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Clinical Sonography & Telecytology
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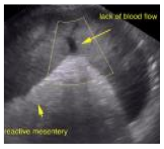
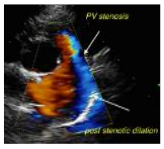
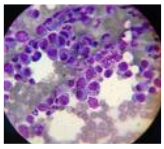
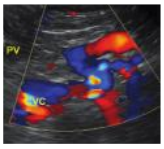





SonoPath.com
1-800-838-4268 info@sonopath.com

**PATIENT**
Beanie Miller

**SPECIES**
Canine

**BREED**
Boston Terrier

**SEX**
Female, spayed

**AGE**
11 Yrs.

**WEIGHT**
26 lbs.

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

**IMAGING PERFORMED BY**
Lynette Reyes

**HOSPITAL NAME**
Mobile Vet Ultrasound

**REFERRING VET**
D. Ambrose

**INVOICE**
13744

**DATE**
7/19/22

## PRESENTING CLINICAL SIGNS

History: Pet presented for pre anesthetic bloodwork; dental cleaning scheduled. No clinical signs pero owner.
Abnormal PE/Chem/CBC/UA Results: CBC: nsf Chem: Alt: 2,074 Alkp: 528 GGT: 29 AST: 106 Glob: 4.2 Cholesterol : 836 Lipase: 268 UA: Sg: 1.039 Protein: 3+ Cast: occ hyaline Crystals: occ calcium oxalate

## ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN

### *Urinary System*

The urinary bladder wall is 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. The region of the trigone and the visible portion of the proximal urethra are normal.

The left kidney is normal size (4.09 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 in size (5.04 cm in length) with a normal shape, smooth peripheral margins and normal internal architecture. There is mild loss of corticomedullary distinction. Several hyperechoic shadowing diverticular foci are observed. There is no evidence of pyelectasia, infarcts or hydronephrosis. Renal vasculature is normal.

### *Adrenal Glands*

The left adrenal gland is normal size (0.53 cm at cranial pole) (0.50 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 region of the right adrenal gland is evaluated. No obvious pathology is observed.

### *Spleen*

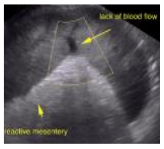
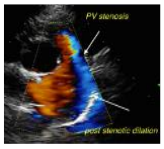
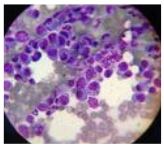
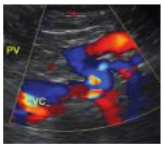
The spleen is normal in size (1.32 cm in width at the level of the hilus) with a normal capsular contour. There is appropriate echogenicity and echotexture. A 1.32 cm hypoechoic to slightly heterogeneous nodule is observed at the lateral aspect, approximately mid-spleen. In addition, a similar appearing 1.00 cm nodule is observed adjacent to the aforementioned nodule. Splenic vasculature is normal.

### *Liver*

The liver is subjectively enlarged with slightly swollen 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 not definitively visualized in the available images.

### *Gastrointestinal*

The stomach and intestine are free of stasis and exhibit normal peristaltic activity. The gastric lumen is not distended. The gastric wall and pylorus are normal in thickness with a normal layering pattern. The

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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 base and limbs of the pancreas are visible 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 (0.24 cm in diameter). There is no evidence of peripancreatic 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 Finding:**

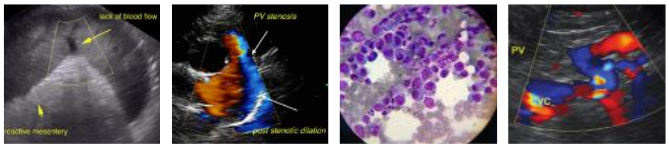
- An obvious cause for the elevated liver enzymes is not identified in the study. However, a microscopic hepatopathy (i.e., bacterial cholangiohepatitis, Leptospirosis, chronic active hepatitis, copper-associated hepatotoxicity, infiltrative neoplasia (less likely)) or gallbladder disease should be considered.
- The hypoechoic splenic nodules could be consistent with a benign process (i.e., focus of lymphoid hyperplasia, extramedullary hematopoiesis or similar). Alternatively, emerging neoplasia is possible.

**Secondary Findings:**

- Age-related pancreatic remodeling +/- fibrosis. Mild chronic pancreatitis may also be present, particularly if the patient exhibits clinical signs consistent with the disease.
- Bilateral, chronic, age-related renal changes with right dystrophic mineralization.

## INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

- If possible, sonographic images of the gallbladder should be obtained to assess for pathology in this organ.
- Leptospirosis testing (i.e., blood and urine PCR, serology) is recommended along with pre- and post-prandial serum bile acids.
- Hepatic tissue sampling (i.e., fine needle aspirate or surgical biopsy) should also be considered. Surgical biopsies are more likely to be representative of global organ pathology. If pursued, acquisition of additional hepatic tissue samples for potential copper quantitation along with aerobic and anaerobic bile cultures are recommended.
- If a conservative approach is desired, consider empirical treatment for bacterial cholangiohepatitis (amoxicillin-clavulanic acid, Denamarin +/- metronidazole). 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

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therapy for at least 4-6 weeks and 1 week beyond normalization of the liver values.

- Given the proteinuria, a UPC is recommended.
- Regarding the splenic nodules, consider FNA (if clotting status is appropriate) or a recheck ultrasound in 3-4 weeks to assess for progression.

## ADDENDUM (7/22/22)

Twelve additional images are provided of the right liver and gall bladder.

### *Gall bladder*

The gall bladder lumen is moderately distended. The wall is thin and smooth. A scant amount of suspended, echogenic debris is observed within the lumen. The cystic and common bile ducts are normal/not seen.

In the images of the right liver, the caudate process appears swollen, with rounded peripheral contours. In addition, an approximately 6.4 cm irregular, hypoechoic mass/area is observed on the right side. The mesentery adjacent to lesion is hyperechoic.

## ASSESSMENT

Possible right hepatic mass effect. Differentials include neoplasia (i.e., adenocarcinoma, adenoma), regenerative nodular hyperplasia, inflammatory focus, other. The homogenous swelling of the caudate process of the liver likely represents a benign process (i.e., vacuolar hepatopathy)

## INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

In addition to the previously listed recommendations, consider three-view thoracic radiographs to assess for pulmonary metastatic disease. An abdominal CT scan would also be useful in further evaluating the lesion in the right liver. Biopsy (+/- removal) of the right hepatic lesion may ultimately be necessary to obtain a definitive diagnosis.


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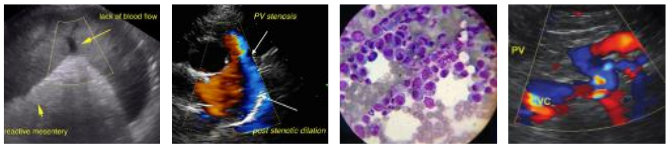

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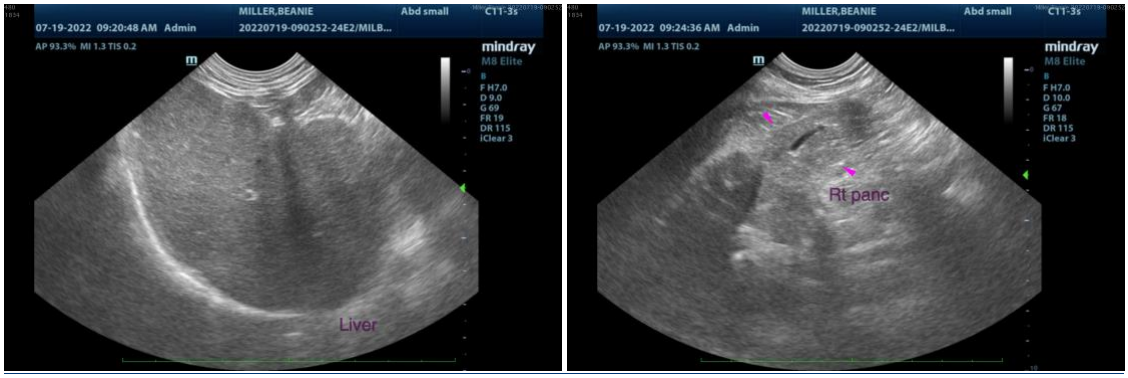


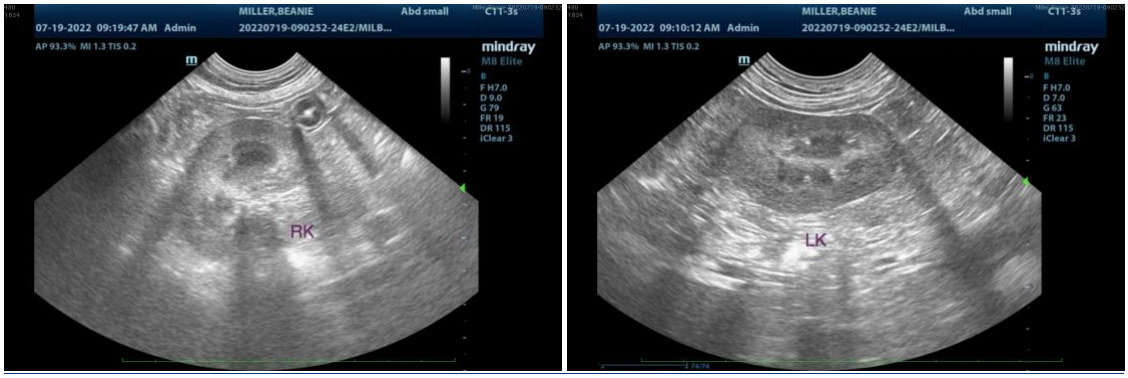


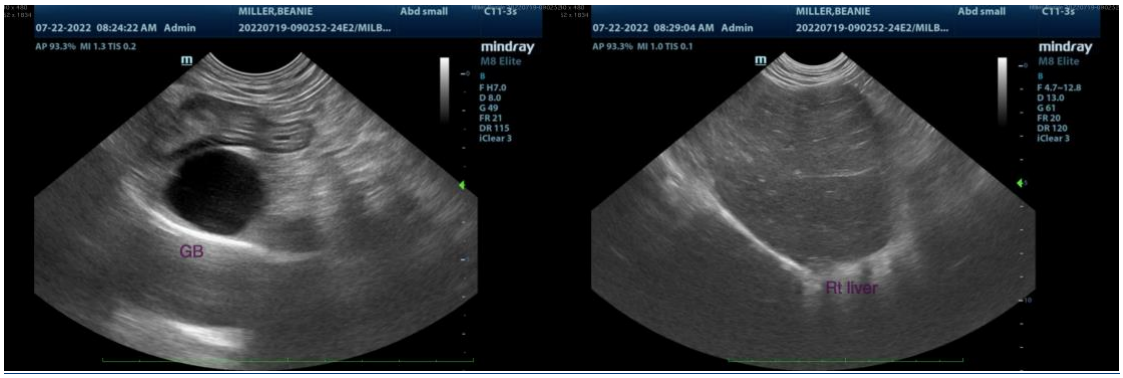


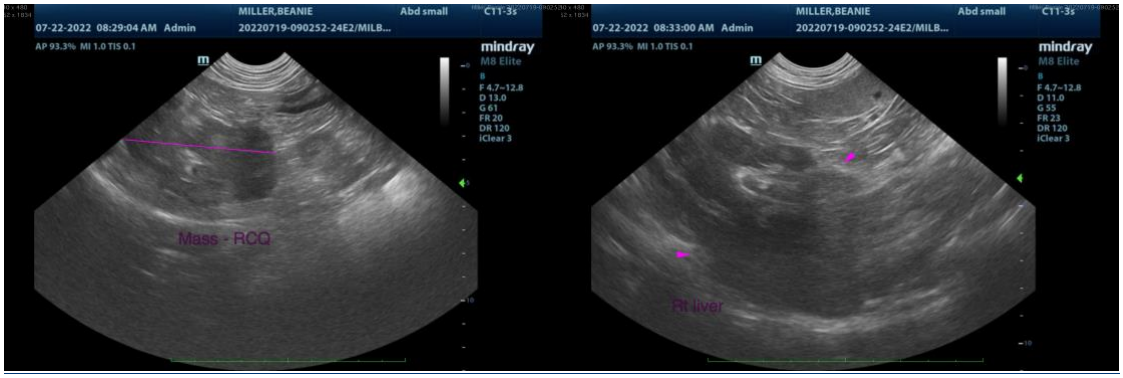


**The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.**

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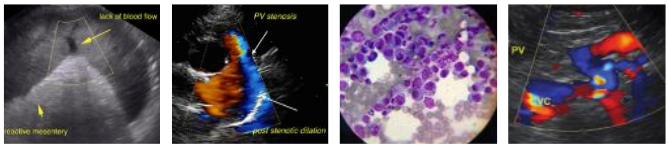


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Thank you for this referral. If the clinical or image interpretation does not parallel your findings or if I can be of any further assistance please contact me.

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