

**PATIENT**

Annabelle Ericson

**SPECIES**

Canine

**BREED**

Shih Tzu

**SEX**

Spayed Female

**AGE**

16 Years 10 Months

**WEIGHT**

9.4 Pounds

**INTERPRETED BY**

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

**IMAGING PERFORMED BY**

Loetitia Saint-Jacques, RVT

**HOSPITAL NAME**

MountainView AH

**REFERRING VET**

Dr. Bridget Landon

**INVOICE**

24998

**DATE**

8/26/21

**PRESENTING CLINICAL SIGNS**

elevated liver values- proteinuria- benazapril as prescribed= hepatopathy- Rx: benazapri 1.25mg SID AMI, hydrocodone, ursodiol 50mg sid PM, denamarin 90mg AM  
Abnormal PE/Chem/CBC/UA Results: UPC 1.0- persistent, ALT 225, continuing to increase in spite of medical management

**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 (3.52 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. Mild pyelectasia noted at 0.22 cm. There is no evidence of nephroliths, infarcts or hydroureter. Renal vasculature is normal.

The right kidney has a normal shape and size (3.61 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. Mild pyelectasia noted at 0.12 cm. There is no evidence of nephroliths, infarcts or hydroureter. Renal vasculature is normal.

**Adrenal Glands**

The left adrenal gland is normal in size measuring 0.53 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 region of the right adrenal (between right cranial kidney and vena cava) is unremarkable, but the adrenal is not distinctly visualized. No evidence of a mass effect.

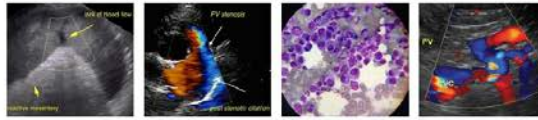
**Spleen**

The spleen is subjectively normal in size. The spleen echotexture is heterogenous and mildly mottled, the splenic capsule is smooth with no irregularities. The blood flow through the hilus and splenic parenchyma appears normal. There is a 1.08 cm x 1.8 cm hypoechoic nodule towards the cranial portion of the spleen, which is slightly deforming the capsule.

**Liver**

The liver is large in size, and normal in echogenicity with smooth peripheral margins. The parenchyma is severely heterogenous in echotexture with subtle, indistinct focal mottling. In many area, the mottling is severe enough to be described as a diffuse nodular pattern with hypoechoic nodules, hyperechoic nodules, and distinct nodules that are either cystic or are hypoechoic with a hyperechoic ring, etc. Hypoechoic nodules are observed measuring 0.75, 0.79 cm. There is a 0.72 cm cyst observed and a target lesion measuring approximately 1.9 cm. There does not appear to be any normal parenchyma visualized, but the left caudal portion of the liver is particularly irregular.

The gallbladder lumen is moderately distended. The wall of the gall bladder is not thickened and has a smooth mucosal surface. Luminal contents are primarily anechoic. The cystic and common bile ducts are normal/not visible.



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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.

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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.)

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

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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.

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**Pancreas**

16 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.

**WEIGHT**

9.4 Pounds

**Free Abdomen**

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.

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**Other**

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

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**ULTRASONOGRAPHIC FINDINGS**

- Severely heterogeneous/nodular liver with numerous focal masses/nodules – 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.
- Decreased corticomedullary distinction in both kidneys with very mild pyelectasia – Mild loss of corticomedullary distinction in both kidneys could be consistent with chronic degenerative disease or interstitial nephrosis. Pyelectasia of the left/right kidney could be consistent with pyelonephritis, chronic renal disease, secondary to PU/PD or fluid therapy (if applicable), other.
- Hypoechoic splenic nodule – There is a non-cavitated, hypoechoic splenic nodule visualized. Differentials include lymphoid hyperplasia, extramedullary hematopoiesis, infiltrative neoplasia, inflammation, other. Cytology or histopathology would be necessary to get a definitive diagnosis.

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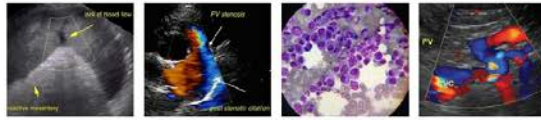
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**INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS**

The liver appearance is very abnormal and almost nodular. This could be consistent with benign nodules such as regenerative nodules, etc., or could be consistent with a neoplastic process. Consider a liver function test and fine needle aspirate of the liver. Additionally, advanced imaging such as a CT scan may

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better delineate focal abnormal areas of liver, which could be sampled/biopsied, or even considered for surgical removal.

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Additionally, there is a hypoechoic splenic nodule visualized. You could consider a fine needle aspirate of this lesion or splenectomy if surgical liver biopsies are considered.

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The changes associated with the kidneys reported on this scan are consistent with the reported renal disease present. It sounds as if you are doing a good job managing the proteinuria. Consider blood pressure evaluation (if not already done) and urinalysis and culture if there is concern for concurrent infection.

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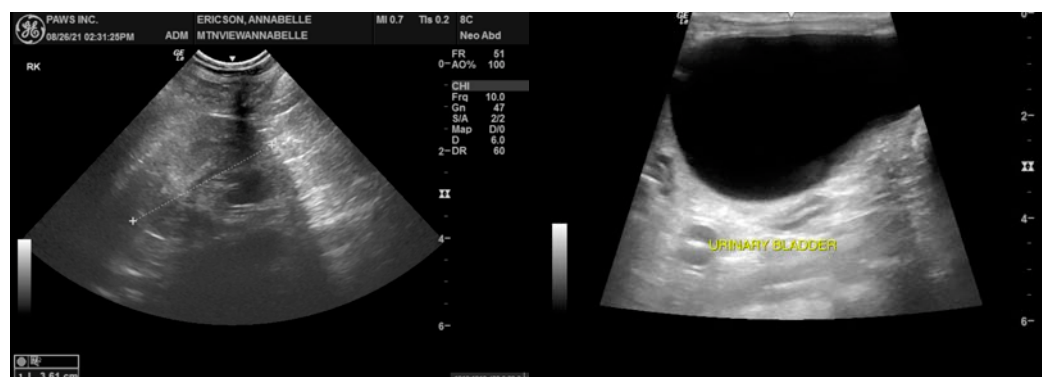
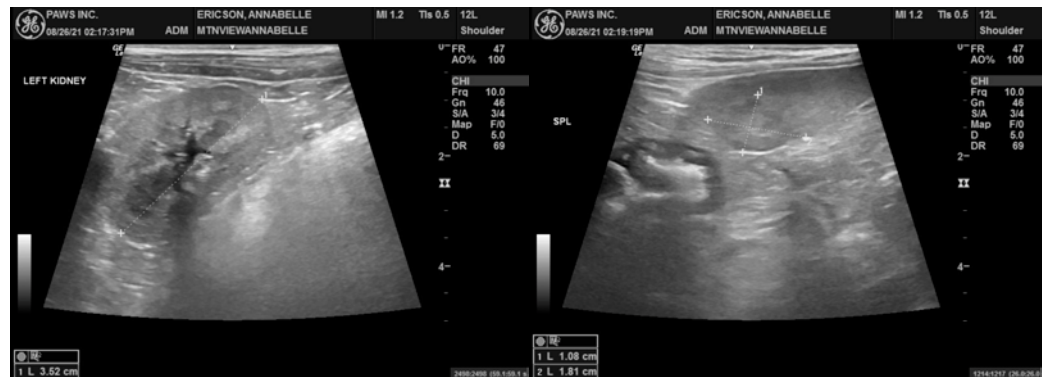
Dr. Bridget Landon

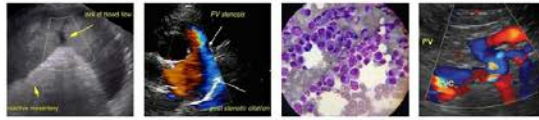
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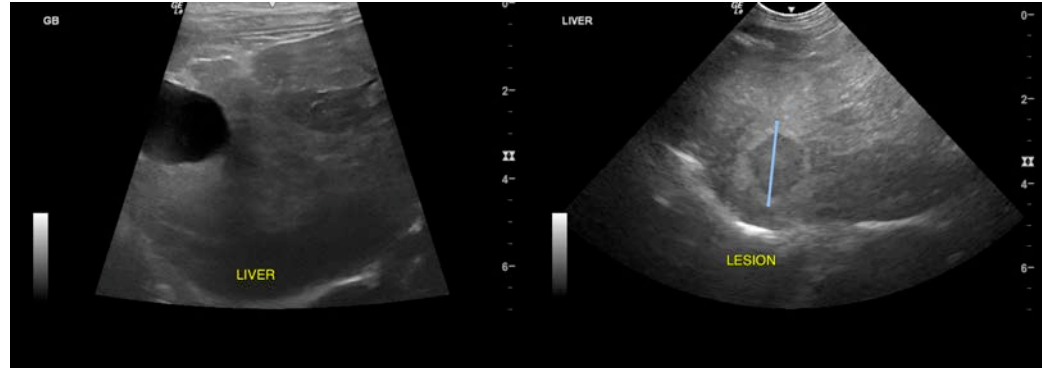
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The information and recommendations provided are based on the images presented by the referring veterinarian. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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.

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

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