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BILIARY TRACT ABNORMALTIES OF DOGS AND CATS

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Abstract
Biliary disease has become increasingly important as we have used ultrasound to recognize more and more cases. Questions over medical management versus surgical management still exist.

Cholecystitis
This may be much more common than many people realize. Dogs that have evidence of antibiotic responsive hepatobiliary tract disease may have a bacterial cholecystitis. Typically, both the ALT and SAP are increased, and icterus is common. Most dogs with cholecystitis do not have discernable gall stones. Many (maybe most) gall stones found in dogs and cats are clinically insignificant and only serve to confuse veterinarians. Ultrasound findings in dogs with bacterial cholecystitis are non-specific: finding “sludge” in the gall bladder can also occur in clinically normal dogs. However, aspirating bile via percutaneous puncture with a 22-25 gauge needle may be very helpful. Rarely, such aspiration technique will cause a vagal response that will cause extreme bradycardia; however, if this happens all that is usually needed is an injection of a parasympatholytic such as glycopyrrolate. Finding WBCs and/or bacteria in the bile seems to be very specific, but we are not really sure how sensitive this test is for cholecystitis. Therapy usually involves chronic (i.e., > 6-8 weeks) antibiotic therapy. If I cannot culture bacteria, I prefer to use a combination of amoxicillin and enrofloxacin. If that approach is unsuccessful, then cholecystectomy is usually the next step. Do not do a cholecystotomy or an incisional biopsy of gall bladder wall; dehiscence appears to be a major cause of morbidity and mortality after such surgery. Rather, remove the entire gall bladder and submit it for histopathology and microbiology. Be sure that you do not ligate or transect the common bile duct, or you may kill the dogs. Remember that cholecystectomy may be required to cure a patient with cholecystitis.

Emphysematous cholecystitis
This is classically associated with diabetes mellitus, but it probably occurs just as often in non-diabetic
animals. This is diagnosed radiographically. Treatment with antibiotics that are effective against gas-producing anaerobic bacteria (e.g., penicillin, metronidazole, chloramphenicol, or clindamycin) is usually successful.

**Spontaneous rupture of the gall bladder**

Usually due to a necrotizing cholecystitis associated with bacterial infection or mucoele (see below), spontaneous rupture of the gall bladder is relatively rare. Animals with septic cholecystitis and spontaneous rupture are usually icteric and present as having an acute abdomen. Cure requires cholecystectomy and aggressive antibacterial therapy. This disease seems to be uncommon, but can be life-threatening. Ultrasound is one of the best tools to detect this disease. It is important to remember that you should never take biopsies of the gall bladder. If you are going to do anything to the gall bladder, then you either a) squeeze it to see if it empties, b) aspirate it to obtain bile for cytology and culture, or c) remove it. Just make sure that when you remove the gall bladder, you do not ligate or obstruct the common bile duct.

**Biliary mucocoele**

Sometimes excessive mucus is secreted into the gall bladder and becomes so thick and inspisated that it essentially becomes a solid or semi-solid mass. This is referred to as a biliary mucocoele. When the contents develop the consistency of thick jell-O and occlude the common bile duct, EHBO occurs. Diagnosis is by ultrasound. You are not looking for gravity-dependent sludge; rather, you are looking for a “stellate” appearance to the gall bladder. Cholecystectomy appears to be the only appropriate therapy. Many of these patients have necrosis of the wall of the gall bladder and will eventually rupture causing peritonitis. Prognosis is good, as long as you do surgery before the gall bladder ruptures there are no post-surgical complications such as pancreatitis. A couple of very controversial points are what constitutes the ultrasonographic diagnosis of an immature biliary mucocoele, and whether gall bladders with non-gravity dependent “sludge” need to be removed or not. Some animals with “immature” mucocoeles seemingly resolve if treated with choleretics such as ursodeoxycholic acid.

**Gall stones**

Gall stones, as mentioned are usually there simply to distract the veterinarian. I am not saying that they never cause disease. I am saying that they are usually innocent of causing disease. If you find gall stones, you should first look elsewhere for the cause of the patient’s illness. If you can find nothing else that seems likely to be responsible for causing hepatobiliary tract disease in the patient, only then should you allow yourself to focus on the gall stones. Of course, if there are bacteria in the bile, then the gall stones are likely to be very important and should be removed so as to prevent recrudescence of the infection.

**Pancreatitis**

Pancreatitis is the most important cause of extrahepatic biliary tract obstruction (EHBO) in the dog. If EHBO is present in a sick dog and appears to be idiopathic, it should generally be assumed to probably be due to pancreatitis until there is evidence to the contrary. History and physical examination are helpful in diagnosing pancreatitis, but not as useful as we’d like. Schnauzers and Yorkies are famous for pancreatitis, but these breeds get a lot of other diseases that cause vomiting, and pancreatitis can be found in any breed of dog. Canine pancreatitis is classically considered to present with acute vomiting and anorexia. Abdominal pain is frequently present, but it is easy to miss during physical examination, and fever is occasionally seen. However, we are
recognizing more and more “atypical” cases to the point that we are no longer sure what a “typical” case of canine pancreatitis is. We are now recognizing more and more cases of severe disease which present in shock due to systemic inflammatory response syndrome (what used to be called septic shock, until we found out that you can have the same thing occur with any cause of massive inflammation); such patients may die very suddenly. We are also recognizing more and more dogs with acute pancreatitis that present as though they had an acute, septic abdomen. Some have substantial amounts of abdominal fluid. If acute pancreatitis is associated with or due to pancreatic carcinoma (rare), you may also see a dog that has widespread subcutaneous fat necrosis causing sterile abscesses that are typically painful and cause cutaneous discoloration. Most cases of canine pancreatitis are related to either ingestion of fat or lipemia associated with diabetic ketoacidosis. Trauma and drugs can also cause canine pancreatitis. Drugs that are suspected of causing pancreatitis in people and animals include azathioprine, sulfonamides, tetracycline, and potassium bromide.

Blockage of the main pancreatic duct due to swelling due to generalized pancreatitis, an intrapancreatic granuloma, or an abscess that subsequently blocks the pancreatic duct may cause extrahepatic biliary tract obstruction with a notable increase in serum alkaline phosphatase and serum bilirubin. In fact, pancreatitis is probably the most common cause of extrahepatic biliary tract obstruction in the dog. However, while the triad of vomiting, abdominal pain, and icterus is consistent with acute pancreatitis (as well as many other diseases), relatively few dogs with acute pancreatitis evidence these changes. Furthermore, there are reasons for this triad of signs besides acute pancreatitis and extrahepatic biliary tract obstruction (e.g., cholangitis-cholangiohepatitis). Ultrasonographic evaluation of the abdomen (discussed below) is particularly helpful in these patients.

**Abdominal ultrasonograph**

Abdominal ultrasonography often finds abnormalities that suggest or are consistent with pancreatitis as well as eliminate other potential causes of vomiting and abdominal pain. Ultrasound is about 65-70% sensitive for finding pancreatitis, depending upon the person doing the ultrasonography. One may sometimes detect hypechogenicity surrounded by hyperechoic fat in the region of the pancreas that is due to pancreatitis. At other times, a markedly thickened pancreas may be found. One of the most diagnostic findings is an obvious pancreatic mass. Evidence of extrahepatic biliary tract obstruction (which requires seeing dilated bile ducts, not just a big gall bladder) is very suggestive of pancreatitis. Rarely, you will find dilated bile ducts due to inflammatory biliary tract disease, but this is not nearly as common a cause as is biliary tract obstruction. Any dog with extra-hepatic biliary tract obstruction and any vomiting/anorexia should be assumed to have pancreatitis until proven otherwise.

**Selected readings:**


