



PATIENT

Zena Lupica

SPECIES

Canine

BREED

Pomeranian

SEX

Spayed Female

AGE

13 Years

WEIGHT

11.8 Pounds

INTERPRETED BY

Beth Johnson, DVM
DACVIM

IMAGING PERFORMED BY

Kelly Vazquez

HOSPITAL NAME

Animal General
on the Hudson

REFERRING VET

Dr. Krstevski

INVOICE

40725

DATE

8/24/22

PRESENTING CLINICAL SIGNS

Grade 3/6 heart murmur; clinically normal. No current meds.
Abnormal PE/Chem/CBC/UA Results: Alk. Phos. 1681, urea nitrogen 43, BUN/creat. ratio 33, glucose 310, K 5.8, Na/K ratio 24, Cl. 101, cholesterol 38, platelet count 665.

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.

Kidneys are overall normal in size and shape with smooth peripheral margination. A normal 1:3 cortex to medulla ratio is maintained. The medulla and cortices are uniform in texture with some mild increased cortical echogenicity and mild loss of corticomedullary distinction, expected in this age patient. There is no evidence of mineral or infarcts observed. The left kidney measures 3.82 cm. Mild pyelectasia noted in the left kidney as well as small multifocal cortical cyst. The right kidney measures 4.28 cm.

Adrenal Glands

The right adrenal gland is normal in size (2.0 cm long x 0.83 cm at the cranial pole and 0.93 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 (2.27 cm long x 0.65 cm at the cranial pole and 0.94 cm at the caudal pole), shape and contour. Corticomedullary structure is unremarkable. Visible surrounding vasculature appears normal.

Spleen

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). Multifocal well-demarcated hyperechoic homogenous nodules are noted. Splenic vasculature appears normal.

Liver

Liver is subjectively enlarged with mildly irregular margins. Parenchyma is heterogenous characterized by multiple poorly defined hypoechoic nodules within otherwise hyperechoic liver parenchyma. Several discrete nodules are noted, including a hyperechoic nodule with a hypoechoic rim measuring approximately 2.0 cm in diameter, a 1.0 cm x 0.5 cm hypoechoic nodule, and a 1.0 cm x 1.5 cm hyperechoic nodule, all noted in the mid liver. 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 stomach wall is normal in thickness (canine < 0.5 cm and feline < 0.4 cm) and layering. The lumen of the stomach is empty with no evidence of obstruction, foreign material or infiltrative disease. Pyloric outflow tract appears patent.



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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.

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

Pancreas

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The area of the pancreas contains irregular hyperechoic pancreatic remodeling.

Free Abdomen

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

There is no apparent lymphadenopathy noted in these images.

PRIMARY FINDINGS

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- **Heterogenous Liver** – These changes are most consistent with benign processes such as nodular hyperplasia, steroid (vacuolar) hepatopathy, extramedullary hematopoiesis or possibly chronic inflammatory disease and less commonly infiltrative round cell or metastatic neoplasia. Differentials for discrete liver nodules include primarily benign changes such as nodular hyperplasia, fibrosis of an old hematoma, granuloma, etc.; however, while considered less likely, primary hepatic neoplasia, infiltrative round cell neoplasia and metastatic disease can mimic benign lesions and cannot be definitively ruled out.

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- **Hyperechoic pancreas** – This finding is suggestive of pancreatic fibrosis, possibly secondary to chronic pancreatitis. A TLI is recommended to rule out exocrine pancreatic insufficiency (EPI), especially if clinical signs (weight loss, diarrhea, etc.) are present.
- **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.

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SECONDARY FINDINGS

- **Hyperechoic splenic nodules** – most consistent with benign myelolipomas. Other differentials such as fibrosis or calcification caused by old hematomas or infarcts, chronic inflammation, granulomatous disease or metastatic disease cannot be ruled out, but are considered less likely.
- Age related kidney changes with mild pyelectasia and cortical cysts in the left kidney

REFERRING VET

Dr. Krstevski

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

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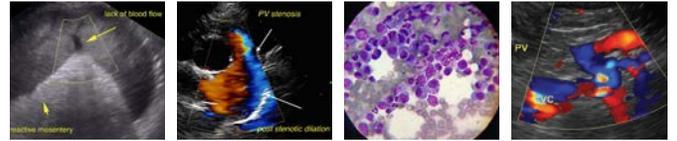
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First recommendation for this patient is to rule in or out diabetes mellitus versus stress hyperglycemia. Therefore, recommendations include a urinalysis and, if indicated based on urinalysis results, urine culture are recommended. If protein is present in an otherwise quiet sediment, protein quantification with a urine protein to creatinine ration is recommended.

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If glucosuria is present at the same time as hyperglycemia, that is a stronger criteria for a true diabetes mellitus. However, without supporting clinical signs, a recheck blood glucose can be planned and/or a Fructosamine can be evaluated.



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Given this patient's sodium to potassium ratio and mildly increased BUN, A baseline cortisol is recommended. If baseline cortisol is less than 2, a full ACTH stimulation test is recommended to rule out hypoadrenocorticism versus early emerging kidney disease in this patient.

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Given the pancreatic changes combined with possibly new diabetes, ruling out exocrine pancreatic insufficiency is recommended with a gastrointestinal malabsorption panel (including cobalamin, folate, TLI and PLI) to Texas A&M GI Laboratory.

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Finally, while the liver appearance trends towards the benign, a fine needle aspirate of the liver nodules could be considered to rule out more serious infiltrative disease if patient's coagulation status is appropriate.

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Three view thoracic radiographs are recommended for further assessment of cardio-pulmonary status as well as to further evaluate for any evidence of metastatic disease, if not recently evaluated.

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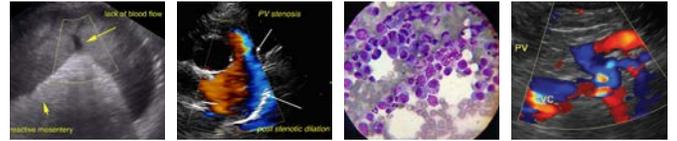
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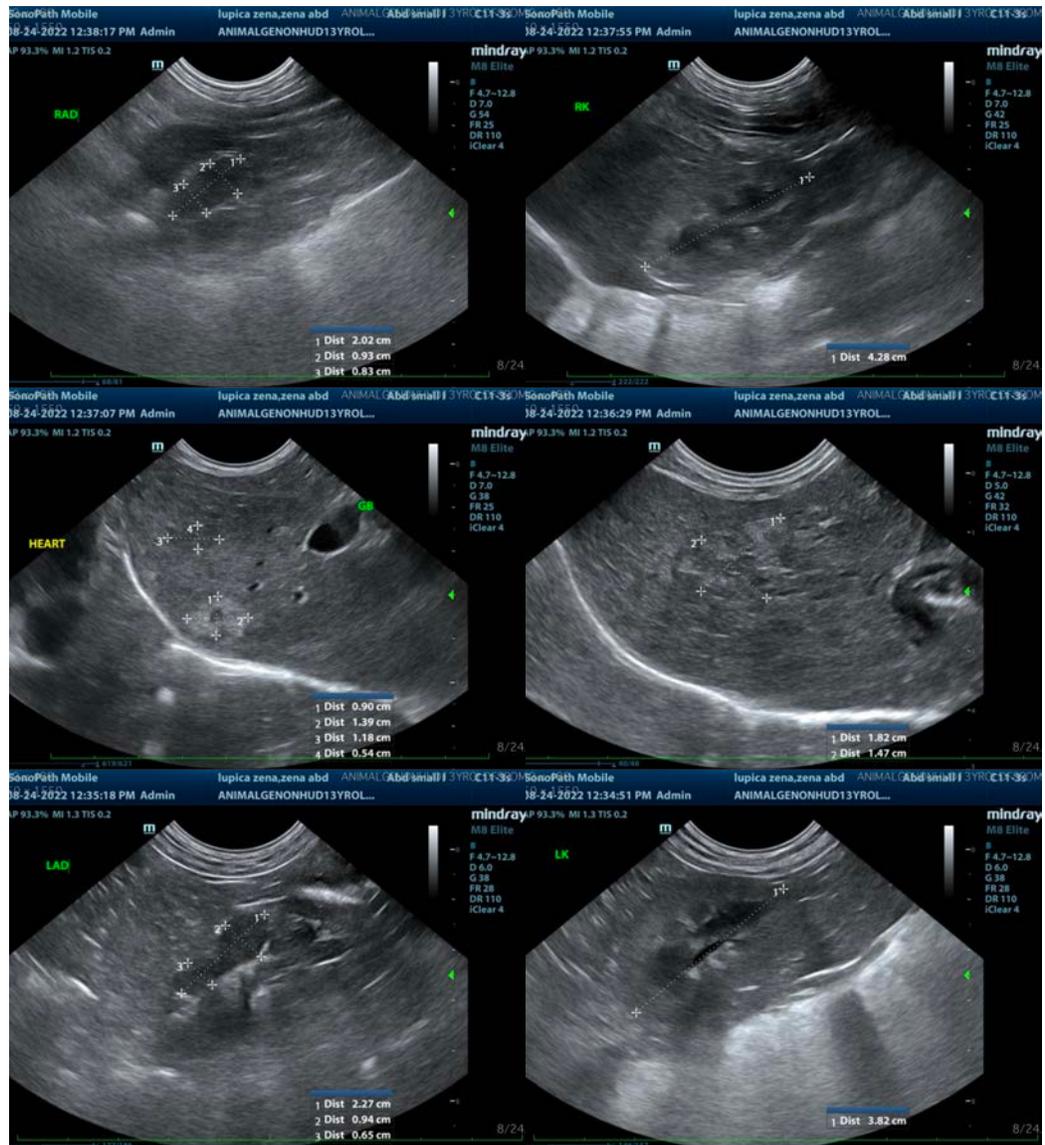
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The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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