

Gall Bladder Mucoceles: The Kiwi Inside

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Gall bladder mucocele (GBM) may currently represent the most common indication for surgical management of extra-hepatic biliary tract disease in dogs. It has not yet been convincingly described in cats. The underlying lesion has been described as cystic mucosal hyperplasia.¹ Hypersecretion of mucus progressively leads to an accumulation of gelatinous bile within the gall bladder lumen. Increased viscosity over a period of weeks or months leads to thick gelatinous material eventually occupying the entire lumen of the gall bladder and in some cases also being present in the common bile duct. This can in some cases lead to clinico-pathological signs consistent with extra-hepatic biliary obstruction. In other cases eventual gall bladder rupture may occur possibly secondary to increases in intracholic pressure and/or gall bladder wall infarction. This will lead to an initial localized and progressively more generalized bile peritonitis.

Etiopathogenesis

The cause of GBM remains largely unknown but recent reports have shown associations (although not a causative link) between GBM and certain intercurrent disease processes with a focus on endocrinopathies and other metabolic abnormalities. Certain genetic predispositions may play a role as Shetland Sheepdogs were recently shown to be predisposed to gall bladder disease albeit not specifically to GBM formation.² Several previous studies have commented anecdotally on the relatively high incidence of endocrinopathies that are present in dogs with GBM.²⁻⁴ In a recent report evaluating a possible association between GBM and hyperadrenocorticism (HAC) and hypothyroidism (HT) both conditions were found to have an association with GBM.⁵ Dogs diagnosed with HT were 3.0 times more likely to have GBM than dogs without HT and the odds of having a mucocele in dogs with HAC was 29.0 times greater than dogs without HAC. In all 21% of dogs with GBM had HAC compared to 2% in the control group. In the case of HT 14% of GBM dogs had the condition compared to 5% in the control group. Certain limitations were present in this study and no causal relationship can be proven from this data.⁵

Diagnosis

A combination of clinical signs, laboratory parameters and imaging studies are used in the diagnosis of GBM. The most frequent laboratory abnormalities include elevations of alanine aminotransferase (ALT), alkaline phosphatase (ALKP), and aspartate aminotransferase (AST). Serum bilirubin is elevated in most cases but is often normal in early cases. A leukocytosis is present in half of the cases. Abdominal radiographs can be helpful but are often non-specific. Hepatomegaly may be evident and gall bladder enlargement with partial mineralization of contents is an occasional finding. Abdominal ultrasonography is the most useful imaging study for this condition. The gall bladder usually contains echogenic material with a typical stellate or finely striated bile pattern (kiwi fruit) which differs from biliary sludge by the absence of gravity dependant bile movement.⁶ Gall bladder rupture is suggested by gall bladder wall discontinuity, the presence of pericholecystic hyperechoic fat or an accumulation of fluid in the abdomen. The sensitivity of ultrasound for gall bladder rupture is 85.7%, so in most cases a suspicion of biliary peritonitis should be ruled out by abdominocentesis or diagnostic peritoneal lavage.⁷

Management

Appropriate management of gall bladder mucoceles depends on clinical presentation. The successful medical management of two dogs with GBM that were followed ultrasonographically has been reported.⁸ Medications administered included ursodiol, S-adenosyl methionine and famotidine although the relative role of these drugs in the resolution of the GBM can only be hypothesized.⁸ The belief that most mucoceles should be treated surgically is probably justified by the high levels of morbidity and mortality seen in cases that develop EHBO or bile peritonitis secondary to gall bladder rupture.^{4,7} However, medical management can be considered in early cases that have significant co-morbidities and are poor anesthetic candidates. Further research into the medical management of GBM seems warranted by this report. In most other cases the procedure of choice for GBM is cholecystectomy although one report includes a description of a significant percentage of dogs that underwent biliary rerouting procedures.⁴ Most dogs with GBM do not have gall bladders that remain healthy enough to allow a viable cholecystoduodenostomy to be performed and progressive gall bladder wall necrosis has been reported.⁴ It is generally considered that the gall bladder wall is the source of excessive mucus production and so the underlying cause appears to be removed when a cholecystectomy is performed. The gall bladder should always be submitted for histopathological analysis and a sample of the bile and a portion of the gall bladder wall should be submitted for bacterial culture and sensitivity testing. Evidence is somewhat conflicting as to whether infection is common in cases of biliary mucoceles with positive cultures for aerobes and anaerobes being reported in 9-75% and 0-25% respectively.^{4,6,7} Enterococcus and E.Coli isolates are the most frequently cultured bacteria.

Gall bladder rupture with subsequent bile peritonitis is encountered in 23-60% of cases and surgeons should be prepared for this eventuality.^{3,4,6} Some form of ongoing drainage is helpful in many cases and can consist of closed suction drainage using Jackson-Pratt drains or open abdominal drainage post-operatively. In dogs with GBM and concurrent evidence of partial or complete EHBO, such as ultrasonographic common bile duct distension or hyperbilirubinemia it is important to ensure that the common bile duct is free of congealed gall bladder mucus post-operatively. Concurrent EHBO has been documented in up to 30% of cases and based on laboratory data alone functional obstruction may be present in an even higher percentage of cases.^{4,7} Ensuring bile duct patency intraoperatively by catheterization and flushing as outlined above is critical especially in patients that have laboratory or imaging evidence of EHBO as persistent obstruction post-operatively may result if this is not performed.

The treatment of incidentally discovered or asymptomatic mucoceles is controversial. Care must be taken to avoid confusing early mucocele formation with the presence of biliary sludge ultrasonographically, a common incidental finding in dogs and cats. A careful history should also be taken in these cases as some apparently asymptomatic dogs will have mild to moderate clinical signs attributable to the presence of GBM, which can resolve after cholecystectomy.⁹ No controlled studies exist to compare surgical and conservative management of incidentally discovered mucoceles and so each case must be considered on its own merit. Recently the development of a laparoscopic cholecystectomy technique in dogs and its application to the treatment of gall bladder mucoceles has been described and may be a good option for dogs with incidentally diagnosed mucoceles.⁹

Prognosis

The prognosis for GBM is generally favorable especially if treated early and no bile leakage or trauma to the biliary tract is present. Post-operative complications consist of further leakage of bile from the surgery site, pancreatitis and re-obstruction of the common bile duct with gelatinous bile post-operatively. Most dogs that survive the perioperative period will not have long-term recurrence or complications. Overall perioperative mortality in the veterinary literature ranges from 22-32%.^{4,7}

References

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