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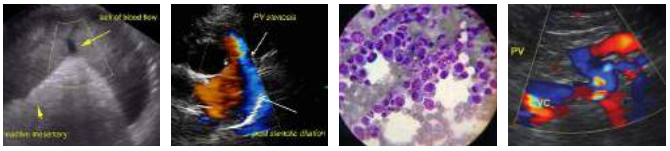

SonoPath.com
1-800-838-4268 info@sonopath.com

**PATIENT**
Millie Robinson

**SPECIES**
Canine

**BREED**
Labrador Retriever

**SEX**
Female spayed

**AGE**
12 Years

**WEIGHT**
76 lbs.

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

**IMAGING PERFORMED BY**
Jack Reese

**HOSPITAL NAME**
Willow Run Veterinary Clinic

**REFERRING VET**
Dr. Davies

**INVOICE**
11664kk

**DATE**
8/18/21

## PRESENTING CLINICAL SIGNS

History: Evaluated for progressive osteoarthritis in hind end - screening bloodwork pulled prior to initiation of NSAID therapy. Elevated liver values noted.

Abnormal PE/Chem/CBC/UA Results: ALT 616 AST 79 ALP 3876 GGT 46.

## ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN

### *Urinary System*

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

The left kidney is normal size (7.53 cm in length); normal shape and architecture with smooth peripheral margins. There is a normal 1:3 cortex to medulla ratio with minimal to mild loss of corticomedullary distinction. There is no evidence of pyelectasia, nephroliths, infarcts or hydroureter. Renal vasculature is normal.

The right kidney is normal size (7.78 cm in length); normal shape and architecture with smooth peripheral margins. There is a normal 1:3 cortex to medulla ratio with minimal to mild loss of corticomedullary distinction. There is no evidence of pyelectasia, nephroliths, infarcts or hydroureter. Renal vasculature is normal.

### *Adrenal Glands*

The left adrenal gland is normal size (0.76 cm at cranial pole) (0.85 cm at caudal pole) (2.94 cm in length); 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 (1.61 cm at cranial pole) (0.74 cm at caudal pole) (2.64 cm in length); 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.

### *Spleen*

The spleen is normal in size with a normal capsular contour. There is appropriate echogenicity and echotexture. Several myelolipomas are observed along the medial aspect. Splenic vasculature is normal.

### *Liver*

The liver is subjectively prominent in size with swollen peripheral contours. The parenchyma is hyperechoic relative to the spleen and diffusely heterogeneous in appearance with numerous, varying-sized, ill-defined, hypoechoic nodules/areas throughout the organ. Hepatic vasculature and intrahepatic biliary tracts are of normal volume with no evidence of congestion. The gall bladder is moderately distended. The gall bladder wall is normal to slightly thickened and irregular with questionable mineralization in some areas. Numerous, polypoid-like lesions are arising from the luminal surface circumferentially. A moderate amount of echogenic to mineralized, gravity-dependent debris/sludge is observed within the lumen. Some of the debris also appears adherent. The cystic and common bile ducts are normal/not seen.

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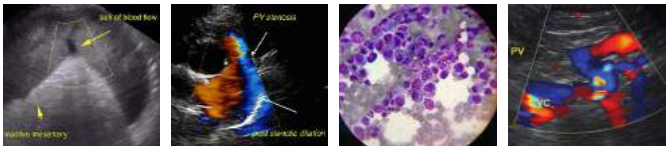

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### *Gastrointestinal*

The stomach and intestine are free of stasis and exhibit normal peristaltic activity. The gastric lumen is mildly distended with ingesta. The gastric wall and pylorus are normal in thickness with a normal layering pattern. The pyloric outflow tract is patent. The small intestinal lumen is not dilated. The small intestinal wall thickness is normal with a normal layering pattern and appropriate mural detail. Discreet masses are not identified. The colonic wall is normal. No obstructive disease is noted.

### *Pancreas*

The region of the pancreas is isoechoic relative to surrounding omental fat. No obvious parenchymal abnormalities are observed. There is no evidence of regional inflammation or effusion.

### *Free Abdomen*

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

## ULTRASONOGRAPHIC FINDINGS

**Primary Findings:**

- Diffuse hepatopathy. Differentials include infiltrative neoplasia (i.e., lymphoma), diffuse inflammatory disease, hepatotoxicosis (i.e., copper), other hepatopathy +/- concurrent age-related changes (i.e., regenerative nodular hyperplasia, age-related remodeling, vacuolar hepatopathy).
- The gall bladder changes could be consistent with cholecystitis and/or age-related hyperplasia. There is questionable focal gall bladder wall mineralization.

**Secondary Findings:**

- Bilateral, age-related renal pathology.
- Splenic myelolipomas.

## INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

1. Cytologic evaluation of the liver should be considered in this patient if clotting status is appropriate. A fine needle aspirate using a 25-gauge needle is recommended. If cytologic evaluation is inconclusive, consider a surgical liver biopsy with aerobic and anaerobic bile cultures and acquisition of additional hepatic tissue samples for copper quantitation.
2. If a conservative approach is desired, consider empirical treatment for bacterial cholangiohepatitis/cholecystitis (amoxicillin-clavulanic acid, Denamarin Advanced). If no improvement in the liver values is seen within 7-10 days of initiating therapy, antibiotics should be discontinued, and hepatic tissue sampling reconsidered. If liver values improve, continue therapy for at least 4-6 weeks and 1 week beyond normalization of the liver values.
3. Leptospirosis testing (i.e., blood and urine PCR, serology) can also be considered, particularly if the disease is endemic in the patient's geographic region.
4. Given the patient's age, three-view thoracic radiographs are recommended to assess cardiopulmonary status.

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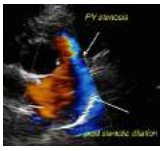
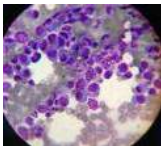
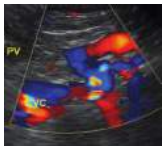

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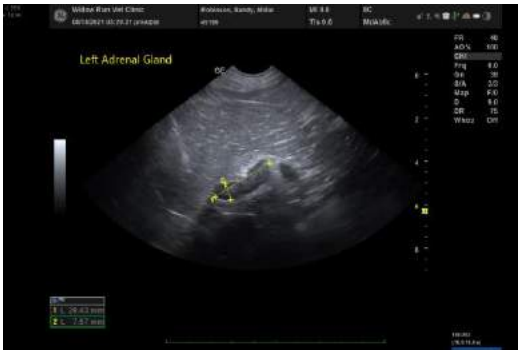

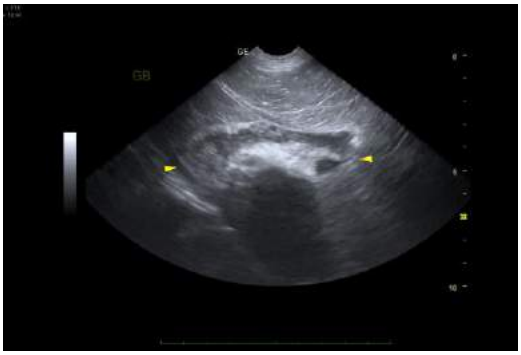

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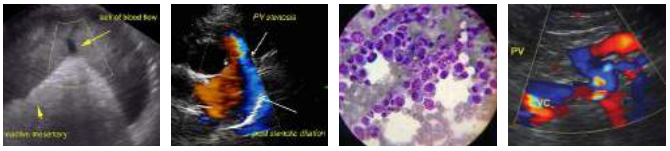

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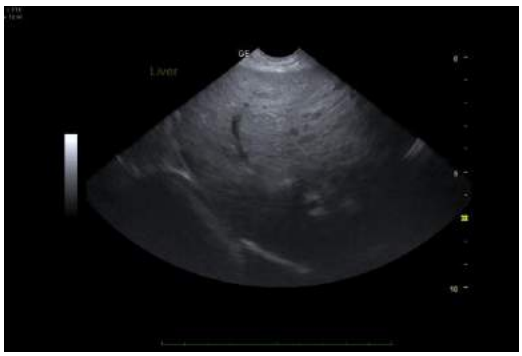

**The information and recommendations provided are based on the images presented by the referring veterinarian. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.**

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.

Andrea Nicastro, DVM, Diplomate ACVIM (*Small Animal Internal Medicine*)
Andrea.nicastro@sonopath.com