

**DATE**

1/24/22

**PRESENTING CLINICAL SIGNS**

History: Presented in Jan for routine exam and bloodwork. ALT was incidentally found to be high. Fasting bile acids (pre and post) were also elevated.

Lab Results: 1/10/22 - ALT 195, 1/18/22 - pre 31.2, post 58.9. Attached separately.

**PATIENT**

Winnie Cramer

Date of Previous IntraPet Ultrasound: No previous IntraPet scans.

Sedation: Not required to complete full diagnostic ultrasound.

Stat Report: Not requested.

Imaging Performed By: Stephanie Pearce RDCS, RVT.

**SPECIES**

Canine

**ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN****Urinary System****BREED**

Pug Mix

The **urinary bladder**, trigone, and pelvic urethra presented normal thicknesses and normal tone. The ureters were not visible which is normal. No uroliths or sediment were visualized and anechoic urine was present. No evidence of inflammatory or neoplastic changes was noted. Ureteral papillae were normal.

**SEX**

Spayed Female

The **kidneys** revealed normal size and structure, corticomedullary definition and ratio for this age. The cortices presented largely uniform texture with normal echogenic relationship to liver and spleen. Medullary structure differed distinctly from the cortex and no evidence of pelvic dilation was present. The capsules were acceptably uniform without significant irregularities. The right kidney measured 4.29 cm. The left kidney measured 4.05 cm.

**AGE**

10/17/18

**Adrenal Glands****WEIGHT**

15 lbs

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 2.02 x 0.83 cm at the cranial pole and 0.48 cm at the caudal pole. The left adrenal gland measured 1.91 x 0.51 cm at the caudal pole and 0.46 cm at the cranial pole.

**INTERPRETED BY**

Eric Lindquist, DMV  
DABVP, Cert. IVUSS

**Spleen**

The **spleen** presented a smooth homogeneous parenchyma hyperechoic to liver and renal cortical parenchyma. The capsule was smooth without noticeable expansion or deviation from within the spleen or adjacent pathology. The splenic vasculature demonstrated normal volume without signs of congestion or thrombosis. No sonographic evidence of acute or chronic inflammatory, neoplastic, or infarctual changes was noted.

**HOSPITAL NAME**

Banfield Pet Hospital  
of Towson

**REFERRING VET**

Dr. Culbertson

**Liver**

The **liver** is slightly subnormal in size with uniform parenchyma. The portal vein was normal in size at 0.51 cm. The portal vein to vena cava ratio was 1:1. There was no evidence of intrahepatic or extrahepatic shunting. The intrahepatic vascularity appeared to have normal volume, yet the parenchyma was mildly subnormal in size. Slightly increased portal markings were noted. This is consistent with low-grade inflammatory hepatopathy. The gallbladder presented acceptably thin walls with primarily anechoic content. The cystic and common bile ducts were normal. No pathological hepatic lymphadenopathy was evident. No overt structural evidence of inflammatory, infiltrative or regenerative pathology was evident.

**INVOICE**

95467

**Gastrointestinal**

Examination of the **gastrointestinal tract** revealed a stomach and intestine free of stasis, of normal wall thickness, acceptable curvilinear mural detail, and peristaltic activity. Small and large intestine demonstrated

normal luminal chyme and stool consistency respectively. No obstructive or overt infiltrative disease was noted. No associated abnormal lymphatic activity was noted.

### **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.

### **ULTRASONOGRAPHIC FINDINGS**

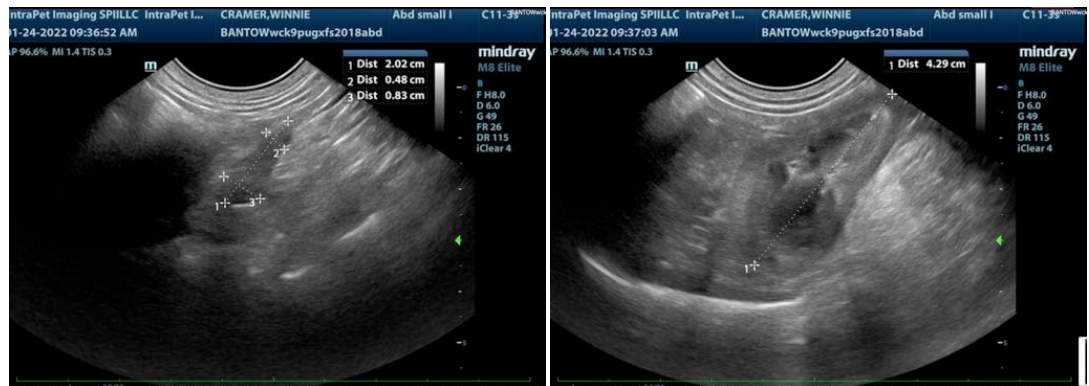
Mild microhepatica and minor hepatic remodeling. This is consistent with non-specific inflammatory hepatopathy.

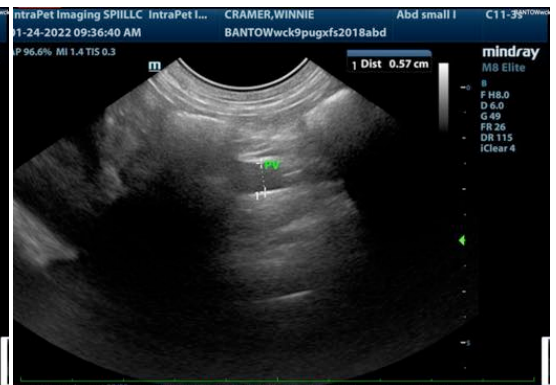
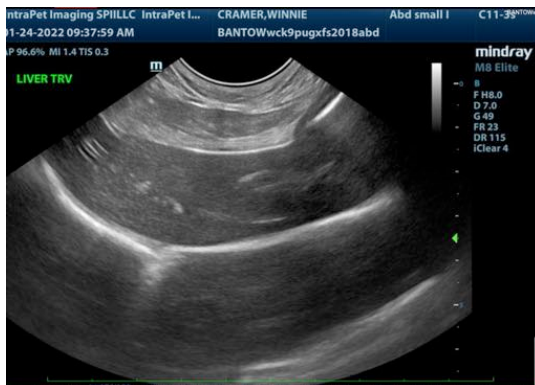
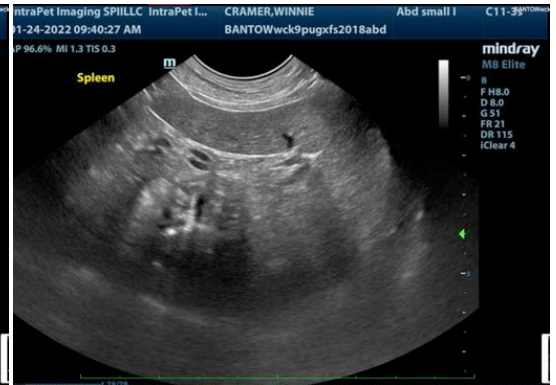
### **INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS**

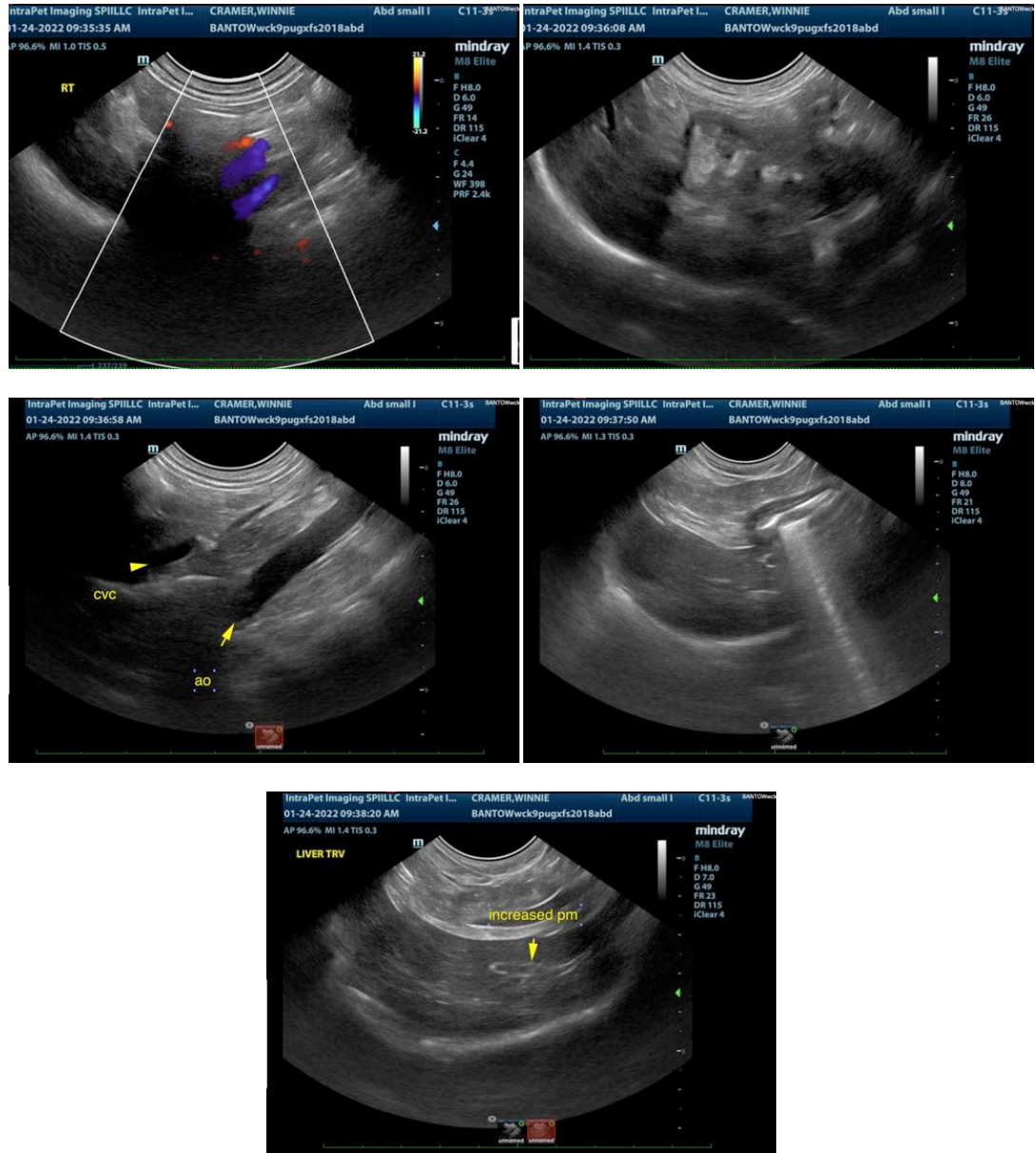
Given the bile acid elevations underlying portal hypoplasia/microvascular dysplasia is suspected. Core liver biopsy is recommended for confirmation. There was no evidence of intrahepatic or extrahepatic macroscopic shunting. A clinical trial of the following can be considered from an empirical standpoint. 10 days of Metronidazole and hepatic oriented diet would be appropriate. Strict dietary regimen is recommended in the lifetime in this patient as acute phased disease may be problematic for the liver. Further information should be based on core liver biopsy results.

### **Hepatic Support for Bile Acid Elevation +/- Hepatic Encephalopathy**

**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.**







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.

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