



Gallbladder Mucocele

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Gallbladder mucocele is distention of the gallbladder by an inappropriate accumulation of mucus. Gallbladder mucoceles have been reported in dogs, ferrets and humans. Mucoceles were rarely seen in dogs prior to the early 1990's but now they are one of the most common causes of extrahepatic biliary disease in dogs.

In humans gallbladder mucocele is a non-inflammatory condition of the gallbladder caused by obstruction of the cystic duct resulting in cholecystectasia leading to increased mucus production by the GB epithelium. The obstruction can be primary (infiltrative disease including neoplasia) or secondary (cholelithiasis). Treatment is cholecystectomy.

In dogs extrahepatic biliary obstruction and cholecystitis do not appear to play a primary role in the formation of gallbladder mucocele. Histologic findings suggest that gallbladder mucocele results from dysfunction of mucus-secreting cells within the gallbladder mucosa. The mucus secreting cells undergo cystic hyperplasia. Cysts and individual glands become dilated by mucus with a similar histologic appearance to that within the lumen. Bile stasis develops as secretion of mucus increases. The secreted mucus can accumulate and eventually cause pressure necrosis and rupture of the GB resulting in bile-induced peritonitis. Extension of bile-laden mucus into the cystic, hepatic, and common bile ducts may result in various degrees of extrahepatic biliary obstruction which may result in gallbladder rupture. Up to 80% of dogs will histologically have GB necrosis and up to 50% will have gallbladder rupture.

The inciting cause of mucus hypersecretion is unknown but is probably multifactorial. Exposure to bile acids (biliary stasis and increased water

absorption) is documented to increase mucus secretion from the canine GB. Interestingly decreased GB motility, biliary stasis, and altered water absorption predispose to biliary sludge which is a common incidental finding in dogs that have abdominal ultrasound. It is unknown if biliary sludge may be a precipitating factor in the formation of canine gallbladder mucoceles. Mucin concentration and phospholipids in the GB are the primary determinants of bile viscosity in humans with gallstones. The phospholipid concentration may be a precipitating factor in the formation of canine GB mucoceles. A more recent increase in the incidence of canine gallbladder mucoceles may suggest a nutritional or environmental factor or may reflect improved sonographic detection of the condition. Given that this condition is more prevalent in certain medium-sized breeds, particularly Cocker Spaniels and Shetland Sheepdogs, there may be a genetic component.

Patients with gallbladder mucoceles typically have a history of vague non-specific clinical signs. Vomiting, anorexia and lethargy are common. Gallbladder mucocele can be an incidental finding. Physical exam findings are most commonly abdominal pain, icterus, tachypnea, tachycardia and fever. Most patients have high liver enzymes and more than 50% have increased serum bilirubin.

Gallbladder mucoceles are diagnosed by abdominal ultrasonography. They are characterized by immobile, echogenic bile with a finely striated (“kiwi”) or stellate pattern within the lumen of the gallbladder. Additional findings are possible distention of the intrahepatic or extrahepatic biliary system and possible gallbladder rupture. Findings suggestive of gallbladder rupture are loss of gallbladder wall continuity, hyperechoic fat in the cranial abdomen, free abdominal fluid, finely striated or stellate echogenic material outside of the gallbladder lumen.

The treatment of choice for gallbladder mucocele is cholecystectomy. Substantial perioperative mortality rates are reported. In three different reports perioperative mortality was 21.7%, 31.8%, 40%. The prognosis is poorer for dogs with septic bile-induced peritonitis (in one study dogs with aseptic vs. septic bile-induced peritonitis survival rates were 100% vs. 27%). Long-term outcome for dogs that survive the hospitalization period is excellent. Treatment for asymptomatic patients is currently controversial. Antibiotics and cholagogues (Actigall^R) have been recommended. Given the immobile nature of the mucus cholagogues generally have little effect. Given

the high percentage of patients with gallbladder necrosis and biliary obstruction and the significant mortality rates in symptomatic patients it is the author's opinion that cholecystectomy at the time of diagnosis is indicated. If surgery is not pursued the patient should be monitored periodically with blood work and ultrasound to evaluate for progressive disease.

Literature Review:

Ultrasonographic appearance and clinical findings in 14 dogs with gallbladder mucocele. Besso JG, et al. Vet Radio & Ultrasound 2000;41:261-271.

Gallbladder mucocele in dogs: 30 cases (2000-2002). Pike FP, et al. JAVMA 2004;224:1615-1622.

Surgical management of gallbladder mucoceles in dogs: 22 cases (1999-2003). Worley DR, et al. JAVMA 2004;225:1418-1422.