

**DATE PRESENTING CLINICAL SIGNS**

5/25/22

HX adr appt with severe ALT elevation of 2539 (27-158) an AST of 438 (16-67) on 3/2/22. O elected to not do further dx at that time, so we started prednisolone and denamarin trial. Recheck bloodwork on 4/5/22 ALT 202, AST 96 so pred weaned to 1/2 of 5mg q 72 hours. A 3rd recheck on 5/13/22 shows ALT 470, AST 104. Pet returned to 1/2 of 5mg pred q 48 hrs. Other hx: Chronic GI issues - suspect possible IBD - prednisolone has helped with symptoms of vomiting and not eating well after being put on for liver concerns. However going to every 3rd day caused pet 's appetite to be off again somewhat. Currently on q 48 hours of 5mg prednisolone 1/2 tab and denamarin. PDDZ 4/4 with odontoclastic lesions/FORLS and would like to pursue dental at some point if ok. Previous AUS done 2017.

**PATIENT**

Tori Clough

**SPECIES**

Feline

**BREED**

DSH

**SEX**

Spayed Female

**AGE**

7/3/06

**WEIGHT**

8.2 Pounds

**INTERPRETED BY**

Kathleen Sennello DVM,  
MS, Diplomate ACVIM  
(Small Animal Internal  
Medicine)

**IMAGING PERFORMED BY**

Rachel Brilhart RDMS

**HOSPITAL NAME**

Airpark AH

**REFERRING VET**

Dr. Gibson

**INVOICE**

37958

Current Medications: Prednisolone and Denamarin.  
Date of Previous IntraPet Ultrasound: No previous.  
Sedation: Not required to complete full diagnostic ultrasound.  
Stat Report: Not requested.

**ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN****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.

The left kidney has a normal shape and size (3.47 cm) with non-obstructive nephroliths, the largest of which measures at 0.39 cm. Overall echogenicity is slightly hyperechoic with mildly reduced 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, infarcts or hydroureter. Renal vasculature is normal.

The right kidney has a normal shape and size (3.46 cm) with non-obstructive nephroliths and mild pyelectasia at 0.27 cm. Overall echogenicity is slightly hyperechoic with poor 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, infarcts or hydroureter. Renal vasculature is normal.

**Adrenal Glands**

The left adrenal gland is normal in size measuring 0.49 cm at the caudal pole. It is observed in its normal position cranial to the left renal artery. It is normal in appearance (uniformly hypoechoic) and shape with no evidence of a mass effect.

The right adrenal gland is normal in size measuring 0.41 cm at the caudal pole. It is observed in its normal position between the cranial aspect of the right kidney and the caudal vena cava. It is normal in appearance (uniformly hypoechoic) and shape with no evidence of a mass effect.

**Spleen**

The spleen is normal in size, hypoechoic, and scalloped in shape. It measures at 0.94 cm in height at the level of the hilus. The blood flow through the hilus and splenic parenchyma appears normal. No focal parenchymal abnormalities are visualized.

**Liver**

The liver is subjectively normal in size, and echogenicity with smooth peripheral margins. The parenchyma is heterogenous in echotexture with subtle, indistinct focal mottling. There are numerous diffuse dilated intrahepatic bile ducts containing heterogeneous mucoid debris. No focal hepatic parenchymal lesions are noted.

The gallbladder lumen is significantly distended. The wall of the gall bladder is not thickened and has a smooth mucosal surface. There is a large amount of non-organized echogenic debris within the lumen. This extends into a dilated cystic and common bile duct as well as dilated intrahepatic bile ducts. These ducts have variably thickened walls, mucoid material, and occasional shadowing structures, possibly consistent with small mineralizations/stones. Dilation is visualized up to the level of the duodenal papilla. The bile duct measures at 0.68 cm at the level of the duodenal papilla. No focal obstruction is noted.

### ***Gastrointestinal***

The stomach contains minimal luminal contents. It measures at a normal thickness of <0.36cm 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 uniform diameter with minimal fluid distension. Wall thickness is normal to slightly increased. Bowel loops follow a typical curvilinear path with distinct wall layering, but some areas display a prominent muscularis layer which does not display the typical 1:3 muscularis:mucosa layer ratio. Jejunum wall measured 0.29 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 pancreas is prominent and mottled compared to the surrounding isoechoic 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. There are prominent mesenteric lymph nodes visualized. An irregular lymph node is visualized measuring 0.95 cm x 2.1 cm. An additional lymph node is visualized at 0.75 cm. The omentum is hyperechoic around these clusters of enlarged lymph nodes.

## **PRIMARY FINDINGS**

- Heterogeneous liver with severely dilated intrahepatic bile ducts as well cystic and common bile duct dilation – 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. The bile duct dilation is diffuse, and there is a lot of intraluminal mucoid debris.
- Decreased corticomedullary distinction in both kidneys with non-obstructive nephroliths and right-sided pyelectasia – The bilateral renal findings are consistent with age-related change.
- Hypoechoic, scalloped spleen -These are subjective abnormalities that could be within normal limits for this individual, but there could be concern for an infiltrative process. Consider a fine needle aspirate.
- Prominent muscularis layer to the small intestine – The small intestinal wall changes are most consistent with an inflammatory process (i.e., inflammatory bowel disease) with a low possibility of emerging lymphoma.
- Mild/moderate mesenteric lymph node enlargement – The prominent abdominal lymph nodes are most consistent with reactive lymphadenitis or lymphoid hyperplasia. Neoplastic infiltration is

considered less likely.

## SECONDARY FINDINGS

- Prominent, mottled pancreas – The pancreatic changes are most consistent with age-related parenchymal remodeling, potentially secondary to a prior inflammatory episode, early fibrosis or chronic pancreatitis.

## INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

The liver is heterogeneous with severely dilated intrahepatic bile ducts as well as cystic and common bile ducts. Dilation is diffuse, and there is a large amount of intraluminal mucoid material, but not focal obstruction is visualized. Possible differentials would include lymphoma involving the bile ducts, ductal plate abnormalities, chronic cholecystitis, Triaditis, etc. It may be difficult to diagnose at this point, as the steroid therapy may be masking some of the changes.

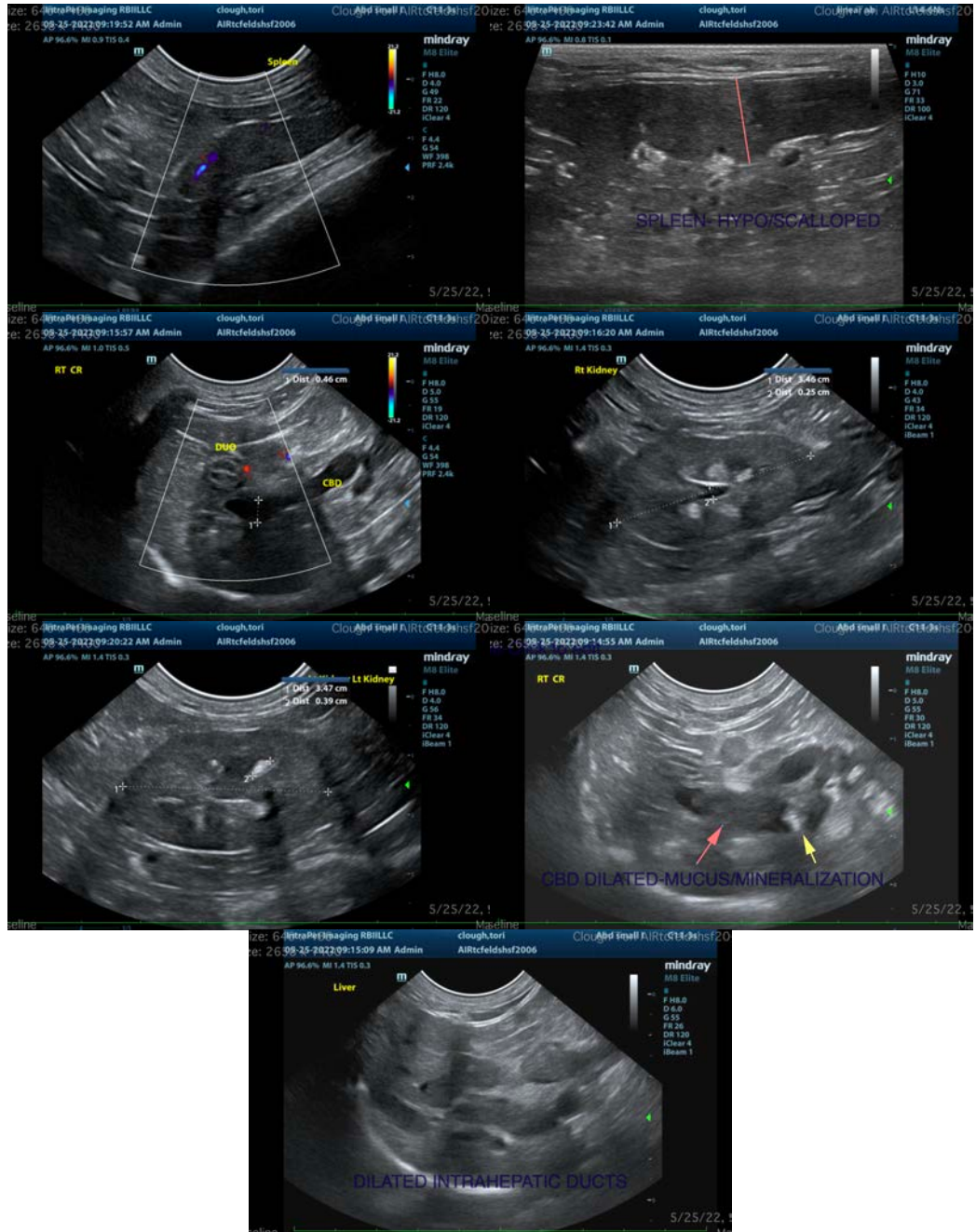
Recommend a fine needle aspirate of the liver and spleen, as well as of the large mesenteric lymph node to look for possible underlying round cell neoplasia. Additionally, recommend antibiotic therapy as well as Ursodiol. If there is active cholangiohepatitis present, a liver biopsy may be necessary (provided coagulation parameters are normal). Based on the appearance of the liver, I think surgical options are limited, as no focal area of obstruction is visualized, and the intrahepatic ducts are dilated as well. This could be considered if a crisis point is reached, and a contrast CT scan may be helpful to make sure there is not a focal lesion to bypass.

Consider three view thoracic radiographs to rule out concurrent thoracic disease/involvement.

The renal changes are consistent with chronic renal disease. Consider a urinalysis and culture to further investigate the mild right-sided pyelectasia noted. Additionally, there are pancreatic and small intestinal changes that could be consistent with concurrent Triaditis. Biopsies of the GI tract and pancreas would be necessary to confirm, but you could consider a GI panel to Texas A&M for a qualitative fPLI, TLI, cobalamin and folate to further evaluate this area non-invasively.

Additionally, a novel protein/hydrolyzed protein prescription diet could be considered if there is underlying small intestinal inflammation present.





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.

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