

EXTRAHEPATIC BILE DUCT OBSTRUCTION

(BLOCKAGE OF THE EXTRAHEPATIC OR COMMON BILE DUCT)

BASICS

OVERVIEW

- The liver is the largest gland in the body; it has many functions, including production of bile (a fluid substance involved in the 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
- “Extrahepatic bile duct obstruction” is a blockage of the biliary tree at the level of the extrahepatic or common bile duct or at the level of the liver bile ducts (may involve one, several, or all ducts, depending on the disorder) that results in the flow of bile being decreased or stopped (known as “cholestasis”)

SIGNALMENT/DESCRIPTION of ANIMAL

Species

- Dogs and cats

Breed Predislection

- Animals with increased likelihood of developing inflammation of the pancreas (known as “pancreatitis”)—breeds having high levels of lipids (compounds that contain fats or oils) in their blood (known as “hyperlipidemic breeds”), such as miniature schnauzers, Shetland sheepdogs

Mean Age and Range

- Middle-aged to old animals

SIGNS/OBSERVED CHANGES in the ANIMAL

- Depend on underlying disorder
- Progressive sluggishness (lethargy)
- Intermittent illness
- Yellowish discoloration to the gums and other tissues of the body (known as “jaundice” or “icterus”)
- Pale or grayish coloration to the stools (known as “acholic feces”), due to the lack of bile pigments that cause the normal brown color of bowel movements: indicate complete blockage of the extrahepatic or common bile duct (extrahepatic bile duct obstruction)
- Increased appetite (known as “polyphagia”)—complete blockage of the extrahepatic or common bile duct (extrahepatic bile duct obstruction) causes poor digestion of fats due to lack of bile flow
- Bleeding tendencies within 10 days of obstruction
- Weight loss
- Enlarged liver (known as “hepatomegaly”)
- Orange urine

CAUSES

- Associated with diverse disorders
- Presence of hard, solid material in the bile duct or gall bladder (known as “cholelithiasis”)
- Inflammation of the common bile duct (known as “choledochitis”); the extrahepatic or common bile duct empties into the upper small intestine
- Cancer
- Malformation of bile ducts
- Parasitic infestation (flukes in cats)
- Compression of the bile duct from surrounding tissues (such as lymph nodes, cancer, inflammation of the pancreas [pancreatitis], diaphragmatic hernia)
- Scarring of the bile duct (known as “duct fibrosis”), such as secondary to trauma, inflammation of the lining of the abdomen (known as “peritonitis”), inflammation of the pancreas (pancreatitis); major duct involvement in some cats with inflammation of the bile duct or biliary tree (known as “cholangitis”) and inflammation of the bile ducts and liver (known as “cholangiohepatitis”)
- Narrowing of the bile duct, secondary to blunt trauma, surgical manipulations/procedures

TREATMENT

HEALTH CARE

- Inpatient—surgical treatment of blockage of the extrahepatic or common bile duct (extrahepatic bile duct obstruction)

- Fluid therapy—depends on underlying conditions; rehydrate and provide maintenance fluids before general anesthesia and surgery
- Water-soluble vitamins—B complex in intravenous fluids

ACTIVITY

- Dependent on patient status, and if patient has blood-clotting disorder secondary to liver disease

DIET

- Maintain nitrogen balance: avoid protein restriction
- Restrict fat—abnormal fat digestion caused by lack of intestinal bile acids (used in normal digestion of fats)
- Supplement fat-soluble vitamins, especially vitamins E and K; administer vitamins by injection

SURGERY

- Surgical exploration—imperative for treating and determining underlying cause
- Surgical treatment of blockage of the extrahepatic or common bile duct (extrahepatic bile duct obstruction)
- Remove masses; remove gallstones (known as “choleliths”) and thickened bile
- May need to remove the gallbladder in some cases
- May need to produce a new connection between the biliary tree and the small intestines (known as a “biliary-enteric anastomosis”) if the bile duct obstruction cannot be resolved or if the patient has scarring inflammation of the pancreas (known as “fibrosing pancreatitis”) or cancer
- Low blood pressure (known as “hypotension”) and slow heart rate (known as “bradycardia”)—may occur with biliary tree manipulation during surgery
- Surgical biopsies/samples—submit tissues and bile samples for bacterial cultures; submit tissues for microscopic examination to determine type of tissue (such as inflammation or cancer); inspect samples for evidence of bacterial infection and presence of parasite (fluke) eggs
- Sclerosing inflammation of the bile duct or biliary tree (cholangitis) in cats (characterized by thickening or hardening of the biliary and/or liver tissues)—clinically may mimic blockage of the extrahepatic or common bile duct (extrahepatic bile duct obstruction) since disease may involve extrahepatic biliary structures; will not respond to biliary tree decompression; liver biopsy essential for diagnosis

MEDICATIONS

Medications presented in this section are intended to provide general information about possible treatment. The treatment for a particular condition may evolve as medical advances are made; therefore, the medications should not be considered as all inclusive.

- Vitamin K1—necessary for normal blood clotting; administer 12 to 36 hours before surgery; treat early to allow response before surgical manipulations
- *Before surgery*—broad-spectrum antibiotics for potential biliary infections, as surgical manipulations may lead to spread of bacteria into the blood stream (known as “bacteremia”)
- Antioxidants—**vitamin E** (tocopherol); *S*-adenosylmethionine (SAME, Denosyl® SD4)
- Ursodeoxycholic acid—to improve secretion of bile (ensure adequate hydration); should be used after the bile-duct obstruction has been relieved
- Agents that reduce stomach acid and protect the stomach—famotidine (H₂-blocker) or omeprazol (pump inhibitor) combined with sucralfate, if medications administered by mouth are tolerated; stagger sucralfate administration from other oral medications to avoid drug interactions

FOLLOW-UP CARE

PATIENT MONITORING

- Depends on underlying conditions
- Monitor blood work (serum chemistry profile, especially total bilirubin values [reflect effectiveness of relief of bile-duct obstruction—should decline to near normal within days] and liver enzymes [decline slowly])
- Complete blood count (CBC)—repeat every two to three days initially, if patient has generalized bacterial infection (known as “sepsis”)
- Inflammation of the lining of the abdomen due to bile leakage (known as “bile peritonitis”)—evaluate fluid accumulation in the abdomen (such as by feeling the abdomen [known as “palpation”], ultrasound examination [preferred], tapping the abdomen to withdraw accumulated fluid [known as “abdominocentesis”])
- Determine necessity for pancreatic enzyme supplementation based on site of the new connection between the biliary tree and the small intestines (biliary-enteric anastomosis); pancreatic enzymes are digestive enzymes that breakdown dietary proteins, fats, and starches in the intestines

POSSIBLE COMPLICATIONS

- Inflammation of the lining of the abdomen due to bile leakage (bile peritonitis)
- Repeated narrowing or stricture of the bile duct

- Narrowing or stricture of the new connection between the biliary tree and the small intestines (biliary-enteric anastomosis)
- Severe intestinal bleeding—high blood pressure in the intestinal blood vessels (known as “hypertensive enteric vasculopathy”) with blood-clotting disorder due to vitamin K deficiency
- Bleeding during surgery
- Low blood pressure (hypotension) and slow heart rate (bradycardia)—may occur with biliary tree manipulation during surgery

EXPECTED COURSE AND PROGNOSIS

- Depend on underlying disease
- Prognosis good if inflammation of the pancreas (pancreatitis) resolves; bile-duct patency may return
- Permanent scarring of the liver tissue surrounding the biliary tree from blockage of the extrahepatic or common bile duct (extrahepatic bile duct obstruction)
- Sclerosing inflammation of the bile duct or biliary tree (cholangitis) in cats (characterized by thickening or hardening of the biliary and/or liver tissues)—clinically may mimic blockage of the extrahepatic or common bile duct (extrahepatic bile duct obstruction) since disease may involve extrahepatic biliary structures; will not respond to biliary tree decompression; liver biopsy essential for diagnosis

KEY POINTS

- Surgical treatment to relieve bile-duct obstruction is essential; obstruction will lead to progressive damage and scarring of the biliary tree and liver (known as “biliary cirrhosis”) within 6 weeks; exception is inflammation of the pancreas (pancreatitis) causing blockage of the extrahepatic or common bile duct (extrahepatic bile duct obstruction) that may self-resolve within 2 to 3 weeks
- Surgical success is based on underlying cause, results of liver biopsy, and specimen cultures

