

**DATE PRESENTING CLINICAL SIGNS**

11/1/21

History: Elevated liver enzymes, first noted 8/2021.

**PATIENT**

Zoey Anthony

Current Medications: Denamarin small-medium dog - 1 PO SID.

Lab Results: Elevated ALT 221 (was 177 in August), GGT 12, normal AlkPhos and Ti-bili.; Pre bile acids 38, post 43. Pet was not fasted and doctor approved scan.

Radiographs: Not provided by the veterinarian.

Date of Previous IntraPet Ultrasound: No previous IntraPet scans.

**SPECIES**

Canine

Sedation: Not needed.

Stat Report: Not requested.

**BREED**

Boston Terrier

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

The urinary bladder, trigone, and pelvic urethra are normal in thickness and the mucosal surface is smooth. The bladder lumen is moderately distended with anechoic urine. No masses, inflammatory changes or calculi are observed. Ureteral papillae and visualized portion of the proximal urethra, visible to a depth of 2 cm, are normal.

**AGE**

2/21/2013

The left kidney is normal size (5.37 cm in length); normal shape and architecture with smooth peripheral margins. There is a normal 1:3 cortex to medulla ratio with normal corticomedullary distinction. There is no evidence of pyelectasia, nephroliths, infarcts or hydroureter. Renal vasculature is normal.

**WEIGHT**

28.6 lbs.

The right kidney is normal size (4.87 cm in length); normal shape and architecture with smooth peripheral margins. There is a normal 1:3 cortex to medulla ratio with normal corticomedullary distinction. There is no evidence of pyelectasia, nephroliths, infarcts or hydroureter. Renal vasculature is normal.

**INTERPRETED BY**

Andrea Nicastrò, DVM,  
 Diplomate ACVIM  
 (Small Animal Internal  
 Medicine)

**Adrenal Glands**

The left adrenal gland is normal size (0.45 cm at cranial pole) (0.52 cm at caudal pole) (2.05 cm in length); normal shape; homogenous parenchyma. The glandular echogenicity and detail are unremarkable. Capsule, cortex, and medullary definition are normal. The phrenicoabdominal vein and surrounding vasculature are normal.

**HOSPITAL NAME**

Banfield Pet Hospital  
 of Timonium

The right adrenal gland is normal size (0.75 cm at cranial pole) (0.58 cm at caudal pole) (2.25 cm in length); normal shape; homogenous parenchyma. The glandular echogenicity and detail are unremarkable. Capsule, cortex, and medullary definition are normal. The phrenicoabdominal vein and surrounding vasculature are normal.

**REFERRING VET**

Dr. Borrison

**Spleen**

The spleen is normal in size (1.76 cm in width at the level of the hilus) with a normal capsular contour. There is appropriate echogenicity and echotexture. No focal lesions are observed. Splenic vasculature is normal.

**INVOICE**

12443

**Liver**

The liver is subjectively normal in size with normal contours and structure. There is appropriate echogenicity and echotexture. No overt structural evidence of inflammatory, infiltrative or regenerative pathology is evident. Vascular and biliary tracts are of normal volume with no evidence of congestion. No pathological hepatic lymphadenopathy observed. The gallbladder is of normal contours and contains some

dependent echogenic debris. The wall is normal in thickness. No choleliths are observed. The cystic and common bile ducts are normal.

### ***Gastrointestinal***

The gastric lumen is distended with ingesta, consistent with a post prandial presentation. The gastric wall and pylorus are normal in thickness with a normal layering pattern. The small intestinal lumen is segmentally dilated with chyme. The small intestinal wall thickness is normal with a normal layering pattern and appropriate mural detail. Discreet masses are not identified. The colonic wall is normal. No obstructive disease is noted.

### ***Pancreas***

A portion of the pancreas is obscured by the distended stomach. In the visualized portion, no obvious pathology is seen.

### ***Free Abdomen***

The peritoneal cavity is normal. There is no evidence of inflammation or effusion. The abdominal lymph nodes are normal/not visible.

### ***Other***

A uterine stump is visible (0.51 cm in diameter). No obvious pathology is seen.

## **ULTRASONOGRAPHIC FINDINGS**

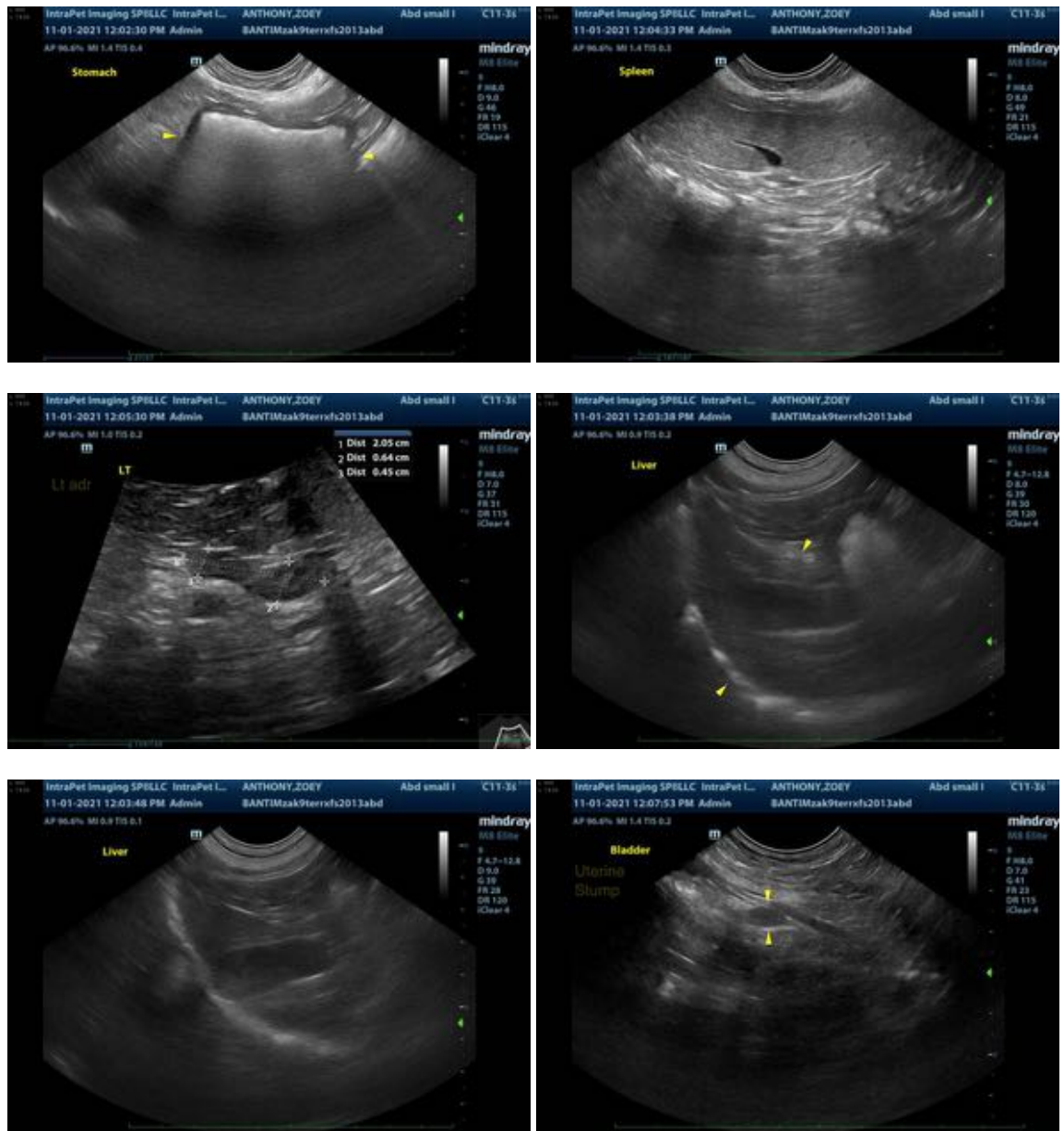
- An obvious cause for the elevated liver enzymes is not identified in the study. However, a microscopic hepatopathy (i.e., bacterial cholangiohepatitis, Leptospirosis, chronic active hepatitis, copper-associated hepatotoxicity, infiltrative neoplasia (less likely)) should be considered.
- Gallbladder debris, non-mucocele.
- Uterine stump- incidental.

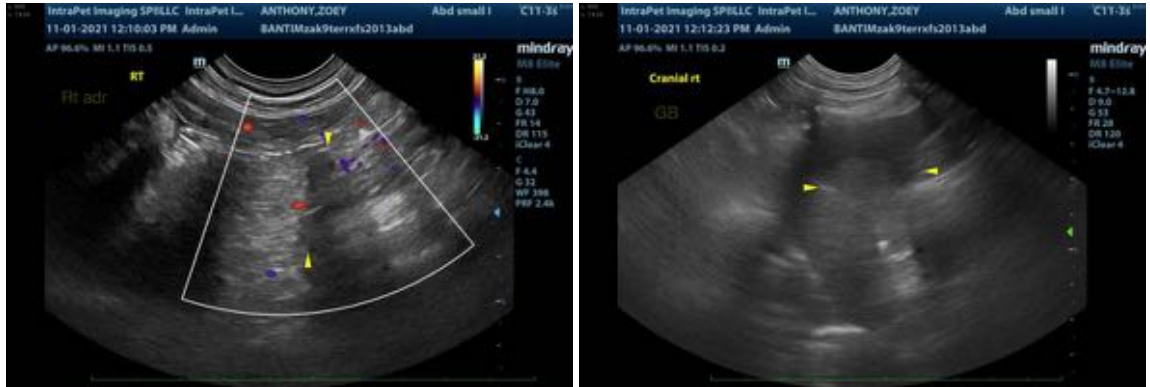
## **INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS**

- Consider a repeat ultrasound when the patient is fasted to further assess the portal hilus for the presence of a congenital portosystemic shunt.
- Leptospirosis testing (i.e., blood and urine PCR, serology) can be considered. However, given the chronicity of the liver enzyme elevations, this differential is considered less likely.
- Cytologic evaluation of the liver should be considered in this patient if clotting status is appropriate. A fine needle aspirate using a 25-gauge needle is recommended. If cytologic evaluation is inconclusive, consider a surgical liver biopsy with aerobic and anaerobic bile cultures and acquisition of additional hepatic tissue samples for copper quantitation.
- If a conservative approach is desired, consider empirical treatment for bacterial cholangiohepatitis (amoxicillin-clavulanic acid, Denamarin Advanced). If no improvement in the liver values is seen within 7-10 days of initiating therapy, antibiotics should be discontinued and hepatic tissue sampling

reconsidered. If liver values improve, continue therapy for at least 4-6 weeks and 1 week beyond normalization of the liver values.

- Three-view thoracic radiographs should be performed prior to any anesthetic event.





**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.

Andrea Nicastro, DVM, Diplomate ACVIM (*Small Animal Internal Medicine*)  
Andrea.nicastro@sonopath.com