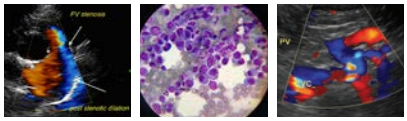
IMAGING PERFORMED BY

IntraPet.com



SonoPath
Clinical Sonography & Telecytology
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DATE

1/5/23

PATIENT

Fletcher Bishop

SPECIES

Canine

BREED

Terrier X

SEX

Neutered Male

AGE

8/6/08

WEIGHT

19.1 Pounds

INTERPRETED BY

Beth Johnson, DVM DACVIM

HOSPITAL NAME

Healing Paws VWC

REFERRING VET

Dr. Levitsky

INVOICE

44000

PRESENTING CLINICAL SIGNS

Clinically dog is doing well. Hx of bladder stones and Cushings dz although pet not clinical- no PU/PD, panting, pacing etc. Repeat BW 12/22 revealed continued elevated of liver chems esp GGT despite being on ursodiol.

Current Medications: Herbal tx, Ursodiol 80 mg po sid
Lab Results: 5/22 ALKP 852, GGT 11, ALT 136. 9/22 ALKP 559, GGT 24, ALT 135. 12/22 ALKP 847, GGT 36, ALT 223.
Date of Previous IntraPet Ultrasound: 10/20/22. See attached.
Sedation: Not required to complete full diagnostic ultrasound.
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 or inflammatory changes. The urinary bladder, trigone and visible pelvic urethra are normal in thickness with a smooth mucosal surface. Multiple cystoliths present measuring between 0.70-0.80 cm.

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 pyelectasia or infarcts observed. Non-obstructive areas of mineralization/nephroliths are noted in both kidneys. The right kidney measures 4.75 cm. The left kidney measures 4.1 cm.

Adrenal Glands

Adrenal glands are plump/swollen in size. Normal shape and contour are maintained without evidence of capsular invasion. Corticomedullary structure is unremarkable. Visible surrounding vasculature appears normal. A hyperechoic nodule is noted in the caudal pole of the right adrenal gland. Nodule does not disrupt normal shape and/or architecture. The right adrenal gland measures 2.19 cm long x 1.37 cm at the cranial pole and 1.09 cm at the caudal pole. The left adrenal gland measures 2.62 cm long x 1.25 cm at the cranial pole and 1.09 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 with mildly irregular margins. Parenchyma is heterogenous characterized by multiple poorly defined hypoechoic nodules within otherwise hyperechoic liver parenchyma. Visible vasculature and biliary tree appear normal without distension or congestion.

Gallbladder is moderately distended with anechoic bile as well as very mild suspended and gravity dependent echogenic debris. The wall is smooth without visible thickening. There is no evidence of cystic or CBD dilation. There is no evidence of effusion or inflammation.

Gastrointestinal

The stomach wall is normal in thickness (canine < 0.5 cm and feline < 0.4 cm) and layering. The lumen of the stomach is empty with no evidence of obstruction, foreign material or infiltrative disease. Pyloric outflow tract appears patent.

The visible small intestines are normal in wall thickness and layering. Hyperechoic mucosal fogging or speckling is noted. Small intestinal motility appears adequate (1-3 contractions per min). The lumen is empty with no evidence of obstruction or foreign material.

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

Pancreas

The area of the pancreas contains irregular hyperechoic pancreatic remodeling.

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

- **Heterogenous Liver –** These changes are most consistent with benign processes such as nodular hyperplasia, steroid (vacuolar) hepatopathy, extramedullary hematopoiesis or possibly chronic inflammatory disease and less commonly infiltrative round cell or metastatic neoplasia.

- **Very mild 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.

- **Bilateral adrenomegaly –** consistent with this patient's reported history of hyperadrenocorticism.

- **Hyperechoic adrenal nodule (right adrenal caudal pole) –** Differentials include primary adrenal cortical adenoma or adenocarcinoma, pheochromocytoma, myelolipoma, adrenal hyperplasia secondary to pituitary disease or metastatic disease. Ultrasound alone cannot differentiate between functional and non-functional nodules and/or between benign and malignant disease. Small nodules without other evidence of abdominal disease (to suggest metastatic disease) and/or clinical signs (to suggest adrenal disease) are most often incidental and should be monitored.

- **Hyperechoic pancreas –** This finding is suggestive of pancreatic fibrosis, possibly secondary to chronic pancreatitis. A TLI is recommended to rule out exocrine pancreatic insufficiency (EPI), especially if clinical signs (weight loss, diarrhea, etc.) are present.

- **Mucosal speckling –** Mucosal speckling is often present with inflammatory bowel disease (IBD). It is not specific for type or severity of disease. Mild speckling change can occur as a normal patient variant in the post-prandial state.

SECONDARY FINDINGS

- Urinary bladder cystoliths

- Age related kidney changes with non-obstructive nephrolithiasis bilaterally

- **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.

**In general, this study is very similar, if not subjectively slightly improved, compared to the prior ultrasound. Neither the liver nor gallbladder changes are significant, and certainly not progressive.

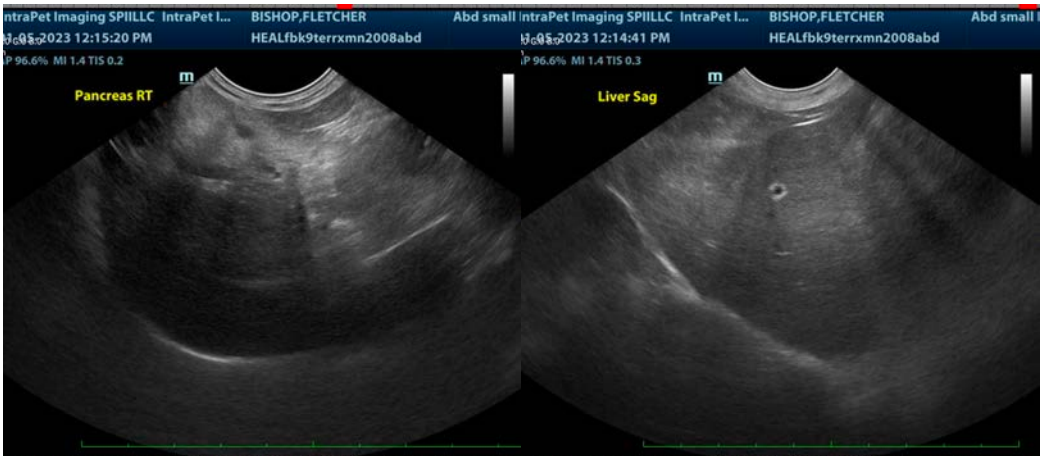
INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

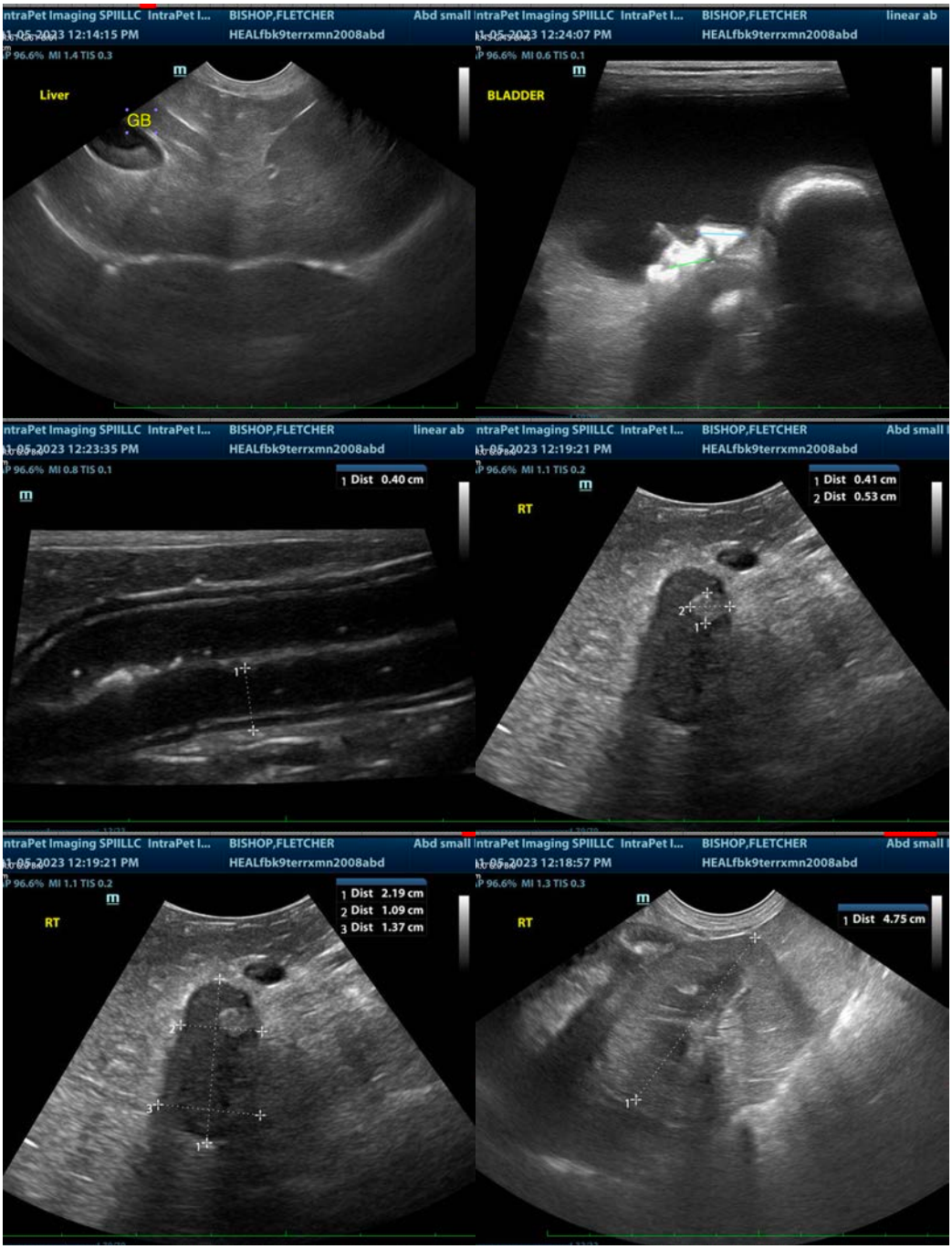
Given the lack of ultrasonographic progression and subjectively mild improvement in the appearance of liver and gallbladder in these images, it is likely that this patient's progressively increased liver enzymes are secondary to hyperadrenocorticism, as GGT can be increased with hyperadrenocorticism similarly to ALP.

Therefore, if this patient is clinically doing well, additional intervention is likely not necessary for mildly increased GGT. Having said that, given that the values are continuing to increase mildly, a fine needle aspirate of the liver (considered likely of low yield) could be considered if patient's coagulation status is appropriate.

Additionally, given the bowel and pancreatic changes, if not already evaluated, a gastrointestinal malabsorption panel (including cobalamin, folate, TLI and PLI) to Texas A&M GI Laboratory is recommended for further evaluation of GI and pancreatic function.

Urinalysis and, if indicated based on urinalysis results, urine culture are recommended. If protein is present in an otherwise quiet sediment, protein quantification with a urine protein to creatinine ration is recommended.

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HEALfbk9terrxmn2008abd
Liver
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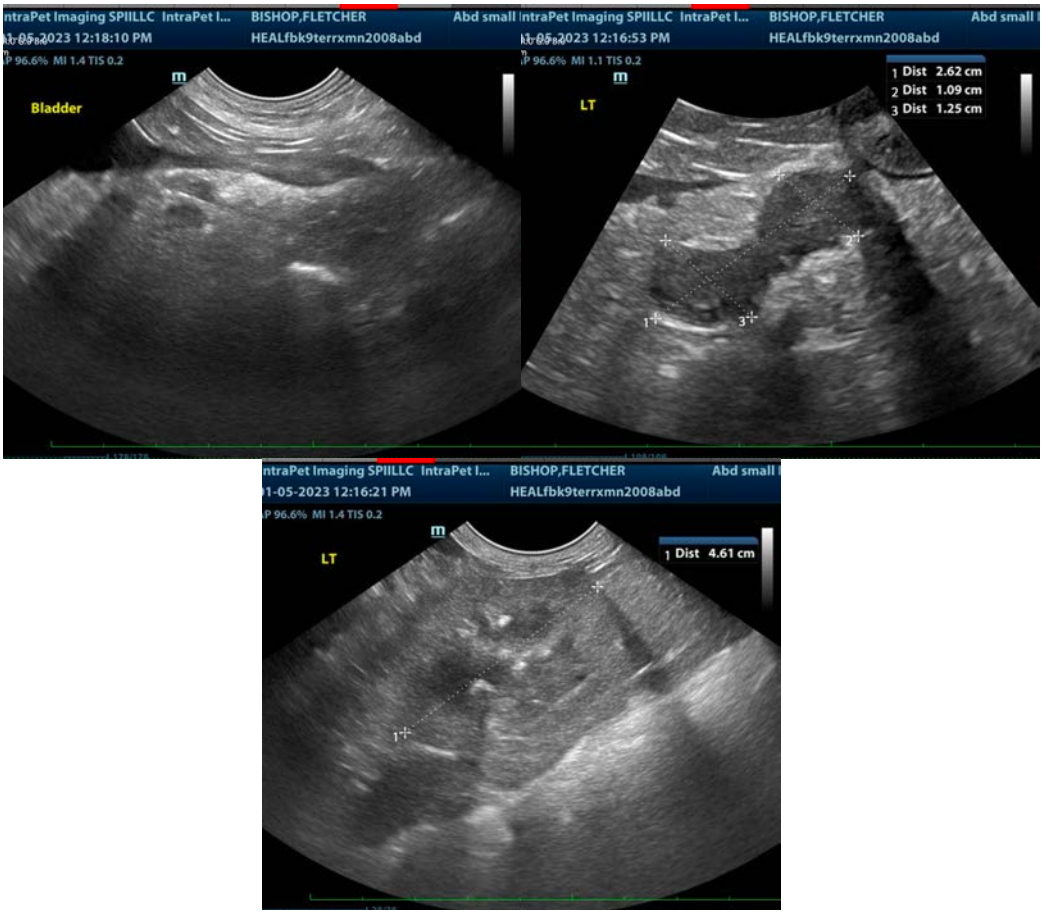

The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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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