SonoPath
Clinical Sonography & Telecytology
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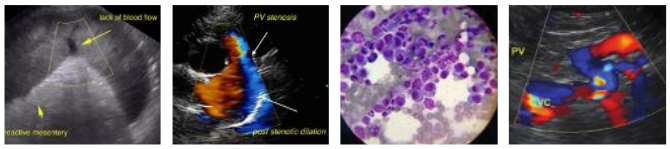



SonoPath.com
1-800-838-4268 info@sonopath.com

**PATIENT**
Buster Campbell

**SPECIES**
Canine

**BREED**
Jack Russell Terrier

**SEX**
Neutered Male

**AGE**
12 Years

**WEIGHT**
16 Pounds

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

**IMAGING PERFORMED BY**
Dr. Meghan Myers

**HOSPITAL NAME**
Hershire AH

**REFERRING VET**
Dr. Meghan Myers

**INVOICE**
37778

**DATE**
5/19/22

## PRESENTING CLINICAL SIGNS

pet has history of IMPA and is on leflunamide, prednisone for maintenance. Has been on these medications for almost 2 years with frequent blood monitoring. Liver values have been normal other than mild increased alkp in past. Recent wellness blood check showed increased alt, alkp, and ast
Clinically pet is doing okay other than joint issues. Pet is also hypothyroid and on thyro-tabs.
Ultrasound to investigate recent elevation of LES.
Abnormal PE/Chem/CBC/UA Results: alt: 452 ast: 93 (16-55) alp: 476 (5-160)

## ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN

### *Urinary System*

The urinary bladder is moderately to mildly distended with anechoic urine. The Bladder wall is largely normal with some mild mucosal irregularity near the apex. The 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. Mucosal irregularities are most consistent with bacterial cystitis or lack of urine distention.

The visualized areas of prostate and surrounding tissue appear normal. Unfortunately, the prostate is not fully visualized likely due to its intrapelvic location. Correlate with rectal exam findings.

The left kidney has a normal shape and size (4.8 cm) with pinpoint non-obstructive nephroliths. Overall echogenicity is normal with adequate corticomedullary distinction and a typical 1:3 cortex:medulla ratio. There is no evidence of perinephric inflammation or effusion. There is no evidence of pyelectasia, infarcts or hydroureter. Renal vasculature is normal.

The right kidney has a normal shape and size (5.1 cm). Overall echogenicity is normal with adequate corticomedullary distinction and a typical 1:3 cortex:medulla ratio. There is no evidence of perinephric inflammation or effusion. There is no evidence of pyelectasia, nephroliths, infarcts or hydroureter. Renal vasculature is normal.

### *Adrenal Glands*

The left adrenal gland is normal in size measuring 0.63 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.

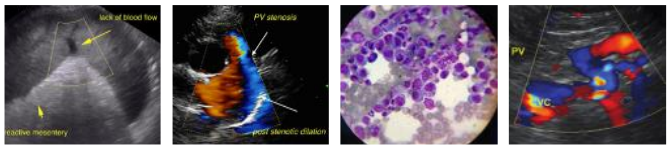
The region of the right adrenal (between right cranial kidney and vena cava) is unremarkable, but the adrenal is not distinctly visualized. No evidence of a mass effect.

### *Spleen*

The spleen is subjectively normal in size, echotexture is homogenous, and the splenic capsule is smooth with no irregularities. The blood flow through the hilus and splenic parenchyma appears normal. No focal parenchymal abnormalities are visualized.

### *Liver*

The liver is large in size, and normal in echogenicity with smooth peripheral margins. The parenchyma is heterogenous in echotexture with subtle, indistinct focal mottling. The visible portions of the vasculature and biliary tract appear normal. There are too numerous to count, ill-defined, hypoechoic nodule visualized within the parenchyma, largely varying in size between 0.5-1.0 cm. There is a distinct hypoechoic nodule visualized in the caudal liver adjacent to the stomach, measuring 1.0 cm.

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The gallbladder lumen is significantly distended. The wall of the gall bladder appears prominent and hyperechoic, but is not overtly thickened and has a relatively smooth mucosal surface. Luminal contents are largely anechoic other than some hyperechoic shadowing mineralization along the wall of the gallbladder. The cystic and common bile ducts are not visible.

### *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.

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

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.

### *Pancreas*

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.

### *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.

## PRIMARY FINDINGS

- Large, irregular, heterogeneous liver with numerous hypoechoic 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. The hypoechoic nodules could be consistent with benign regenerative nodules or an underlying neoplastic process (seems less likely).

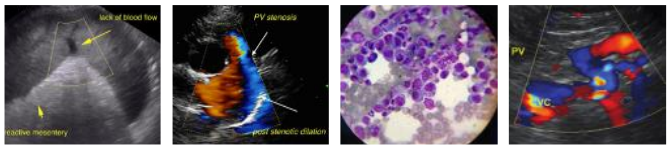
- Distended gallbladder with hyperechoic gallbladder wall – most consistent with mineralization along the wall of the gallbladder. There are no obvious inflammatory changes observed. Recommend continued monitoring.

## SECONDARY FINDINGS

- Mildly irregular bladder mucosa at the apical wall – findings are most consistent with bacterial cystitis or lack of urine distention. Recommend urinalysis and culture.

## INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

I agree that the current liver enzyme elevations seem less likely to be associated with the current



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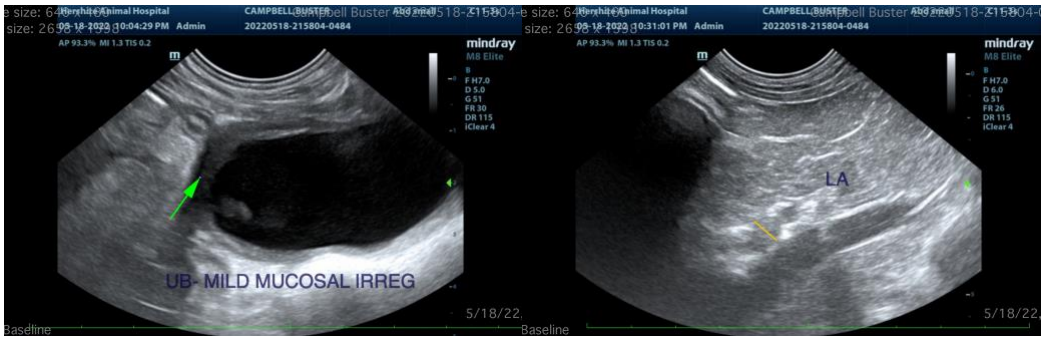
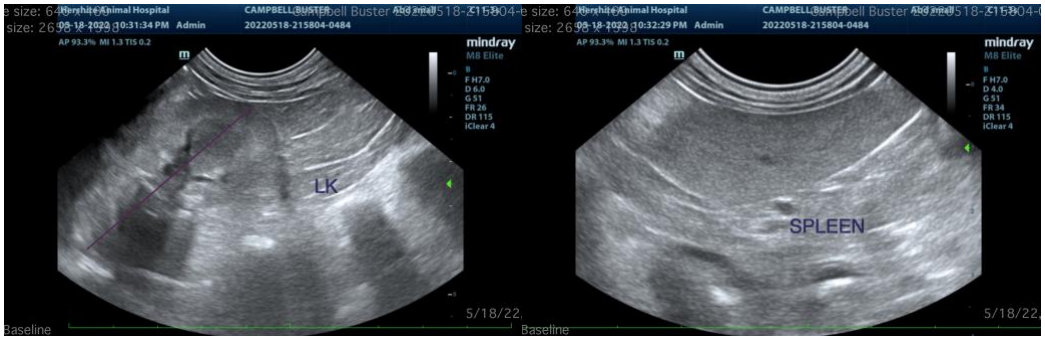
medical therapy. This is concerning for progression of a previously present hepatopathy or development of a new hepatopathy. The changes observed are non-specific. Consider:

- Consider close evaluation of history for possible toxic changes examine medications, diet, dietary indiscretion etc...
- Consider PCR on urine/serum for leptospirosis (if not on antibiotics)/serology if recent antibiotic history
- If not already done, consider pre and post prandial bile acids to evaluate liver function
- If the ALP is significantly elevated relative to the ALT and symptoms consistent with cushings are present, consider adrenal function testing (ACTH stim)
- Consider Fine needle aspirate if round cell neoplasia is on your differentia list (25 g needle, normal coags)
- If no response to medical care (denamarin, antibiotics,+/- ursodiol etc...) Consider liver biopsy with samples obtained for histopathology, culture, and copper levels.

The gallbladder appears somewhat atypical, but this could be an incidental finding. Recommend continued monitoring and possible Ursodiol therapy.



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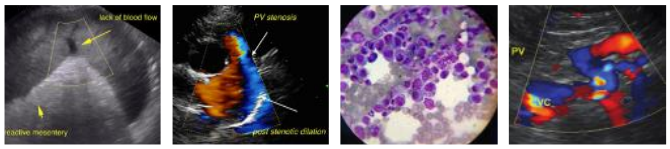

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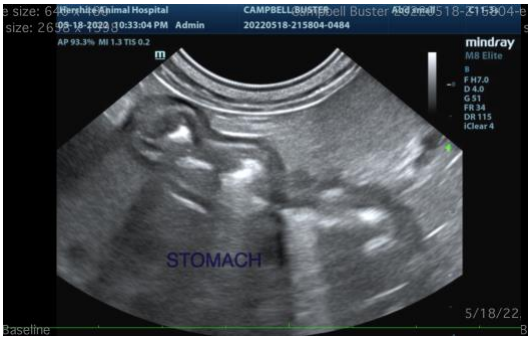


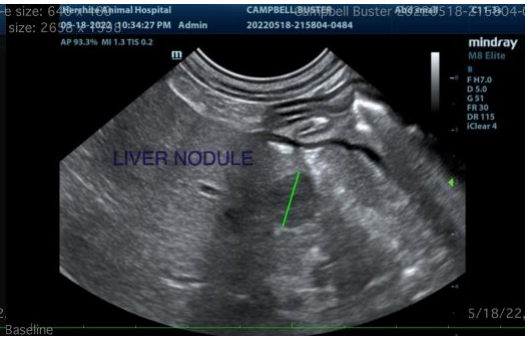


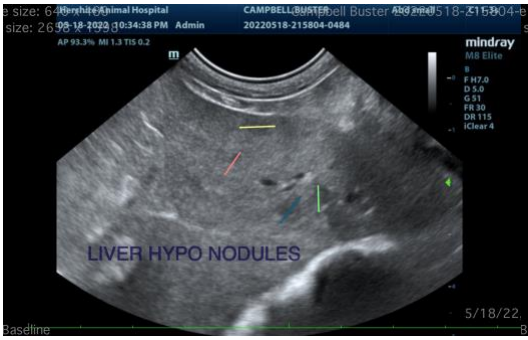


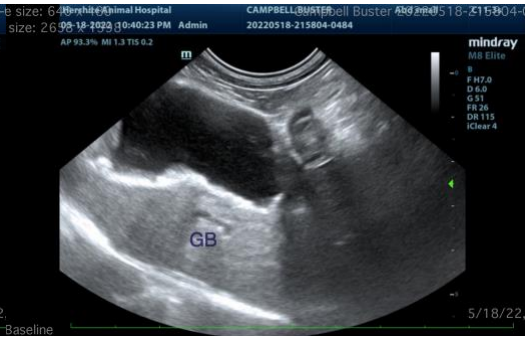


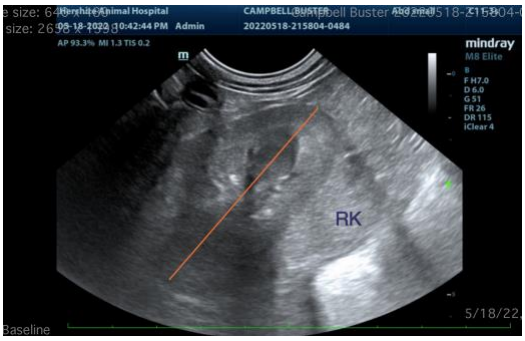


**The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.**

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.

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