



**PATIENT**

Bella Voinov

**SPECIES**

Canine

**BREED**

Mixed

**SEX**

Spayed Female

**AGE**

9 Years

**WEIGHT**

57.3 Pounds

**INTERPRETED BY**

Beth Johnson, DVM  
DACVIM

**IMAGING PERFORMED BY**

Kelly Vazquez

**HOSPITAL NAME**

Legacy AH

**REFERRING VET**

Dr. Kristin Pontenzone

**INVOICE**

35921

**DATE**

3/3/22

**PRESENTING CLINICAL SIGNS**

Hypoalbuminemia, albumin 1.5, globulin WNL. Ravenous appetite, no vomiting. Current meds: Thyroid-Levothyroxine, Denamarin, joint support.  
Abnormal PE/Chem/CBC/UA Results: TLI >50, Folate/cob. WNL. U/A: 4+ protein, USG 1.040.

**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.

The right kidney is normal in size (6.05 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, mineral or infarcts observed.

The left kidney is normal in size (6.75 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, mineral or infarcts observed.

**Adrenal Glands**

The left adrenal gland is normal in size (2.23 cm long x 0.68 cm at the cranial pole and 0.73 cm at the caudal pole), shape and contour. Corticomedullary structure is unremarkable. Visible surrounding vasculature appears normal.

The right adrenal gland is normal in size (2.17 cm long x 1.2 cm at the cranial pole and 0.64 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**

Liver is subjectively enlarged with rounded margins. Parenchyma is heterogenous characterized by multiple poorly defined hypoechoic nodules within otherwise hyperechoic liver parenchyma. Visible vasculature appears normal.

The gallbladder is non-distended in size. The wall is smooth without visible thickening. Luminal contents are primarily anechoic. There is no evidence of cystic or common bile duct dilation.

**Gastrointestinal**

The stomach wall is normal in thickness (canine < 0.5 cm and feline < 0.4 cm) and layering. The lumen of the stomach is mildly distended with echogenic non-shadowing luminal contents and gas consistent with normal ingesta. 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



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per min). The lumen of the small intestine is empty with no evidence of obstruction, foreign material or infiltrative disease. There is very subtle echogenic mucosal speckling in the duodenum.

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

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**Pancreas**

The pancreatic parenchyma is hyperechoic to surrounding tissue and mottled in echotexture. The visible capsule is smooth and normal in contour. There is no visible pancreatic duct dilation. There is no evidence of active peripancreatic inflammation or effusion.

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**Free Abdomen**

There is no evidence of peritoneal effusion. There is no apparent lymphadenopathy.

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**PRIMARY FINDINGS**

- Heterogenous liver – Differentials for hepatic changes include both benign steroid (vacuolar) hepatopathy or extramedullary hematopoiesis as well as infiltrative round cell or metastatic neoplasia.
- Subtle hyperechoic duodenal mucosal speckling – This is a non-specific finding, but can be seen with inflammatory bowel disease.

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**SECONDARY FINDINGS**

- Coarse prominent pancreas – Rule outs include normal age related remodeling versus chronic smoldering pancreatitis.

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**INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS**

Differentials for hypoalbuminemia include loss through the GI tract versus loss through the kidneys versus decreased production from the liver. Given this patient's proteinuria and lack of gastrointestinal signs, the first diagnostic recommendations is a urine protein to creatinine ratio to quantify the amount of protein in the urine to help diagnose versus rule out protein losing nephropathy. Bile acids are recommended to further assess liver function, as is a fine needle aspirate of the liver if patient's coagulation status is appropriate, given the heterogeneous mottled appearance of the liver.

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If the urine protein to creatinine ratio cannot explain the level of hypoalbuminemia present, and bile acids are normal, then the mild mucosal speckling present in this study is considered more significant, and biopsies of the gastrointestinal tract could be considered to definitively diagnose an underlying bowel disease. If at that point biopsies are not possible due to the low albumin, empirical therapy with a low-fat diet and steroids could be considered.

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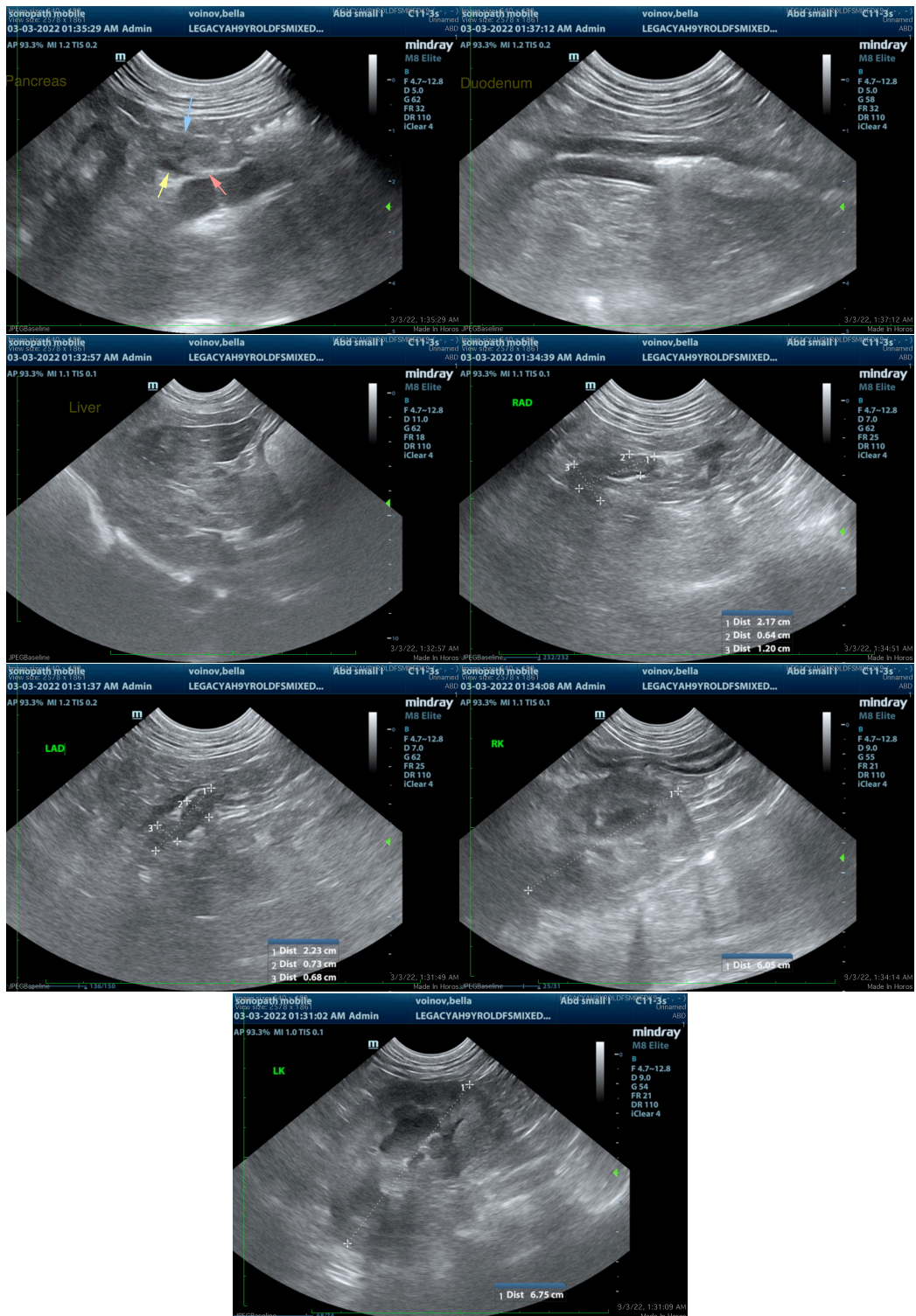
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**The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.**

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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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Beth.Johnson@sonopath.com

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