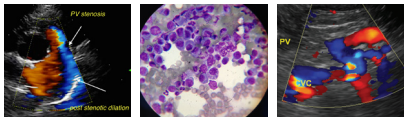
IMAGING PERFORMED BY

IntraPet.com



SonoPath
Clinical Sonography & Telecytology
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DATE

6/14/23

PATIENT

Lulu Wales

SPECIES

Canine

BREED

Siberian Husky

SEX

Spayed Female

AGE

11/18/12

WEIGHT

70 Pounds

INTERPRETED BY

Beth Johnson, DVM DACVIM

HOSPITAL NAME

Frederick Road VH

REFERRING VET

Dr. Beyer

INVOICE

43167

PRESENTING CLINICAL SIGNS

Lethargy, inappetence, elevated liver and kidney values. MSU hypercalcemia panel in 2/2023-suspected primary hyperparathyroidism, no further treatment or workup. History of PU/PD and leaking urine on proin (from previous vet hospital) on carprofen (from previous vet hospital). Friday started being lethargy, not eating, diarrhea, limping/lameness RIGHT pelvic limb, no vomiting

Current Medications: discontinue carprofen, fluids SQ, sucralfate, cerenia, metronidazole (liver dose) Proviable, gabapentin, haven't started denamarin yet
Lab Results: snap cpl NEGATIVE. CREA = 1.8 mg/dL 0.5 - 1.8, BUN = 30 mg/dL 7 – 27, PHOS = 3.3 mg/dL 2.5 - 6.8, Ca = 12.1 mg/dL 7.9 - 12.0, ALT = 194 U/L 10 – 125, ALKP = 496 U/L 23 – 212, GGT = 14 U/L 0 – 11, TBIL = 0.3 mg/dL 0.0 - 0.9, CHOL = 321 mg/dL 110 – 320, AMYL = 372 U/L 500 - 1500 | : : LOW
liver and renal values normal in past
Date of Previous IntraPet Ultrasound: No previous.
Sedation: Not required to complete full diagnostic ultrasound.
Stat Report: Not requested.
Imaging Performed By: Rachel Brilhart, RDMS.

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.

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 mineral. The left kidney measures 6.48 cm. The right kidney measures 6.39 cm. Chronic infarcts are noted bilaterally in the caudal poles of both kidneys.

Adrenal Glands

The left adrenal gland is enlarged measuring 7.46 cm long, 3.2 cm at the cranial pole and 3.3 cm at the caudal pole. Moderately heterogeneous parenchymal changes, mineralization in the cranial and caudal poles, swollen capsular expansion, and some concern for possible phrenicoabdominal vein invasion noted. Corticomedullary structure is unremarkable.

The right adrenal gland is also enlarged but on a much smaller scale, measuring 2.46 cm long x 0.85 cm at the cranial pole and 1.1 cm at the caudal pole, with a similarly heterogeneous parenchymal change and mineralization. Mild swollen capsular expansion is noted without evident capsular escape or vascular invasion.

Spleen

The 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). No focal nodules or masses are observed. 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. Adjacent to the gallbladder there is a 2.3-2.4 cm in diameter, slightly more heterogeneous, partially cavitated nodule. Visible vasculature and biliary tree appear normal without distension or congestion.

Gallbladder is moderately distended with anechoic bile as well as 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 (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 pancreatic parenchyma is appropriately isoechoic to surrounding tissue. Visible capsule is smooth and normal in contour. 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.

ULTRASONOGRAPHIC FINDINGS

- **Mineralized left adrenal mass with possible/suspect vascular invasion** – Concerning for a primary adrenal cortical tumor such as an adenocarcinoma. A benign adenoma is possible but less likely if true vascular invasion is present. Additionally, a pheochromocytoma is possible but considered less likely. Given the similar (but on a smaller scale) changes in the right adrenal gland, bilateral adrenal tumors could be present, or this patient could be a rare presentation of adrenal and pituitary dependent disease.

- **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. The more discrete partially cavitated nodule could represent the same process as is occurring diffusely. However, a more focal process, even infiltrative neoplastic or metastatic nodule, cannot be ruled out without tissue sampling.

- **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.

- Age related kidney changes with bilateral chronic infarcts

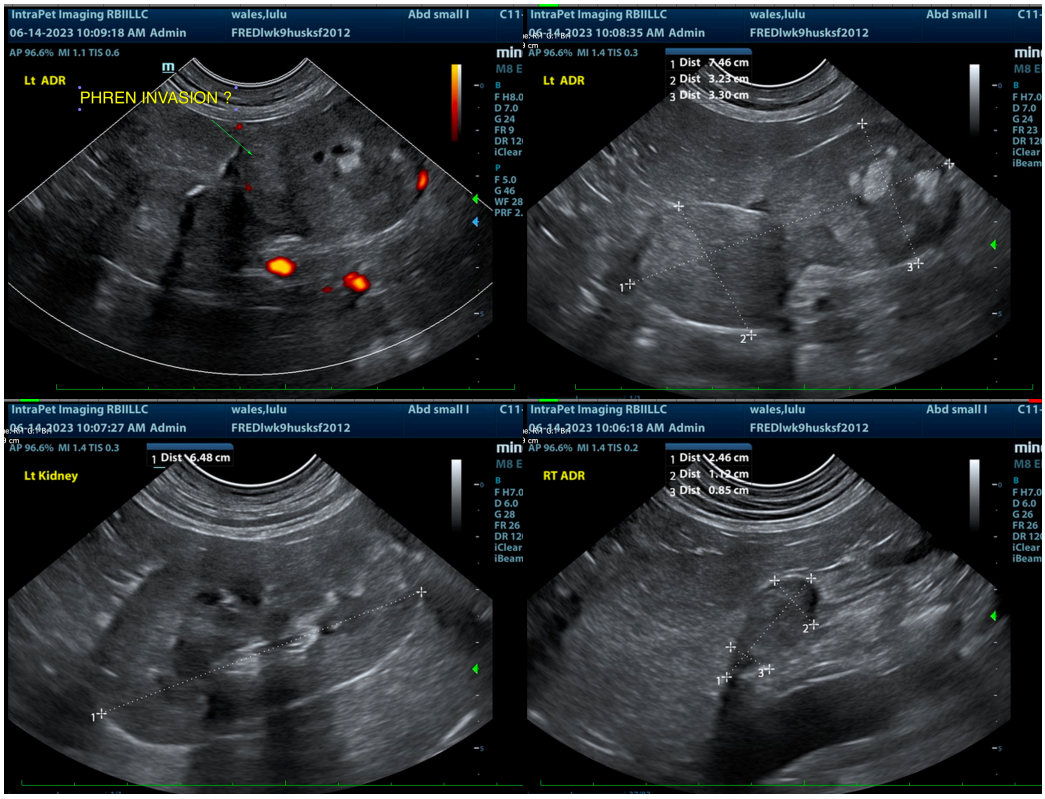
INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

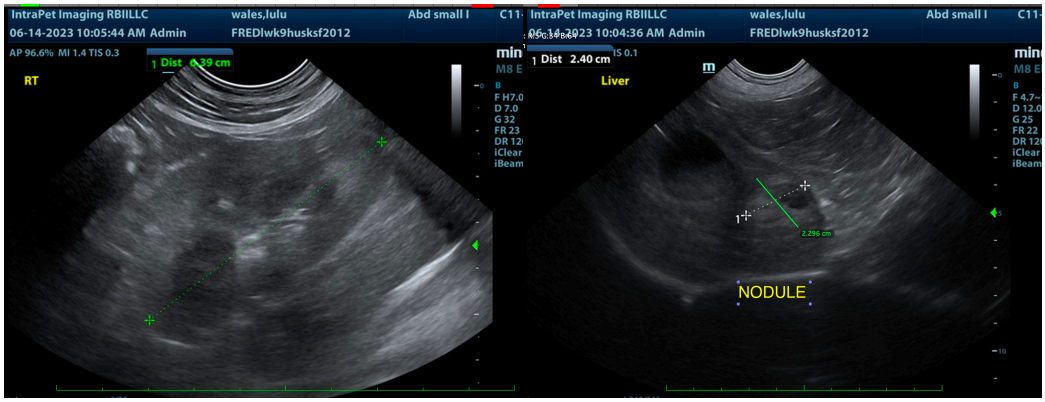
This patient's adrenal gland, liver, and gallbladder changes can all be seen with hyperadrenocorticism. Given this patient's supporting clinical signs (i.e., PU/PD, etc.) further investigation is recommended, beginning with a low-dose Dexamethasone suppression test. In addition, if not recently evaluated, a blood pressure is recommended, as is a urinalysis and, if indicated based on urinalysis results, urine culture. If protein is present in an otherwise quiet sediment, protein quantification with a urine protein to creatinine ration is recommended.

If this patient's new mild azotemia is believed to be renal in origin, further workup for possible kidney insults could also be considered, including further investigation of the hypercalcemia beginning with an ionized calcium, potentially testing for Leptospirosis, etc.

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.

Ultimately, at least a left adrenalectomy is likely going to be warranted as part of the management of this patient's suspect hyperadrenocorticism, and if pursued, a pre-surgical planning abdominal CT scan may be helpful for further investigation of the possible vascular invasion, the liver nodule, kidneys, 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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