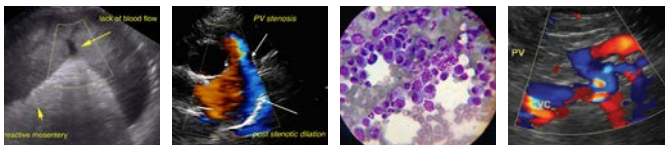
SonoPath
Clinical Sonography & Telecytology
EDUCATIONAL TELECONSULTATION SERVICES™



SonoPath.com™
1-800-838-4268 info@sonopath.com

PATIENT
Brogan Oehrlieh

SPECIES
Canine

BREED
Boston Terrier

SEX
Neutered Male

AGE
4 Years

WEIGHT
22 Pounds

INTERPRETED BY
Beth Johnson, DVM DACVIM

IMAGING PERFORMED BY
Diane McFadden

HOSPITAL NAME
Newton Vet Hospital

REFERRING VET
Dr. Kim

INVOICE
40342

DATE
8/11/22

PRESENTING CLINICAL SIGNS

elevated liver enzymes per rDVM; vomiting.
Abnormal PE/Chem/CBC/UA Results: ALT >1000, GGT 17

ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN

Urinary System

The urinary bladder is moderately distended with anechoic contents. No masses, inflammatory changes, echogenic sediment or cystoliths are observed. The urinary bladder, trigone and visible pelvic urethra are normal in thickness with a smooth mucosal surface.

Prostate is normal in size, echotexture and echogenicity for a neutered male.

The right kidney is normal in size (4.42 cm), shape and echogenicity. It has smooth peripheral margination. There is a normal 1:3 cortex to medulla ratio with appropriate corticomedullary distinction. There is no evidence of pyelectasia or infarcts observed. Non-obstructive linear multifocal hyperechoic diverticular foci with acoustic shadowing are noted.

The left kidney is normal in size (4.59 cm), shape and echogenicity. It has smooth peripheral margination. There is a normal 1:3 cortex to medulla ratio with appropriate corticomedullary distinction. There is no evidence of pyelectasia. Non-obstructive linear multifocal hyperechoic diverticular foci with acoustic shadowing are noted. A chronic infarct is noted in the cranial pole.

Adrenal Glands

The right adrenal gland is normal in size (1.53 cm long x 1.26 cm at the cranial pole and 0.68 cm at the caudal pole), shape and contour. Corticomedullary structure is unremarkable. Visible surrounding vasculature appears normal.

The left adrenal gland is normal in size (2.22 cm long x 0.48 cm at the cranial pole and 0.46 cm at the caudal pole), shape and contour. Corticomedullary structure is unremarkable. Visible surrounding vasculature appears normal.

Spleen

The spleen is subjectively normal in size with a normal smooth capsular contour. Parenchyma is appropriately finely textured and homogenous with normal echogenicity relative to surrounding tissue (hyperechoic to liver). No focal nodules or masses are observed. Splenic vasculature appears normal.

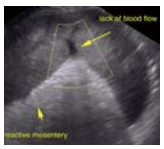
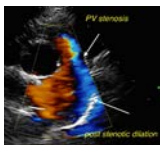
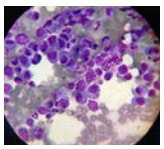
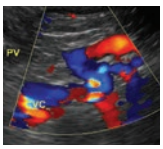
Liver

The liver is subjectively mildly decreased in size with normal smooth curvilinear peripheral contour. Parenchyma is appropriately hypoechoic to the spleen in echogenicity and appropriately mildly coarse and homogenous in echotexture. No focal lesions are observed. Visible vasculature and biliary tree appear normal without distension or congestion.

Gallbladder is moderately distended with anechoic bile as well as suspended and gravity dependent echogenic debris. The wall is smooth without visible thickening. There is no evidence of cystic or CBD dilation. There is no evidence of effusion or inflammation.

Gastrointestinal

The visible stomach wall is normal in thickness and layering. The lumen of the stomach is mildly distended with echogenic non-shadowing luminal contents and gas consistent with normal ingesta.

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There is no evidence of obstruction, foreign material or infiltrative disease. Pyloric outflow tract appears patent.

The visible small intestines are normal in wall thickness and layering (canine duodenum < 0.5 cm and feline duodenum < 0.4 cm; other < 0.3 cm). Small intestinal motility appears adequate (1-3 contractions per min). The lumen of the small intestine is empty with no evidence of obstruction, foreign material or infiltrative disease.

The visible colon is normal in wall thickness (< 0.2 cm) and layering. Contents are consistent with normal formed feces and gas.

Pancreas

The pancreatic parenchyma is appropriately isoechoic to surrounding tissue. Visible capsule is smooth and normal in contour. There is no visible pancreatic duct dilation. There is no evidence of active peripancreatic inflammation.

Free Abdomen

There is no evidence of free peritoneal effusion noted in these images.

There is no apparent lymphadenopathy noted in these images.

PRIMARY FINDINGS

- **Mildly subjectively decreased liver size** – Top differential includes normal patient variant. However, given the liver enzyme changes and signalment, a vascular anomaly cannot be ruled out.

- **Gallbladder debris -** Cholecystic debris is of unknown clinical significance. It can be seen with biliary stasis from fasting or illness. Cholecystic debris is not necessarily related to hepatobiliary disease. Echogenic bile is most commonly an incidental finding in dogs and should be interpreted in combination with clinical signs such as nausea, inappetence, cranial abdominal discomfort and/or laboratory changes such as increased ALP and/or increased Tbili.

SECONDARY FINDINGS

- Non-obstructive dystrophic renal mineralization bilaterally and infarct noted in the left kidney.

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Testing for Leptospirosis is indicated if not recently evaluated.

Given this patient's signalment, liver enzyme increase, and possibly subjectively small liver, bile acids are recommended if not recently evaluated. If bile acids are significantly increased, especially >100, follow up abdominal imaging for looking for vascular anomalies with power doppler in the area of the porta hepatis ultrasonographically or with an abdominal CT scan is recommended.

An obvious cause for the reported increased liver enzymes is not identified in these images. If bile acids are not markedly increased and Leptospirosis is negative, other microscopic disease such as bacterial cholangiohepatitis, chronic active hepatitis, copper associated hepatopathy, other hepatotoxicity, infiltrative neoplasia (considered unlikely), etc. cannot be definitively ruled out, and recommendations include an empirical course of antibiotics, hepatic nutraceuticals, as well as any other supportive/symptomatic management necessary to control clinical signs. However, if the ALT does not improve and/or progresses, tissue sampling is likely warranted.

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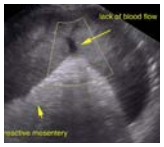
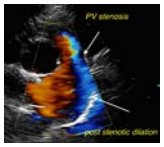
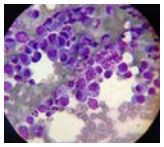
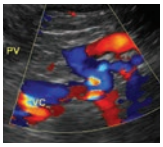

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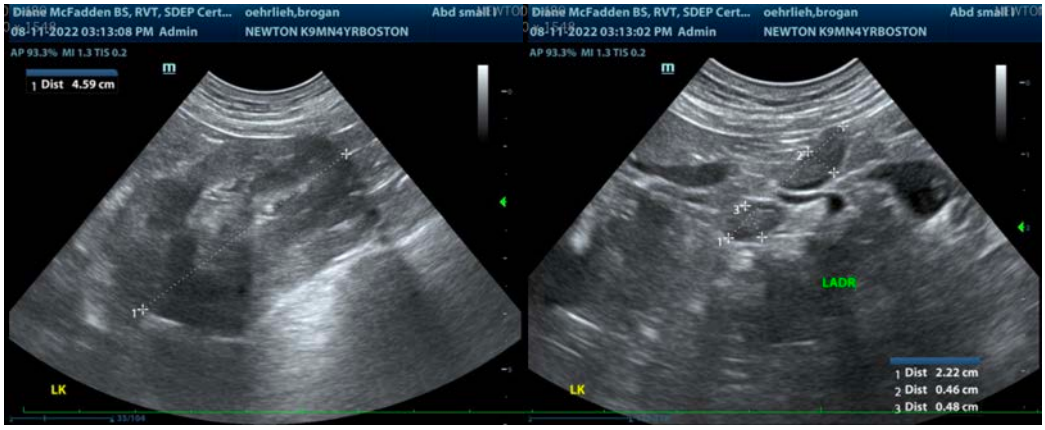
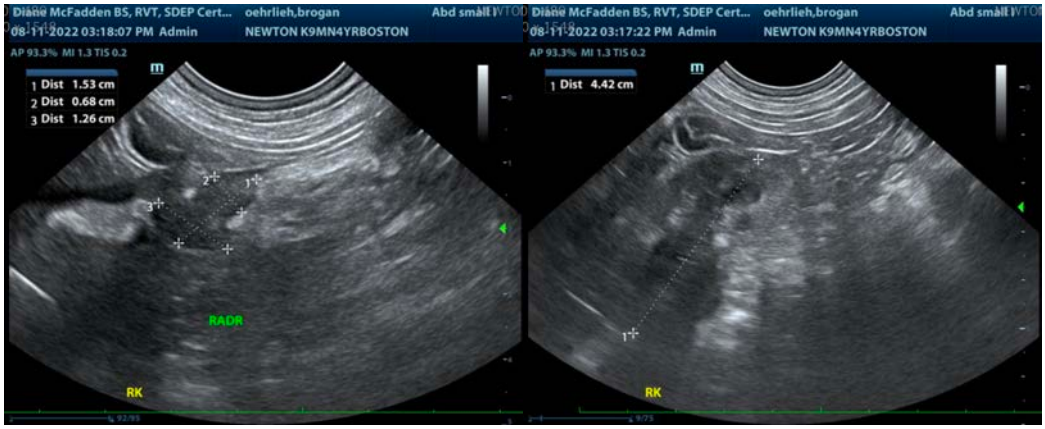
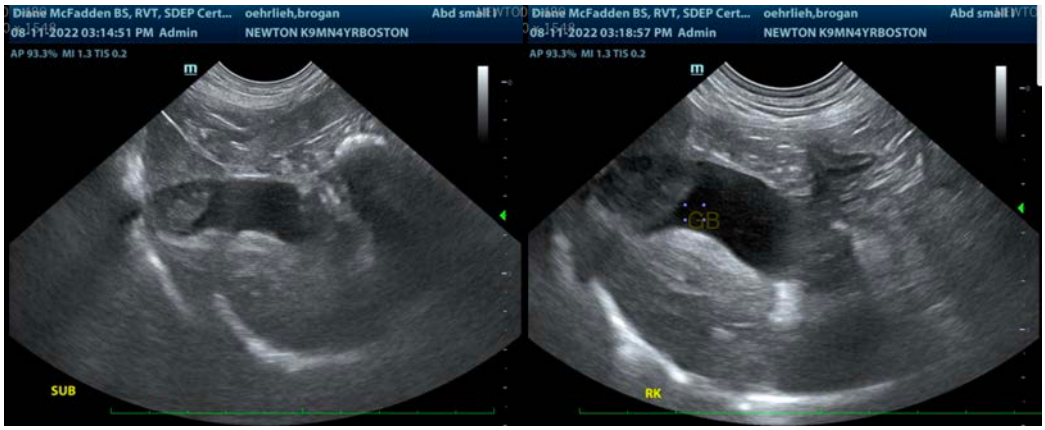
A fine needle aspirate of the liver could be performed to assess inflammatory cell type, rule in/out round cell neoplasia. etc. If round cell neoplasia is not diagnosed, a liver biopsy including copper level assessment may be required to definitively diagnose the underlying hepatopathy.







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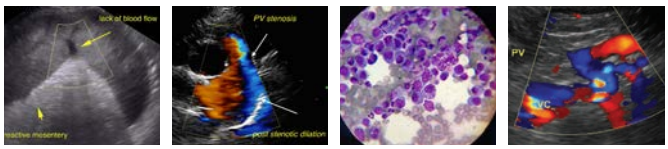

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The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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.

Beth Johnson, DVM, DACVIM
Beth.Johnson@sonopath.com