

O'Brien KM, et al. Clinical, histopathologic, and immunohistochemical features of 13 cases of canine gallbladder neuroendocrine carcinoma

**Supplementary Table 1.** Clinical pathology results.

Case	Clinical signs	ALT (U/L)	AST (U/L)	ALP (U/L)	GGT (U/L)	Culture and susceptibility of gallbladder
1	Emesis, hematemesis, abdominal distention	Elevated (no record available)	Elevated (no record available)	Elevated (no record available)	Elevated (no record available)	Yes; no results listed
2	Emesis, hematemesis, abdominal distension	276 (10–100)	—	1558 (23–212)	—	No growth
3	Emesis	252 (10–118)	220 (10–40)	983 (20–150)	—	Yes; <i>E. coli</i> heavy; <i>Enterococcus</i> moderate
4	Emesis, hematemesis	534 (5–107)	202 (5–55)	112 (10–150)	30 (0–14)	Yes; <i>E. coli</i> heavy; <i>Enterococcus</i> light
5	Emesis, diarrhea	78 (12–118)	52 (15–66)	786 (5–131)	11 (1–12)	Yes; scant growth of coagulase-negative <i>Staphylococcus</i> spp.
6	Hematuria, hematemesis	348 (0–120); 4282 one month prior to biopsy	Elevated 1 mo prior to biopsy	83 (0–140); elevated 1 mo prior to biopsy	31 (0–14)	Yes; negative growth
7	None	92 (16–91)	55 (23–65)	228 (20–155)	8 (7–24)	—
8	Emesis, pain, anorexia	219 (12–118)	—	281 (5–131)	—	Yes; negative growth
9	None	Elevated (no record available)	Elevated (no record available)	Elevated (no record available)	Elevated (no record available)	—

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10	Emesis	360 (12–118)	—	904 (5–131)	22 (1–12)	—
11	Emesis	261 (12–118)	42 (15–66)	179 (5–131)	—	—
12	Emesis, diarrhea	102 (10–125)	—	120 (23–212)	—	—
13	Emesis, anorexia	2166 (12–118)	328 (15–66)	818 (5–131)	—	Yes; negative growth

ALP = alkaline phosphatase; ALT = alanine aminotransferase; AST = aspartate aminotransferase; GGT = gamma-glutamyl

transferase. Dash (—) = not reported. Numbers in parentheses are reference intervals.

**Supplementary Table 2.** Histologic characteristics of the neoplasm and relevant gallbladder and liver lesions.

Case	Pleomorphism	Necrosis	Mitotic count	Hemorrhage	Vascular invasion	Margins	Gallbladder findings	Liver findings
1	Marked with karyomegaly	Yes	10	Yes	Yes	Clean	Inspissated bile/choleliths	Ductal bile stasis; mild neutrophilic lymphoplasmacytic cholangitis
2	Marked with karyomegaly	No	6	Yes	Yes	Clean	No significant lesions reported	Not biopsied
3	Marked with karyomegaly	Yes	3	Yes	Yes	Clean	Cystic mucosal hyperplasia; moderate chronic cholecystitis; inspissated bile/choleliths; bacteria; mineralization	Severe neutrophilic cholangitis; bile duct hyperplasia & fibrosis; portal fibrosis
4	Marked with karyomegaly	Yes	4	Yes	Yes	Clean	Mild chronic cholecystitis	Mild lymphoplasmacytic cholangitis; minimal bile duct hyperplasia
5	Marked with karyomegaly	No	9	No	Yes	Clean	Mild cystic mucosal hyperplasia; mild lymphoplasmacytic cholecystitis	Nodular hyperplasia
6	Moderate (no karyomegaly)	No	4	Yes	No	Clean	Mild chronic cholecystitis	Mild steroid hepatopathy; mild chronic neutrophilic cholangitis; bile duct hyperplasia

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7	Moderate (no karyomegaly)	No	8	Yes	Yes	Clean	Mild chronic cholecystitis, inspissated bile; cholelith; cholangitis; cystic mucosal hyperplasia & fibrosis	Nodular hyperplasia
8	Moderate-to-marked (no karyomegaly)	Yes	2	Yes	No	Clean	Mucocele	Not biopsied
9	Marked (no karyomegaly)	No	12	Yes	No	Clean	Cystic mucosal hyperplasia; moderate chronic lymphoplasmacytic cholecystitis; inspissated bile/cholelith; bacteria; mineralization	Mild chronic-active cholangitis; severe steroid hepatopathy
10	Mild (no karyomegaly)	Yes	13	Yes	No	Clean	Choleliths; cystic mucosal hyperplasia	Bile duct hyperplasia, fibrosis, & stasis; mild chronic cholangitis
11	Mild (no karyomegaly)	Yes	11	Yes	Yes	Clean	Inspissated bile	Moderate hepatocellular swelling & clearing; ductal bile stasis; fibrosis
12	Marked with karyomegaly and cytoplasmic intranuclear invaginations	No	10	No	No	Clean	Mild chronic choledochitis	Not biopsied
13	Moderate pleomorphism with slight karyomegaly	Yes	12	Yes	Yes	Dirty	Moderate chronic lymphoplasmacytic & neutrophilic cholecystitis; cystic mucosal hyperplasia	Effaced by tumor with scattered remnant bile ductules