**DATE PRESENTING CLINICAL SIGNS**

3.24.23 Patient presented for history of increased appetite, loose stool, hair loss (truncal alopecia), and dry scaly skin. PE - H/L NSF. Abd distended. Skin appears thinning. Truncal alopecia with seborrhea/flaky dry skin on entire trunk.

PATIENT

Bori Tak Current Medications: Apoquel 5.4 mg 1/2 tab PRN, Simparica Trio monthly, Provable forte, Metronidazole, Cerenia (last dose given 3/21/23).

SPECIES

Canine

Lab Results: ALT = 142 U/L (18-121), ALP 2230 U/L (5-160), GGT 34 U/L (0-13), Cholesterol 507 mg/dL (131-345), USG 1022, Proteinuria 2+, calcium oxalate crystals.

Date of Previous IntraPet Ultrasound: No previous.

Sedation: Midazolam/Torbugesic IV.

Stat Report: Not requested.

BREED

Imaging Performed By: Stephanie Warga RDCS, RVT.

Havanese

ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN**SEX**

Spayed Female

Urinary System

The urinary bladder is moderately distended with anechoic urine. The Bladder wall, trigone, ureteral papillae and visible urethra (to a depth of 2cm) appear normal with no evidence of wall thickening, mucosal irregularities, masses or cystic calculi.

AGE

7/18/16

The left kidney has a normal shape and size (3.61 cm). Overall echogenicity is normal with adequate corticomedullary distinction and a typical 1:3 cortex:medulla ratio. There is no evidence of perinephric inflammation or effusion. There is no evidence of pyelectasia, nephroliths, infarcts or hydroureter. Renal vasculature is normal.

WEIGHT

12.2 lbs.

The right kidney has a normal shape and size (4.12 cm). Overall echogenicity is normal with adequate corticomedullary distinction and a typical 1:3 cortex:medulla ratio. There is no evidence of perinephric inflammation or effusion. There is no evidence of pyelectasia, nephroliths, infarcts or hydroureter. Renal vasculature is normal.

INTERPRETED BY

Kathleen Sennello DVM,
MS, Diplomate ACVIM
(Small Animal Internal
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Adrenal Glands

The left adrenal gland is normal in size and slightly irregular in shape (0.59 cm at the cranial pole / 0.73 cm caudal pole / 1.68 cm in length). It is visualized in its normal position cranial to the left renal artery. It is slightly irregular in appearance in that there is a slightly irregularity at the caudal pole suggestive of possible mild/early vascular invasion. Careful color flow evaluation of vasculature in that region does not support the presence of vascular invasion (so this could be imaging artifact. Recommend continued monitoring.

HOSPITAL NAME

Hickory VH

REFERRING VET

Dr. McNesby

The right adrenal gland is normal in size but irregular in appearance (0.57 cm at the cranial pole / 0.46 cm caudal pole / 1.75cm in length). It is visualized in its normal position between the right kidney and the caudal vena cava. It is abnormal in appearance in that there is a hyperechoic nodule at the cranial pole (approximately 0.41 x 0.46 cm). There is no evidence of vascular invasion is visualized.

INVOICE

12522

Spleen

The spleen is subjectively normal in size, echotexture is homogenous, and the splenic capsule is smooth with no irregularities. The blood flow through the hilus and splenic parenchyma appears normal. No focal parenchymal abnormalities are visualized.

Liver

The liver is subjectively large in size, and echogenicity with smooth peripheral margins. The parenchyma is heterogenous in echotexture with subtle, indistinct focal mottling. The visible portions of the vasculature and biliary tract appear normal. No focal nodules or cystic lesions are observed.

The gall bladder lumen is significantly distended. Some areas of the wall appear mildly thickened with adherent debris. There is a large amount of primarily non-organized echogenic debris. There is no evidence of bile duct dilation.

Gastrointestinal

The stomach contains minimal luminal contents. It measures at a normal thickness of <0.7cm with some variability due to the presence of rugal folds. The distinction of the gastric wall layers is adequate and there is no impression of reduced peristaltic activity. No masses or focal lesions were observed.

The visualized areas of duodenum, jejunum and ileum have a relatively uniform diameter with minimal fluid distension. Wall thickness is normal. Bowel loops follow a curvilinear path with distinct wall layering maintaining the typical 1:3 muscularis:mucosa layer ratio. The duodenum measured as normal (0.32 cm) and the jejunum measured as normal (0.33 cm). Visualized peristalsis appears appropriate. There were no focal lesions consistent with obstruction or a mass effect observed.

The ileocecal junction was visualized and exhibited normal intact wall layering and is subjectively of normal thickness. Sections of colon are visualized with formed fecal material and gas shadowing distally. There is no observed focal or generalized colon wall thickening or loss of layering.

Pancreas

The area of the pancreas is normal and isoechoic to surrounding mesentery. There is no evidence of nodules or cystic lesions. There is no evidence of regional mesenteric inflammation or fluid.

Free Abdomen

Evaluation of the peritoneal cavity did not reveal any evidence of effusion, or subjective lymphadenomegaly. The Medial iliac nodes appear normal and there was no evidence of a caudal aortic thrombus at the bifurcation. The omentum is of normal uniform echogenicity.

ULTRASONOGRAPHIC FINDINGS

- Subjectively irregular caudal pole of left adrenal. On plane views there is the suggestion of some mild irregularity, which could be consistent with early vascular invasion. This is not supported by Power Doppler or additional views of the blood flow vasculature. Recommend continued monitoring. (Consider a recheck in 8-12 weeks).
- Large heterogenous liver. The diffuse hepatic changes are non-specific and could be consistent with vacuolar hepatopathy, nodular hyperplasia, inflammatory/immune-mediated disease, fibrosis, extramedullary hematopoiesis, toxic hepatopathy (e.g., copper), infiltrative neoplasia (less likely) or other hepatopathy.
- Large gall bladder debris. The significance of the aggregated gallbladder debris is unclear. This could represent an early mucocele, cholestasis, or may be secondary to fasting but seems unlikely to be causing a current issue. Recommend continued monitoring.
- Hyperechoic nodule in the cranial pole of the right adrenal. Adrenomegaly could be consistent with neoplasia (e.g., adenoma, carcinoma, pheochromocytoma), hyperplasia, inflammation, other.

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

There is a hyperechoic nodule visualized in the cranial pole of the right adrenal. This could represent a benign lesion or an early neoplastic lesion. This lesion could be secreting hormone or be nonactive. Given the suspicion of possible Cushing's based on the physical exam findings and biochemical changes, consider these recommendations:

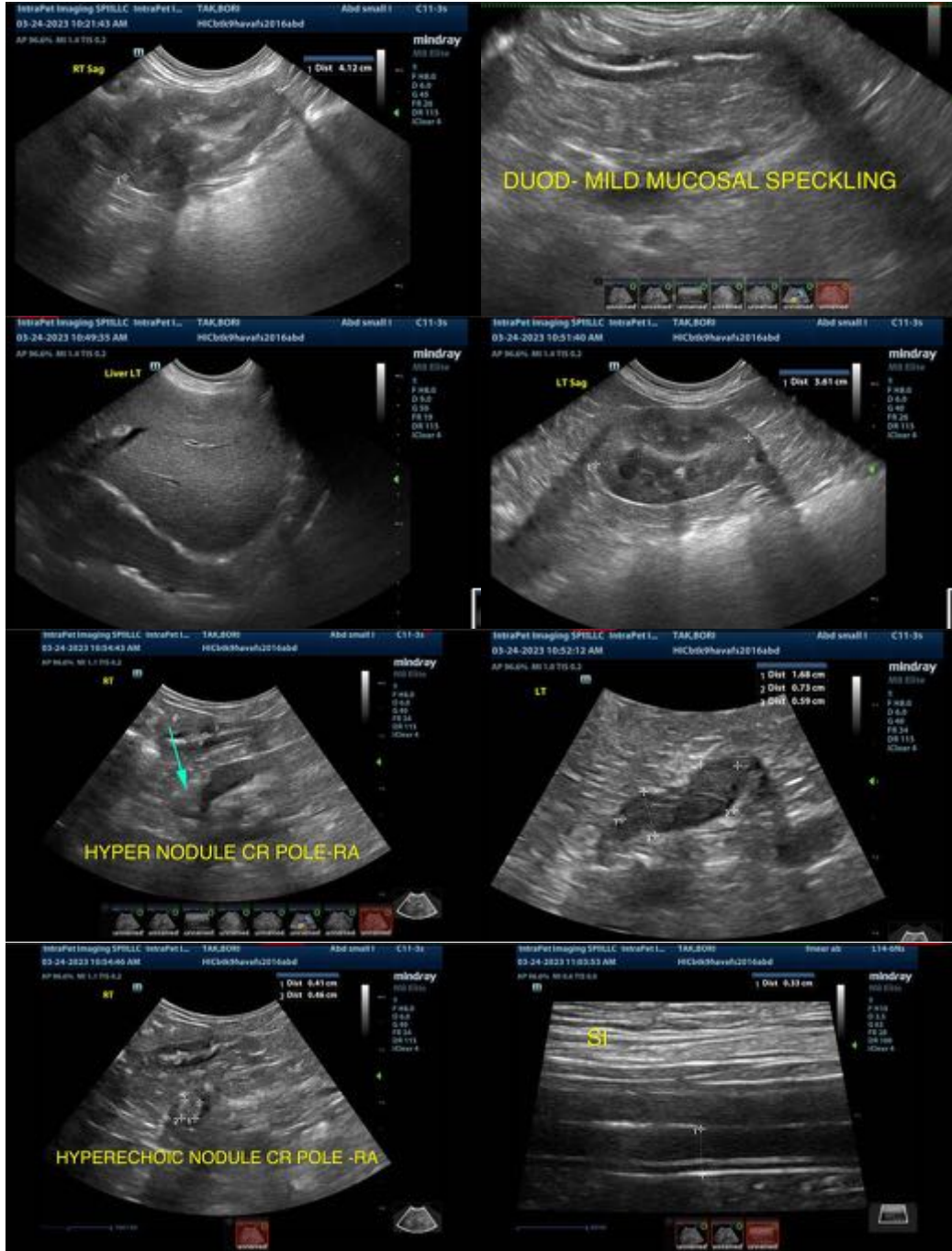
- If signs of Cushing's are present, consider adrenal function testing. I prefer an ACTH stimulation test combined with an adrenal panel to the University of Tennessee's endocrine lab to look for atypical adrenal hormones as well as cortisol. (other testing can suffice)
- If adrenal dependent Cushing's is suspected and supported by adrenal function testing consider medical therapy with lysodren or trilostane or consider surgical removal (recommend referral to a board certified veterinary surgeon and possible pre op CT)
- Recommend blood pressure evaluation-if hypertensive consider testing catecholamine levels for a possible pheochromocytoma
- If no symptoms of Cushing's are present, consider either referral for surgery or continued monitoring with ultrasound (in 3-4 months).
- Many of these nodules can be benign and incidental in nature, unfortunately that is difficult to determine with a single ultrasound.

Additionally, there is a slight irregularity on some views of the left adrenal, with concern for early vascular invasion. This finding is not supported by Power Doppler or additional views of the vasculature, so the significance is unknown. To be safe I would recommend reimaging right adrenal in 8-12 weeks. Or, if a contrasting CT scan is performed of the right adrenal, the left should be evaluated at the same time.

I suspect the changes in the liver could be secondary to adrenal hormone excess. Additionally, this could be a vacuolar hepatopathy. If there is no evidence of hormone excess, you could consider a fine-needle aspirate and liver function test. There is a large amount of debris visualized within the gall bladder with no evidence of surrounding inflammation, etc. Recommend continued monitoring for possible progression of this lesion, +/- starting Ursodiol therapy.

Recommend three view thoracic radiographs to evaluate for possible concurrent thoracic disease/involvement.







The information and recommendations provided are based on the images presented by the referring veterinarian. 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.

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