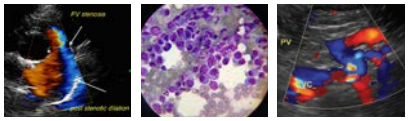
IMAGING PERFORMED BY

IntraPet.com



SonoPath
Clinical Sonography & Telecytology
EDUCATIONAL TELECONSULTATION SERVICES™
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**DATE**

8/24/23

**PATIENT**

Cody Collier

**SPECIES**

Canine

**BREED**

Yorkshire Terrier

**SEX**

Neutered Male

**AGE**

3/8/08

**WEIGHT**

11 Pounds

**INTERPRETED BY**

Beth Johnson, DVM DACVIM

**HOSPITAL NAME**

Everhart Vet Hospital

**REFERRING VET**

Dr. Betta

**INVOICE**

44945

## PRESENTING CLINICAL SIGNS

Presented for wellness. Labs show increase in liver values. Hx of hepatocellular carcinoma removed in July 2021 by veterinary surgeon. Rec repeat ultrasound to assess for any regrowth

Current Medications: gabapentin 50mg 1 tab PO q12hr, Denamarin added back in after changes in Labwork, diet transition to hills g/d after changes in Labwork
Lab Results: aug 2023: alt 174, alp 1882, ggt 18, tbili 0.1, bun 42, creat 1.0, phos 6.4, ca 12.0, magnesium 3.0, k 5.7, na/k 26, cholesterol 477, triglycerides 1061, psl 346. ua: usg 1.020, protein 3+, quiet sediment, upc 4.8. feb 2022: alt 126, alp 630, k 6.1, na/k ratio 25, psl 233, trig 373. ua usg 1.036, 4+ with quiet sediment, no upc run at that time
Date of Previous IntraPet Ultrasound: No previous.
Sedation: Torbugesic IV.
Stat Report: Not requested.
Imaging Performed By: Stephanie Warga RDCS, RVT.

## ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN

### *Urinary System*

The urinary bladder is moderately distended with anechoic contents. No masses, inflammatory changes, echogenic sediment or cystoliths are observed. The urinary bladder, trigone and visible pelvic urethra are normal in thickness with a smooth mucosal surface.

Prostate is normal in size, echotexture and echogenicity for a neutered male.

Kidneys are overall normal in size and shape with smooth peripheral margination. A normal 1:3 cortex to medulla ratio is maintained. The medulla and cortices are uniform in texture with some mild increased cortical echogenicity and mild loss of corticomedullary distinction, expected in this age patient. There is no evidence of infarcts observed. Trace pyelectasia is noted in both kidneys. Punctate non-obstructive nephroliths are noted bilaterally as well as multiple small bilateral cortical cysts. The left kidney measures 4.42 cm. The right kidney measures 4.3 cm.

### *Adrenal Glands*

Adrenal glands are largely normal in size, shape and contour. Some parenchymal heterogenicity is present without concerning capsular distortion. These changes are likely normal for this age but should be monitored if there is any suspicion of adrenal disease. The right adrenal gland measures 0.88 cm at the cranial pole and 0.89 cm at the caudal pole. The left adrenal gland measures 0.74 cm at the cranial pole and 0.75 cm at the caudal pole.

### *Spleen*

Spleen is subjectively normal in size with a normal smooth capsular contour. Parenchyma is appropriately finely textured and homogenous with normal echogenicity relative to surrounding tissue (hyperechoic to liver). Multifocal well-demarcated hyperechoic homogenous nodules are noted. Splenic vasculature appears normal.

### *Liver*

Liver is subjectively enlarged (swollen contour) without disruption of architecture. It has a normal homogenous echotexture. Parenchyma is diffusely hyperechoic characterized by less prominent than normal portal vein walls and increased echogenicity relative to the spleen and falciform fat. In the mid right liver adjacent to the gallbladder there is a 2.7 cm x 2.2 cm irregular, mildly heterogeneous, vascular, primarily

hyperechoic nodule/mass. Visible vasculature and biliary tree appear normal without distension or congestion.

The gallbladder is moderately overdistended with anechoic bile as well as a large amount of both suspended and gravity dependent echogenic and some mineral/sand debris. Small cholecystoliths can't be ruled out. The wall is smooth without visible thickening. The proximal cystic duct appears mildly distended, but no further dilation of the cystic or common bile duct. There is no evidence of effusion or inflammation.

### *Gastrointestinal*

The visible stomach wall is normal in thickness and layering. The lumen of the stomach is mildly distended with very echogenic reverberation artifact from intraluminal gas. There is no evidence of obstruction, foreign material or infiltrative disease; however, complete visualization of far wall is partially inhibited by gas. Pyloric outflow tract appears patent.

The visible small intestines are normal in wall thickness and layering (canine duodenum < 0.5 cm and feline duodenum < 0.4 cm; other < 0.3 cm). Small intestinal motility appears adequate (1-3 contractions per min). The lumen of the small intestine is empty with no evidence of obstruction, foreign material or infiltrative disease.

The visible colon is normal in wall thickness (< 0.2 cm) and layering. Contents are consistent with normal formed feces and gas.

### *Pancreas*

The observed pancreas appears appropriately isoechoic to surrounding omental fat. The capsule is mildly irregular in shape. Parenchyma is mildly heterogenous and coarse. There is no visible pancreatic duct dilation. There is no evidence of active peripancreatic inflammation.

### *Free Abdomen*

There is no evidence of free peritoneal effusion noted in these images.

There is no apparent lymphadenopathy noted in these images.

## PRIMARY FINDINGS

- The liver nodule/mass described above, given this patient's history, is concerning for infiltrative neoplasia (i.e., recurrent hepatocellular carcinoma). Having said that, benign nodular hyperplasia, hepatoma/adenoma, even cyst, hematoma, etc. can't be definitively ruled out without tissue sampling.

- **Moderate gallbladder debris -** Cholecystic debris is of unknown clinical significance. It can be seen with biliary stasis from fasting or illness. Cholecystic debris is not necessarily related to hepatobiliary disease. Echogenic bile is most commonly an incidental finding in dogs and should be interpreted in combination with clinical signs such as nausea, inappetence, cranial abdominal discomfort and/or laboratory changes such as increased ALP and/or increased Tbili.

## SECONDARY FINDINGS

- **Hyperechoic splenic nodules –** most consistent with benign myelolipomas. Other differentials such as fibrosis or calcification caused by old hematomas or infarcts, chronic inflammation, granulomatous disease or metastatic disease cannot be ruled out, but are considered less likely.

- Age related changes of the kidneys, adrenals, and pancreas.

## INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Three view thoracic radiographs are recommended for further assessment of cardio-pulmonary status as well as to further evaluate for any evidence of metastatic disease, if not recently evaluated.

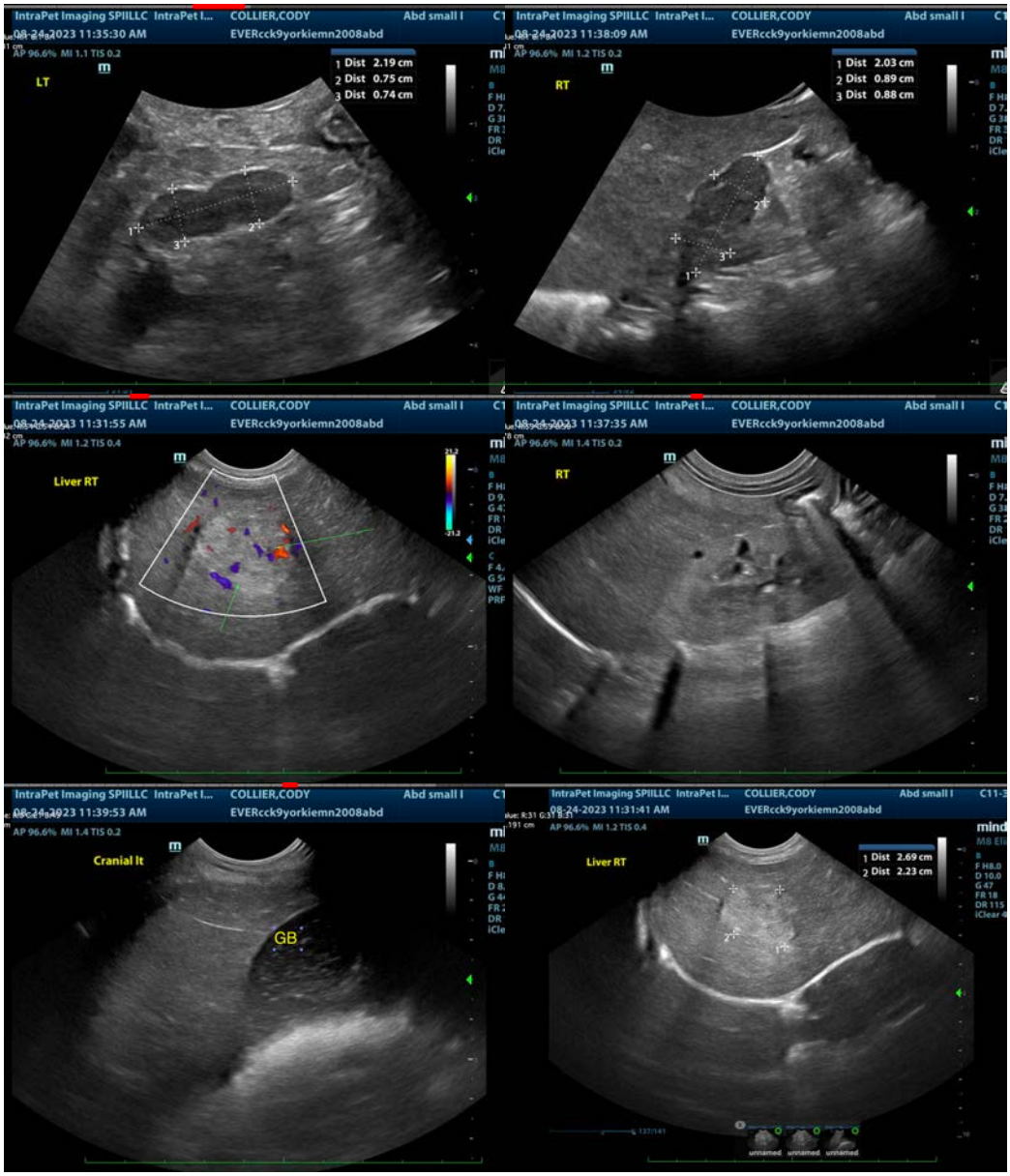
If surgery would be elected to remove the nodule/mass described above, which does appear likely resectable, then a fine needle aspirate could be considered if patient's coagulation status is appropriate to help obtain a diagnosis prior to surgery. If, however, a diagnosis cannot be obtained, or the nodule can't be reached, an exploratory laparotomy for excisional biopsy may be the next best step. At that time, further evaluation and possible removal of the gallbladder concurrently could be considered.

In the meantime, unrelated but recommended additional diagnostics, given this patient's reported laboratory changes, include:

A baseline cortisol is recommended. If baseline cortisol is less than 2, a full ACTH stimulation test is recommended to rule out hypoadrenocorticism.

Pending results, further evaluation of the hypercalcemia, beginning with a malignancy panel to include PTH, PTHrP, and ionized calcium, is recommended.

Additionally, if not recently evaluated, a blood pressure should be considered, and if treatment is not in place for proteinuria, this should be considered as well, in addition to possible hepatic nutraceuticals such as Ursodiol, if surgical intervention is not elected for the liver nodule, gallbladder, etc.




**The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.**

Thank you for this referral. If the clinical or image interpretation does not parallel your findings or if I can be of any further assistance please contact me.

**Beth Johnson**, DVM, DACVIM
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