



**PATIENT**

Eve Fischer

**PRESENTING CLINICAL SIGNS**

History: Pet has had elevated liver enzymes noted on bloodwork, pet does drink a lot per owner but always has.

Abnormal PE/Chem/CBC/UA Results: 11/22/22 ALT 178, 2/7/23 ALT 237

**SPECIES**

Canine

**ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN**

*Urinary System*

**BREED**

Shih Tzu

The urinary bladder wall is normal in thickness and the mucosal surface is smooth. The bladder lumen is moderately distended with mostly anechoic urine. No masses, inflammatory changes or calculi are observed. Ureteral papillae and visualized portion of the proximal urethra, visible to a depth of 1-2 cm, are normal.

**SEX**

Female, spayed

The left kidney is normal in size (4.12 cm in length) with a normal shape, smooth peripheral margins and normal internal architecture. The cortex is isoechoic relative to the spleen. There is moderate loss of corticomedullary distinction. Several hyperechoic shadowing diverticular foci are observed. There is no evidence of pyelectasia, infarcts or hydronephrosis. Renal vasculature is normal.

**AGE**

8 Yrs.

The right kidney is normal size (4.96 cm in length); normal shape and architecture with smooth peripheral margins. The cortex is isoechoic relative to the spleen. There is a normal 1:3 cortex to medulla ratio with mild to moderate loss of corticomedullary distinction. There is no evidence of pyelectasia, nephroliths, infarcts or hydroureter. Renal vasculature is normal.

**WEIGHT**

12.6 lbs.

*Adrenal Glands*

The left adrenal gland is normal size (0.39 cm at cranial pole) (0.46 cm at caudal pole); 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.

The right adrenal gland is normal size (0.69 cm at cranial pole) (0.40 cm at caudal pole); 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.

**INTERPRETED BY**

Andrea Nicastro, DVM,  
Diplomate ACVIM  
(*Small Animal Internal  
Medicine*)

**IMAGING  
PERFORMED BY**

Dr. Sheldon

*Spleen*

The spleen is normal in size (1.04 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.

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Advanced PetCare of  
Oakland

*Liver*

The liver is prominent in size with normal curvilinear peripheral contours. The parenchyma is isoechoic relative to the spleen and diffusely homogeneous in appearance. No distinct focal lesions are observed. Vascular and biliary tracts are of normal volume with no evidence of congestion. The gall bladder lumen is moderately distended. The wall is thin and smooth. Luminal contents are anechoic. The cystic and common bile ducts are normal/not seen.

**REFERRING VET**

Dr. Sheldon

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*Gastrointestinal*

The gastric lumen is not distended. The gastric wall is normal in thickness with a normal layering pattern. The small intestinal lumen is not dilated. The small intestinal wall thickness is normal with a

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2/7/23



**PATIENT**

normal layering pattern and appropriate mural detail. Discreet masses are not identified. The colonic wall is normal. There is no evidence of an obstructive pattern.

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***Pancreas***

**SPECIES**

The base and limbs of the pancreas are normal in size with normal curvilinear peripheral contours. The parenchyma is largely isoechoic relative to surrounding omental fat and slightly mottled in appearance. The pancreatic duct is visible but not overtly dilated. There is no evidence of peripancreatic inflammation or effusion.

Canine

**BREED**

***Free Abdomen***

Shih Tzu

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

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**AGE**

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**ULTRASONOGRAPHIC FINDINGS**

**Primary 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, microvascular dysplasia, reactive hepatopathy, infiltrative neoplasia (less likely)) should be considered.

**Secondary Findings:**

- Bilateral chronic age-related renal changes.
- Minor, age-related pancreatic remodeling.

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**INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS**

- Consider pre and post prandial serum bile acids to assess hepatic function. Hepatic tissue sampling (i.e., fine needle aspirate or biopsies- laparoscopic or surgical) can be considered to get a definitive diagnosis. If biopsies are pursued, aerobic and anaerobic bile cultures should be obtained along with additional hepatic tissue samples for potential copper quantitation.
- Leptospirosis testing can also be considered. However, given the chronicity of liver enzyme elevations, this differential is considered less likely.
- If a more conservative approach is desired, consider empirical treatment for cholangiohepatitis with amoxicillin-clavulanic acid along with hepatic antioxidants. If liver values do not begin to improve within 7-10 days of initiating therapy, antibiotics should be discontinued and hepatic tissue sampling reconsidered. If values do improve, a 4-6-week course of treatment is recommended.

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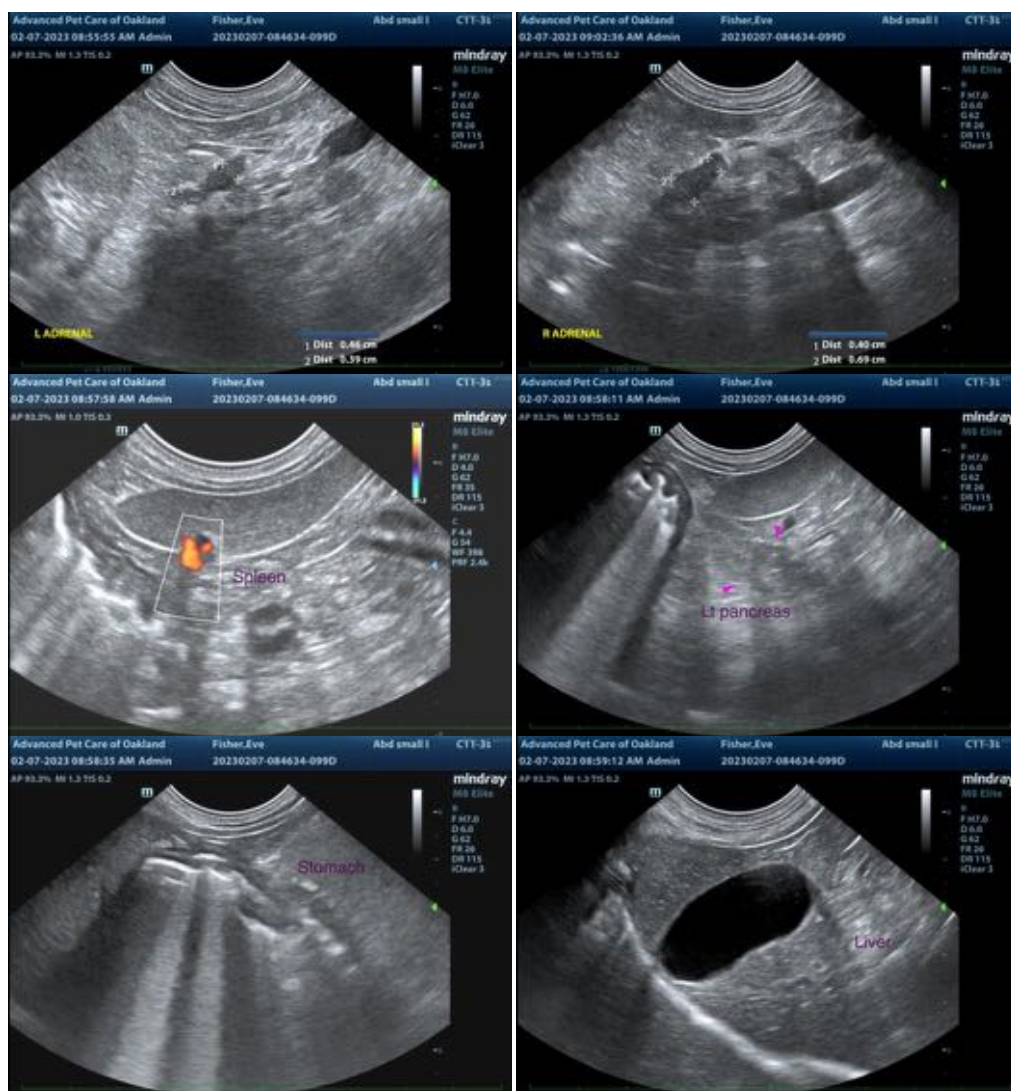
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2/7/23



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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