with confirmed decreased number of bile ducts (ductopenia) require more aggressive treatment. Clinical experience suggests combination of *Prednisolone*, *metronidazole* with pulsed *methotrexate* (a chemotherapeutic drug); provide folate (folinic acid); may use *chlorambucil* instead of *methotrexate*.
- Some cats require chemotherapy protocols developed for intestinal lymphoma (“lymphoma” is a type of cancer that develops from lymphoid tissue, including lymphocytes, a type of white blood cell formed in lymphatic tissues throughout the body).

Other Medications

- Antioxidants; Vitamin E (tocopherol)—higher dose if the pet has long-term (chronic) blockage of the extrahepatic or common bile duct (extrahepatic bile duct obstruction) or decrease in the number of bile ducts (ductopenia) because of abnormal absorption of fat (fat malabsorption).
- Ursodeoxycholic acid—has numerous potentially beneficial effects, including altering the immune response (immunomodulation), protecting the liver, causing secretion of bile, and providing antioxidant effects.
- B-vitamin supplementation with thiamine (B1) and B12.

What the possible complications?

Suppurative cholangitis/cholangiohepatitis syndrome may transform into nonsuppurative cholangitis/cholangiohepatitis syndrome or sclerosing cholangitis/cholangiohepatitis syndrome (characterized by thickening or hardening of the biliary and/or liver tissues). In addition to this, diabetes mellitus in 30% of cats with sclerosing cholangitis/cholangiohepatitis syndrome is treated with *Prednisolone*. Hepatic lipidosis may develop with inadequate nutritional intake and in some cats, with steroid therapy; “hepatic lipidosis” is a disease in which fats and lipids accumulate in the liver of cats.

Prognosis and Follow Up Care

Suppurative cholangitis/cholangiohepatitis syndrome—may be cured.

Nonsuppurative cholangitis/cholangiohepatitis syndrome—long-term (chronic) disease; long-term remission possible (remission greater than 8 years has been documented).

For *nonsuppurative cholangitis/cholangiohepatitis* syndrome initially it is required that you monitor bloodwork for the observation of changing liver enzyme and bilirubin levels every 7–14 days; with remission, assess bloodwork quarterly.