



Figure 1: Appearance of the enlarged gallbladder (arrow), on the verge of rupture, prior to surgical dissection.

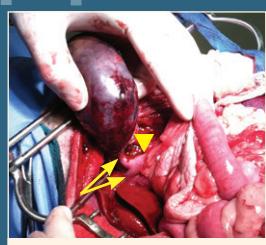


Figure 2: The gallbladder dissected free from the liver, with the enlarged hepatic ducts (arrows) and common bile duct (arrowhead) in view.

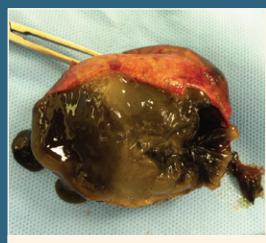


Figure 3: Excised gallbladder and the mucocoele within its lumen.



Figure 4: Excised gallbladder and the mucocoele within its lumen.

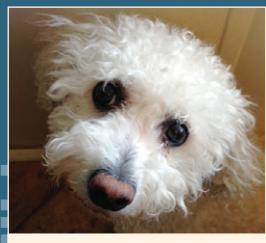


Figure 5: Snowball following a full recovery from surgery.

BILIARY MUCOCELE: A GALLBLADDER PRIMED FOR EXPLOSION!

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Introduction

A biliary mucocele is a collection of mucus within the gallbladder which can lead to distension of the gallbladder, pressure necrosis of the wall, rupture, and subsequent bile peritonitis. This case is an example of a biliary mucocele caught on the verge of rupture, before bile peritonitis occurred.

History

Snowball is an 8 year-old F/S Bichon Frisé with a history of hyperadrenocorticism controlled with trilostane. She developed acute onset vomiting in June 2014 and bloodwork revealed severe elevations in her liver enzymes (ALT, ALP, GGT). Her clinical signs resolved with medical management for acute gastroenteritis. However, Snowball again developed vomiting, lethargy, and anorexia two months later. Bloodwork was repeated and Snowball's liver values were higher and there was now hyperbilirubinemia. An abdominal ultrasound was performed, revealing enlargement of the gallbladder with thickened walls and a "kiwi" sign that was consistent with a biliary mucocele. The likely cause for Snowball's clinical signs was extra-hepatic cholestasis from a biliary mucocele. There was concern that the gallbladder was at risk for rupturing and a cholecystectomy was recommended. Snowball was referred to VSRC for surgery. On examination, Snowball was bright, alert, and responsive but mildly icteric. The abdomen was soft and non painful and no fluid wave or masses were palpable.

Surgical Treatment

A standard ventral midline celiotomy was performed. The hepatic ducts, common bile duct, cystic duct, and gallbladder were all severely distended. There were omental adhesions to the surface of the gallbladder and there were several spots where the gallbladder wall was dangerously thin. The gallbladder was bluntly dissected from the parenchyma of the quadrate and right medial liver lobes using a suction tip, cotton-tipped applicators, and right angled forceps. The gallbladder was handled delicately so as to not rupture it in the process. Once the gallbladder and cystic duct were freed, the cystic duct was clamped above its junction with the hepatic ducts and common bile duct and the diseased gallbladder was excised. An organized mucocele was present within the lumen of the gallbladder. Portions of the gallbladder wall and contents were submitted for culture and the remainder for histopathology. The common bile duct was catheterized to ensure patency along its entire length and the remaining extra-hepatic biliary tree was lavaged with saline to reduce the viscosity of the bile and ensure patency. The stump of the cystic duct was then ligated and oversewn to prevent bile leakage. There was no gross leakage of bile throughout the procedure. A liver biopsy was collected and the abdomen was thoroughly lavaged and routinely closed. Culture of the gallbladder and its contents revealed no bacterial growth. Histopathology of the gallbladder revealed cystic mucinous hyperplasia with mural hemorrhage,

necrosis, and neutrophilic cholecystitis. The gallbladder was very close to rupturing in the areas of necrosis. Histopathology of the liver revealed moderate hepatocellular vacuolar change (consistent with hyperadrenocorticism), mild chronic hepatitis, and mild cholangitis (likely secondary to reduced biliary flow). Clinically, Snowball recovered completely from surgery and did not experience any perioperative complications. Her clinical signs and icterus resolved and subsequent bloodwork at 5 days post-operatively revealed a marked improvement of the liver enzymes and complete resolution of the hyperbilirubinemia. She was kept on ursodiol to prevent mucous accumulation and subsequent biliary obstruction within the remainder of the extrahepatic biliary tree.

Discussion

The exact cause of biliary mucocele is unknown but impairment of a protective mechanism against luminal bile acids on the gallbladder epithelium and poor gallbladder emptying is thought to contribute to the disease. On histology, hyperplasia of the mucus-secreting epithelium is seen. As the gallbladder (or occasionally the extrahepatic biliary tree) becomes progressively more distended with mucus, pressure necrosis of the wall can develop, leading to rupture, bile peritonitis, and possibly death. If an ascending infection of the biliary tree has occurred, then rupture and subsequent septic bile peritonitis is associated with a high mortality rate.

There appears to be a breed-predisposition for biliary mucocele with higher numbers of Cocker spaniels, Shetland sheepdogs, and Miniature Schnauzers reported. Clinical signs of a biliary mucocele are oftentimes vague and non-specific, such as anorexia, vomiting, and lethargy, although icterus and abdominal pain can also be seen. Ultrasonographic exam of the gallbladder is a useful and sensitive imaging tool for the diagnosis of biliary mucocele. The mucocele is echogenic and non-mobile and contains fine granular organized striations or a stellate (kiwi) pattern. Cholecystectomy is most commonly recommended for treatment of a biliary mucocele, although cholecystoduodenostomy has also been reported with some success. The patency of the extra-hepatic biliary tree, including the common bile duct, should be confirmed with flushing and/or catheterization intra-operatively. Perioperative mortality rates can be high, ranging from 7-40%, but long-term survival is typically obtainable for dogs surviving the immediate perioperative period.

Summary:

Biliary mucoceles can present as a life-threatening problem, with possible rupture and bile peritonitis. Cholecystectomy is the recommended treatment of choice for biliary mucoceles. Fortunately for Snowball, her gallbladder was on the verge but had not yet ruptured. The gallbladder was able to be safely removed without any perioperative complications, giving her an excellent long-term prognosis.



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