



PATIENT

Nova Ruggiero

SPECIES

Canine

BREED

Shih Tzu

SEX

Spayed female

AGE

9 years

WEIGHT

7.1 lbs

INTERPRETED BY

Eric Lindquist, DMV
DABVP, Cert. IVUSS

**IMAGING
PERFORMED BY**

Cheyenne Watts LVT

HOSPITAL NAME

Brunswick VH

REFERRING VET

Dr. Burrows

INVOICE

31805

DATE

7/19/22

PRESENTING CLINICAL SIGNS

History: Has had well managed hepatic encephalopathy and portosystemic shunt since puppyhood. Recently started refusing food, having episodes of shaking. Initial labwork was consistent with PSS but BG was 51 mg/dL, which was a new finding. Subsequent spot BGs were between 60-70. Radiographs WNL.

Abnormal PE/Chem/CBC/UA Results: Available on request- full labs or detailed summary (extensive history)

ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN

Urinary System

The **urinary bladder**, trigone, and pelvic urethra presented normal thicknesses and normal tone. The ureters were not visible which is normal. There was a trace amount of sand and measured 1.0 cm. No evidence of inflammatory or neoplastic changes was noted. Ureteral papillae were normal.

The left kidney revealed pelvic calculus and irregular contour. A cortical infarct was noted at the caudal pole with cortical collapse. The left kidney measured 3.54 cm with occasional cortical cyst noted. The right kidney revealed similar changes with corticomodullary calculi and cortical cyst with moderate degenerative changes. The right kidney measured 3.78 cm.

Adrenal Glands

Both **adrenal glands** were visualized and recognized as having normal shape, size, position and echogenicity for this breed. The phrenic vasculature, glandular echogenicity and detail were unremarkable. Capsule, cortex, and medullary definition were normal for this age patient. The right adrenal gland measured 1.07 cm at the cranial pole and 0.96 cm at the caudal pole. The left adrenal gland measured 1.21 x 0.5 cm.

Spleen

The **spleen** revealed subtle heterogenous changes with minor scalloping contour, yet otherwise revealed uniform parenchyma.

Liver

The **liver** is subnormal in size with hepatic nodular changes. The portal hilus was not visible. Diffuse, hyperechoic parenchymal changes were noted. In one view a 0.7 cm wide anechoic structure was present. This is consistent with intrahepatic abnormal vessel. Further definition is needed. The gallbladder wall was slightly edematous.

Gastrointestinal

The **stomach** was dilated with fluid. This is consistent with gastritis. Echogenic mucosa was noted. The small intestines and colon were unremarkable.



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Pancreas

The base and limbs of the **pancreas** were observed to be largely isoechoic to surrounding omental fat. Pancreatic duct and capsular contour were acceptably normal and parenchyma respected normal curvilinear patterns. No overt evidence of active inflammatory or neoplastic disease was noted.

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ULTRASONOGRAPHIC FINDINGS

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Moderate degenerative renal changes with calculi, cysts and infarcts.

Bladder sand.

Gastritis pattern.

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Hepatic remodeling and microhepatica.

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INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Full urinary evaluation is warranted if not already performed. The patient may be passing calculi periodically contributing to the clinical signs. Further imaging is necessary to define portosystemic shunting. CT evaluation with contrast would be ideal in this patient. The clinical signs may be owing to a number of comorbidities. If the bile acids are significantly elevated then logically emerging liver failure is a potential especially with hypoglycemia. Gastritis and periodic passage of calculi from the kidneys to the bladder may also be playing a role. The bladder sand should be able to be liberated as this is a female. GI protectant protocol and a clinical trial of the following is warranted if not already implemented.

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Royal Canin Hepatic Support diet or Hills L/D, Metronidazole (7.5 mg/kg PO bid) over the next 14 days, **Lactulose** (Oral: 3.1-3.7 g/5 ml lactulose in a syrup base) long term to target 2-3 soft stools/day, with a **high-quality protein supplement** of minor amount of **yogurt or cheddar cheese**. Monitor bile acids, with attention paid to dropping albumin, BUN or cholesterol. SAME and nutraceuticals as needed.

Ursodiol (10-15 mg/kg p.o. q24h) can be considered as hepatoprotectant and to enhance bile flow.

Zinc serum level keep between 200–500 ug/dl. If deficient then Tx zinc acetate 1-3 mg/kg/day.

Gastrointestinal protectants are recommended if the patient is anorexic.

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Internal medicine consult can be utilized through SonoPath.com. You can select the internal medicine drop down at <http://spa.sonopath.com/>.

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One of the world's top internists & SonoPath associate Dr. Remo Lobetti BVSc, MMedVet, PhD, DECVIM can evaluate your case through SonoPath. <https://sonopath.com/resources/sonopath-services/internal-medicine-teleconsultation-services>

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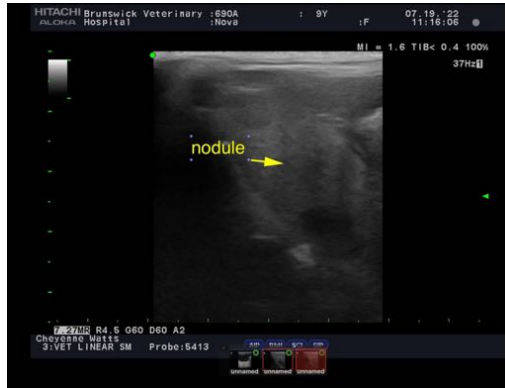
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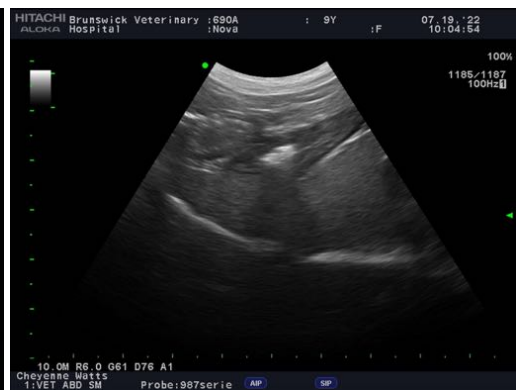
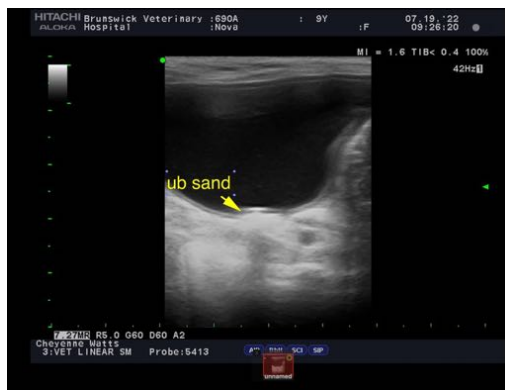
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The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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.

Eric Lindquist, DMV, DABVP, Cert. IVUSS, CEO of SonoPath.com
info@SonoPath.com