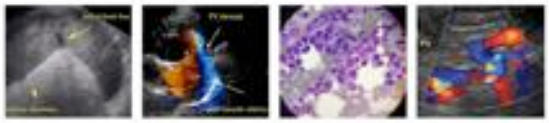

PATIENT

Denali Rose

SPECIES

Canine

BREED

Shiba Inu

SEX

Spayed Female

AGE

8 ½ years

WEIGHT

23.4 Pounds

INTERPRETED BY

Lisa Carioto, DVM, DVSc, Diplomate ACVIM

IMAGING PERFORMED BY

Loetitia Saint-Jacques, RVT

HOSPITAL NAME

MountainView AH

REFERRING VET

Dr. Hill

INVOICE

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PRESENTING CLINICAL SIGNS

Chief Concern 1. chronic on and off energy level 2. urine leakage - refractory to proin (was initially responsive) was seen initially at different clinic - we do not have these records- w/ "strongly elevated liver values" and back pain. rx was given for vetprofen and proin at that time. pet showed some response ~ recent BW shows ALP elevation, USG 1.010 r/o hyperadrenocorticism vs other Recent Diagnostics: Relevant Labratory Results / Abnormalities: ~ 1. ALP 664 2. USG 1.010, no proteinuria ~ Current medications (include full name, dosage and frequency): ~ carprofen, proin, denamarin advanced ~ Relevant Radiograph Findings(email radiographs if available): ~n/a
Abnormal PE/Chem/CBC/UA Results: Weight 24.2 pounds BodyScor e9 4 - Ideal - 4 Temp 100.9 Pulse 130 Resp pant CRT <2 sec Dental 2 - Mild Pain 1 - No Visible Pain Alert BAR Muc Memb Pink/Healthy

ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN

Urinary System

The urinary bladder is well distended with anechoic contents. The wall is smooth and regular. No abnormalities are noted with the trigone or proximal urethra, and there is no evidence of sediment, cystoliths, polyps or a mass.

Kidneys

The **left** kidney measures 4.48 cm. The capsule is smooth. The cortex is mildly hyperechoic (i.e., it is isoechoic to the spleen) and a mild loss of the normal definition of the cortico-medullary junction is present. Mineralizations of the diverticulae and pelvis are present, without evidence of nephroliths or pyelectasia. Blood flow is within normal limits. The surrounding mesentery is not hyperechoic.

The **right** kidney measures 4.43 cm. The capsule is smooth. The cortex is mildly hyperechoic. In addition to the former, there are areas of increased echogenicity throughout the cortex, particularly at both poles, that are suggestive of inflammation, ischemia and/or fibrosis. Infarcts are not evident. A mild to moderate loss of the normal definition of the cortico-medullary junction is present. Mineralizations of the diverticulae and pelvis are present, without evidence of nephroliths or pyelectasia. Blood flow is within normal limits. The surrounding mesentery is not hyperechoic.

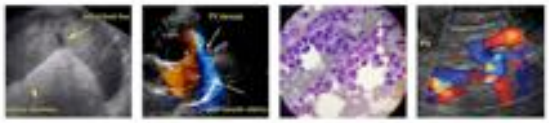
Aortic bifurcation/trifurcation

No abnormalities observed.

Adrenal Glands

The **left** adrenal gland measures 0.49 cm at the cranial pole, 0.50 cm at the caudal pole. No abnormalities are noted with the gland's overall architecture, echogenicity or echotexture. The phrenico-abdominal vein and surrounding vasculature and mesentery are unremarkable.

The **right** adrenal gland measures 0.52 cm at the cranial pole, 0.48 cm at the caudal pole, however, it is 0.60 at its largest diameter (near the center of the gland). The gland has lost its normal shape and is more "plump" along its entire length. It is mildly heterogenous at the cranial pole, consisting of small hypoechoic nodules of variable size, which are suggestive of nodular hyperplasia. There are no signs of a



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nodule or a mass. The phrenico-abdominal vein and surrounding vasculature and mesentery are unremarkable.

Spleen

The spleen is within normal limits in size, architecture, echotexture, and echogenicity. The capsule is smooth. Occasional perivascular cuffing, consistent with myelolipomas, are noted. The latter are not considered clinically significant. No abnormalities are observed with its vasculature, i.e. congestion and thrombi are not identified.

Liver

There are no obvious signs of hepatomegaly. The liver's borders are smooth and sharp, while others are mildly rounded to severely rounded. A diffuse, mildly coarse or granular echotexture is observed. It is mildly hyperechoic, i.e., it is mildly hyperechoic to the liver. No obvious abnormalities are noted with the hepatic vessels.

The gallbladder (GB) is mildly to moderately distended with a moderate amount of free floating, gravity dependent and inspissated echogenic material. The GB wall is within normal limits in thickness and echogenicity. The portions of the cystic and/or common bile ducts observed are not dilated or tortuous, i.e. there are no signs of an obstruction.

Gastrointestinal

The lumen is filled with a large amount of ingesta, gas and fluid. The gastric wall is within normal limits in thickness and the wall layers are well defined. The submucosa appears mildly more prominent. Peristalsis appears increased, yet ineffective.

The small intestinal wall thickness, including the duodenum, is within normal limits and the definition of the wall layers is preserved. The submucosa of the duodenum is mildly more prominent than usual. No abnormalities are noted with the ileo-cecal-colic junction. Abnormally dilated loops of bowel are not observed.

The colonic wall is not thickened and mural detail is considered normal.

There are no obvious signs of a mass, foreign body, infiltrative disease or an obstruction in the gastrointestinal tract.

Pancreas

The pancreas has a coarse echotexture. It consists of homogeneous parenchyma with pinpoint and punctate hyperechoic foci scattered haphazardly throughout. These changes are suggestive of fibrosis, which may be due to age-related changes, secondary to previous episodes of pancreatitis, mineralization, as well as amyloid deposition. Signs of active pancreatitis or neoplasia are not appreciated.

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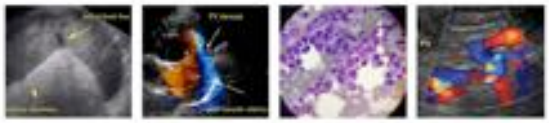

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Other

Lymph nodes

No abnormalities are observed

Abdominal effusion is not visualized.

Heart

A brief video clip of the heart was submitted. Pericardial and pleural effusion are not identified. There is no evidence of a mass in any of the cardiac chambers, including the right auricle, however, a mass may be overlooked in the absence of pericardial effusion.

No obvious abnormalities with contractility (measurements not performed).

ULTRASONOGRAPHIC FINDINGS

- **Adrenal glands**: The right gland is more plump along its entire length and at the *high end* of the normal reference range for a dog of Rose's stature. *Mild age-related changes* are also noted. Glands within or at the high end of the normal reference range do not exclude a diagnosis of hyperadrenocorticism (HAC). Therefore, differential diagnoses include adrenal hyperplasia due to stress or pituitary dependent HAC.

- **Liver**: *Vacuolar and reactive hepatopathies* are suspected, in addition to possible cholestasis. Hepatitis is considered less likely. *Cholangitis/cholangiohepatitis and cholecystitis* with a *secondary bacterial infection* cannot be excluded. There are no obvious signs of neoplasia.

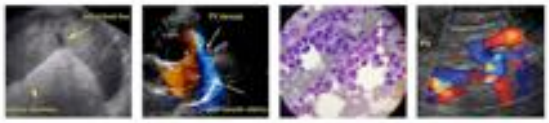
- **Gallbladder**: **Gallbladder sludge** without signs of a mucocele. Dogs with hyperadrenocorticism are more predisposed to developing gallbladder sludge. Also, some dogs may show clinical signs of gastroesophageal reflux disease as a result of the sludge, therefore, obtaining a history regarding signs of *GERD* from the client is suggested. Treatment with an anti-acid, proton pump inhibitor or ursodeoxycholic acid may be required depending on the patient's history. *Cholecystitis with a secondary bacterial infection* cannot be excluded.

- **Kidneys**: Bilateral renal changes, suggestive of *age related degeneration*, however, *glomerulonephritis* associated with hyperadrenocorticism may also be present. *Pyelonephritis* cannot be excluded despite the absence of classical sonographic signs.

- **Gastrointestinal tract:** No obvious abnormalities are observed with the GI tract, however, a delay in gastric emptying may be present if Rosie was fasted, and an ultrasound of the stomach and biliary system may be considered after a longer fasting period.

- **Spleen**: Myelolipomas are suspected, which are not considered clinically significant.

- **Pancreas**: *Age-related changes*, secondary to previous episodes of pancreatitis, mineralization, as well as amyloid deposition. Signs of active pancreatitis or neoplasia are not appreciated.



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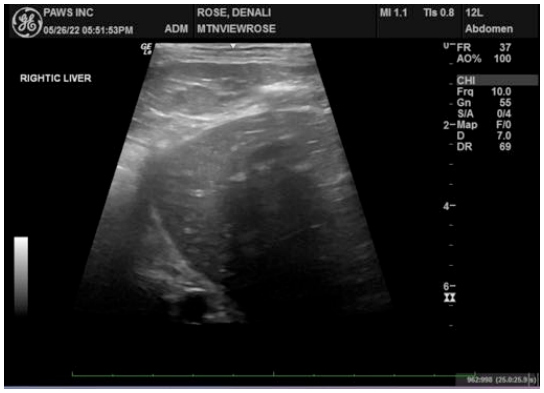
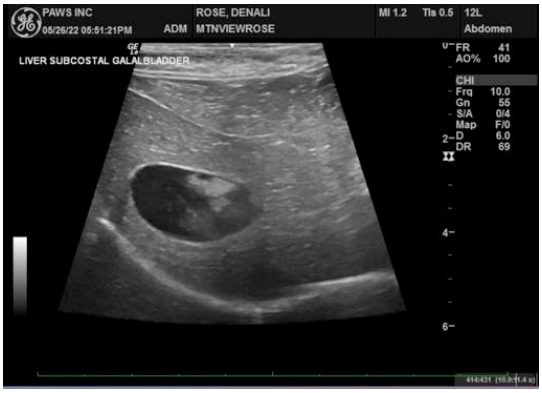
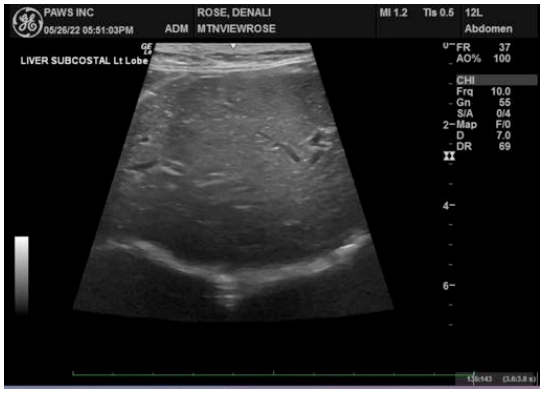
INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Suggestions/recommendations include

- Obtaining a history regarding signs of GERD from the client is suggested. Treatment with an anti-acid, proton pump inhibitor or ursodeoxycholic acid may be required depending on the patient's history.
- A urine culture and sensitivity to exclude underlying urinary tract infection or pyelonephritis due to immunosuppression associated with HAC. This could explain the lack of response to phenylpropanolamine.
- If negative, a urine protein: creatinine ratio is suggested, i.e. false negative results for protein may occur on dipsticks with urine specific gravities less than 1.020.
- An arterial blood pressure is recommended to rule out hypertension.
- An ACTH stimulation test or low-dose dexamethasone suppression test is suggested, based on the patient's clinical signs.
- Other diagnostics to rule out underlying causes of glomerulonephritis may be considered depending on results of LDDS or ACTH stimulation test.







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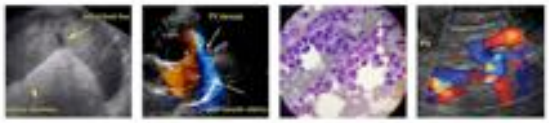

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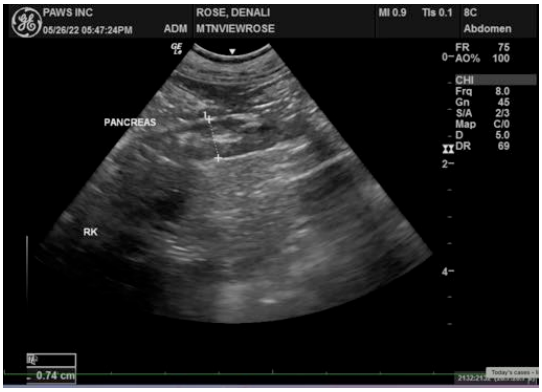

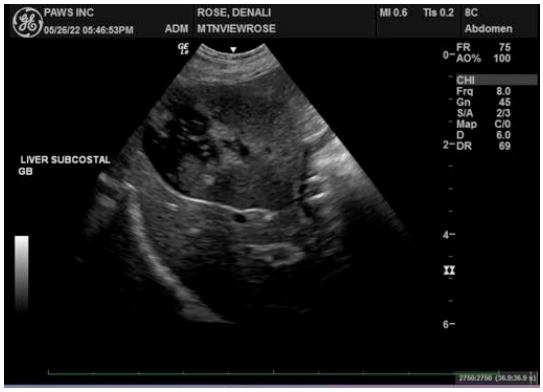

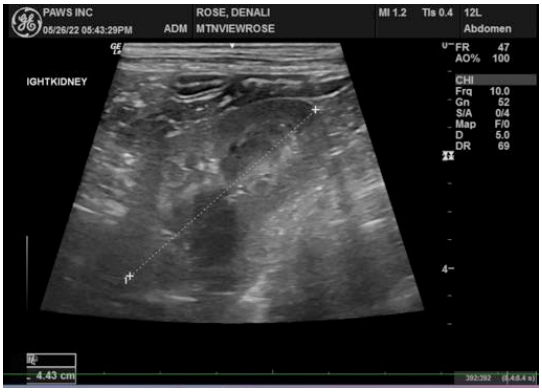

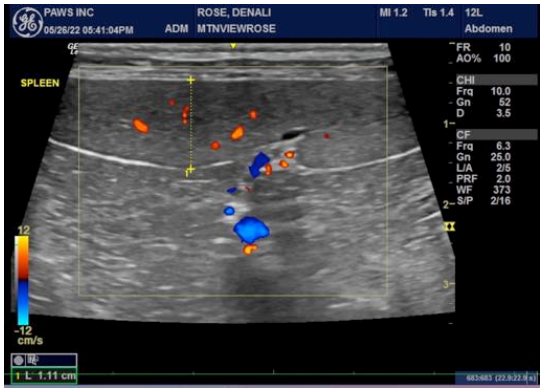

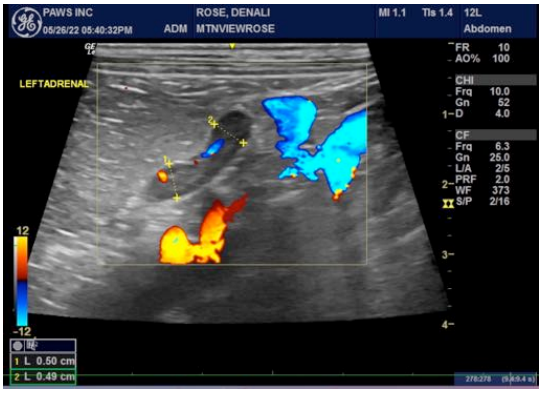

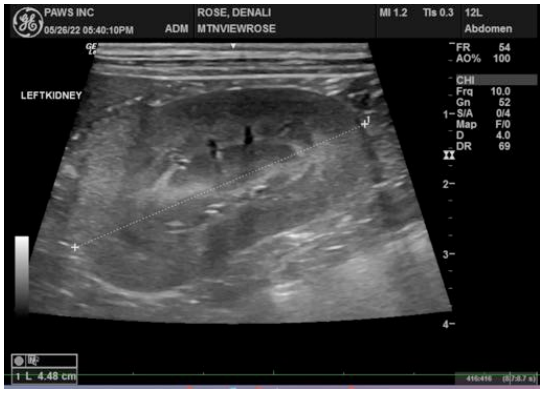

The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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.

Lisa Carioto, DVM, DVSc, Diplomate ACVIM

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