



**PATIENT**

Kyra Pena

**PRESENTING CLINICAL SIGNS**

Chronic liver elevations, proteinuria, anemia. Current meds: Denamarin Advanced

**SPECIES**

Canine

Abnormal PE/Chem/CBC/UA Results: Non-regenerative anemia, elevated ALT 199/ ALP 2k. U/A 2/20/2022-USG 1.035, Protein 2+

**BREED**

Siberian Husky

**ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN**

**Urinary System**

The urinary bladder is moderately to mildly distended with anechoic urine. The Bladder wall appears mildly diffusely thickened at 0.79 cm. The area of the trigone, ureteral papillae and proximal urethra appear normal with no evidence of mass effect or calculi. Findings are most consistent with cystitis or lack of urine distention.

**SEX**

Spayed Female

The left kidney has a normal shape and size (7.07 cm). Overall echogenicity is normal with adequate 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, nephroliths, infarcts or hydroureter. Renal vasculature is normal.

**AGE**

9 Years 10 Months

The right kidney has a normal shape and size (6.75 cm). Overall echogenicity is normal with adequate 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, nephroliths, infarcts or hydroureter. Renal vasculature is normal.

**WEIGHT**

68.5 Pounds

**Adrenal Glands**

The left adrenal gland is normal in size measuring 0.57 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 0.63 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.

**INTERPRETED BY**

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

**Spleen**

The spleen is subjectively normal in size, echotexture is homogenous, and the splenic capsule is smooth with no irregularities. The blood flow through the hilus and splenic parenchyma appears normal. There is a very small focal hyperechoic nodule visualized within the spleen at 0.30 cm.

**IMAGING PERFORMED BY**

Shari Reffi, CVT

**Liver**

The liver is subjectively normal in size with smooth peripheral margins. The parenchyma is hyperechoic and homogenous in echotexture. The visible portions of the vasculature and biliary tract appear normal. No focal nodules or cystic lesions are observed.

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Ridge Road AH

**REFERRING VET**

Dr. Pathak

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**Gastrointestinal**

The stomach contains minimal luminal contents. It measures at a normal thickness of <0.7cm 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.

**SPECIES**

Canine

The visualized areas of duodenum, jejunum and ileum have a relatively uniform diameter with minimal fluid distension. Wall thickness is normal. Bowel loops follow a curvilinear path with distinct wall layering maintaining the typical 1:3 muscularis:mucosa layer ratio. The duodenum measured as normal (between 0.3-0.5cm in wall thickness) and the jejunum measured as normal (between 0.2-0.47cm.)

**BREED**

Siberian Husky

Visualized peristalsis appears appropriate. There were no focal lesions consistent with obstruction or a mass effect observed.

**SEX**

Spayed Female

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**

**AGE**

9 Years 10 Months

The pancreas is normal and isoechoic to surrounding mesentery. There is no evidence of nodules or cystic lesions. There is no evidence of regional mesenteric inflammation or fluid.

**Free Abdomen**

**WEIGHT**

68.5 Pounds

Evaluation of the peritoneal cavity did not reveal any evidence of effusion, or subjective lymphadenomegaly. The Medial iliac nodes appear normal and there was no evidence of a caudal aortic thrombus at the bifurcation. The omentum is of normal uniform echogenicity.

**Other**

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MS, Diplomate ACVIM  
(Small Animal Internal  
Medicine)

A brief view of the heart was submitted. No significant pericardial effusion was seen.

**PRIMARY FINDINGS**

- Hyperechoic liver – The diffuse hepatic changes are non-specific and can be seen with vacuolar hepatopathy, reactive change, nodular hyperplasia or, less likely, inflammatory/immune-mediated disease, infiltrative neoplasia, or other hepatopathy.

**IMAGING PERFORMED BY**

Shari Reffi, CVT

**SECONDARY FINDINGS**

- Small, hyperechoic foci visualized within the spleen – This most likely represents a benign lesion, but continued monitoring is warranted.
- Subjectively thickened urinary bladder wall – most likely consistent with lack of urine distention, but consider urinalysis and culture and continued monitoring.

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**INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS**

No focal lesions were visualized on today's scan. These are my recommendations for further evaluation of a primary ALP elevation.

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- Induction phenomena are the most common cause for an ALP elevation. These are systemic illnesses that 'turn on' the liver enzyme. Causes of this include Cushing's disease, dental disease, arthritis, and numerous others. In many cases the exact cause is unclear but as long as ultrasound and bile acids tests are normal most patients do not have progressive changes in their liver. While liver biopsy is not routinely performed, vacuolar hepatopathy, is noted on most biopsies. This is often non-progressive but in rare cases can be more severe and lead to liver failure.

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- If signs of cushings disease are present recommend endocrine function testing to evaluate for cushings disease.

**SPECIES**

Canine

- Consider fine needle aspirate to rule out round cell neoplasia if this is a concern.
- If a cause for the ALP elevation is not identified: I recommend recheck general blood work every 6 months, ultrasound once per year, and bile acids test every 1-2 years based on other results. If the ALP continues to climb a biopsy could be considered.

**BREED**

Siberian Husky

- Consider long term use of denamarin, and monitoring for the signs of cushings developing.

**SEX**

Spayed Female

- A primary vacuolar hepatopathy can be breed related and is seen in Scottish Terriers, Schnauzers, Cocker spaniels etc..

**AGE**

9 Years 10 Months

Depending on the degree of proteinuria present, consider screening for infectious disease. I typically recommend canine comprehensive panel to NC State's vector borne disease lab to look for evidence of tickborne disease, etc. (this is also due to the anemia reported).

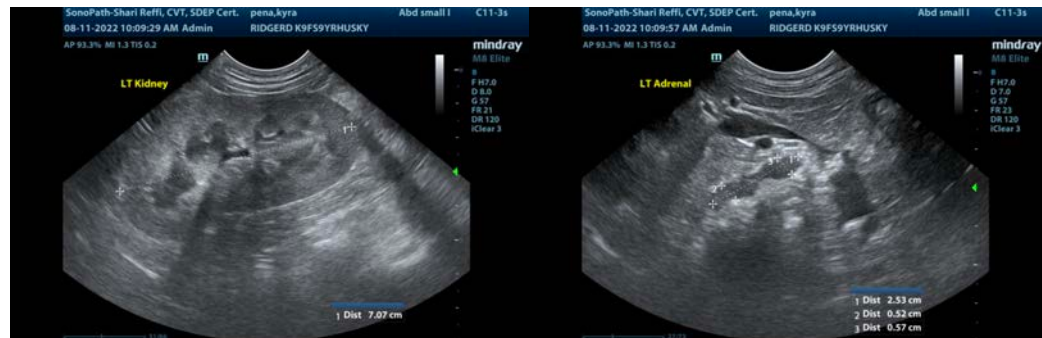
Consider three view thoracic radiographs to rule out concurrent thoracic disease/involvement.

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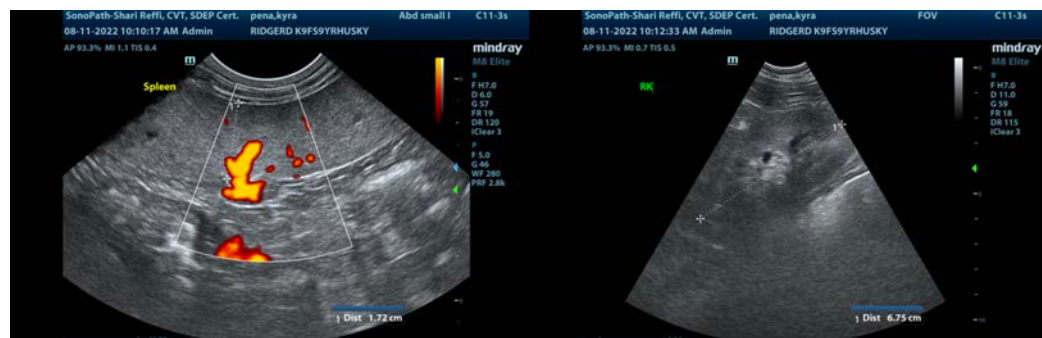
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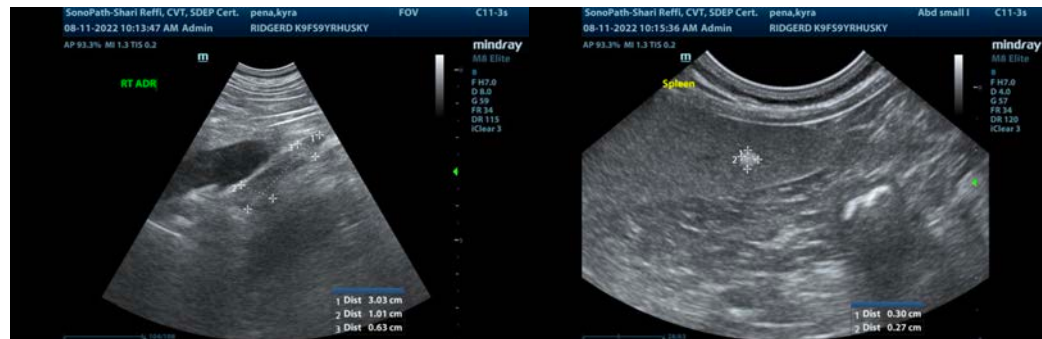
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The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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.

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

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