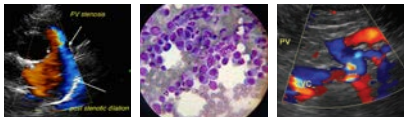
IMAGING PERFORMED BY

IntraPet.com



SonoPath

Clinical Sonography & Telecytology

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DATE

7/12/23

PATIENT

Midnight Hudson

SPECIES

Canine

BREED

Mixed

SEX

Spayed Female

AGE

5/18/09

WEIGHT

15 Pounds

INTERPRETED BY

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

HOSPITAL NAME

Airpark AH

REFERRING VET

Dr. Gibson

INVOICE

43938

PRESENTING CLINICAL SIGNS

PU/PD starting 4/27/23: pet will drink to the point of regurgitating. Not particularly polyuric per o.
Rule out renal, dm, cushings, uti, other/open. Cefpodoxime abx course for borderlin uti on UA did not resolve symptoms. Seen again 6/6/23 and another urine run- imaging recommended after that.

Current Medications: None listed.
Lab Results: Collection Free Catch- Color Pale Yellow Green, Clarity Clear, Specific Gravity- 1.018, 1.020 1.038, pH- 8.0, 9.0, 7.0, Urine Protein- neg, TR Glucose- neg, Ketones- neg, Blood / Hemoglobin neg 25, 50, Bilirubin- neg, Urobilinogen- norm, Leukocyte Esterase- neg 25, White Blood Cells <1 /HPF, 3 /HPF 2 /HPF, Red Blood Cells <1 /HPF, 1 /HPF, <1 /HPF, Bacteria, Cocci None detected. Chem 21/CBC/T4-FT4 all wnl, neg 4dx fecal on 4/27/23. UA - boderline uti.
Date of Previous IntraPet Ultrasound: No previous.
Sedation: Not required to complete full diagnostic ultrasound.
Stat Report: Not requested.
Imaging Performed By: Stephanie Warga RDCS, RVT.

ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN

Urinary System

The urinary bladder is moderately distended with anechoic urine. The Bladder wall, 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.

The left kidney has a normal shape and size (4.39 cm). Overall echogenicity is slightly hyperechoic with mildly decreased corticomedullary distinction and a typical 1:3 cortex:medulla ratio. There is no evidence of focal perinephric inflammation or effusion. There is no evidence of pyelectasia, nephroliths, infarcts or hydroureter. Renal vasculature is normal.

The right kidney has a normal shape and size (3.75 cm). Overall echogenicity is slightly hyperechoic with mildly decreased corticomedullary distinction and a typical 1:3 cortex:medulla ratio. There is no evidence of focal 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 0.68 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 right adrenal gland is normal in size measuring 0.59 cm at the caudal pole. It is observed in its normal position between the cranial aspect of the right kidney and the caudal vena cava. It is normal in appearance (uniformly hypoechoic) and shape with 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 borderline large and irregular in shape. The parenchyma is homogenous echotexture. The visible portions of the vasculature and biliary tract appear normal. There is an area of the left liver that appears somewhat rounded with focal cystic areas, creating the suggestion of an ill-defined/subtle cystic mass effect measuring 4.56 cm x 3.58 cm.

The gall bladder lumen is moderately distended. The wall of the gall bladder is not thickened and has a smooth mucosal surface. There is a moderate amount of non-organized echogenic debris. The cystic and common bile ducts are normal/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. Duodenum wall measures 0.47 cm. Jejunum wall measures 0.32 cm. 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 left limb of the pancreas is prominent and hypoechoic as compared to the surrounding isoechoic 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.

ULTRASONOGRAPHIC FINDINGS

- Mildly reduced corticomedullary distinction in both kidneys – The bilateral renal findings are consistent with age-related change.

- Prominent, mottled left limb of the pancreas – The pancreatic changes are most consistent with age-related parenchymal remodeling, potentially secondary to a prior inflammatory episode, early fibrosis or chronic pancreatitis.

- Focal ill-defined hyperechoic/cystic region of the left liver – Findings are concerning for an ill-defined mass effect. This could be consistent with a cystadenoma, adenoma, an area of hyperplasia, etc. A neoplastic lesion seems less likely but is possible.

- Moderate gallbladder debris – The significance of the aggregated gallbladder debris is unclear. This could represent an early mucocele, cholestasis, or may be secondary to fasting but seems unlikely to be causing a current issue. Recommend continued monitoring.

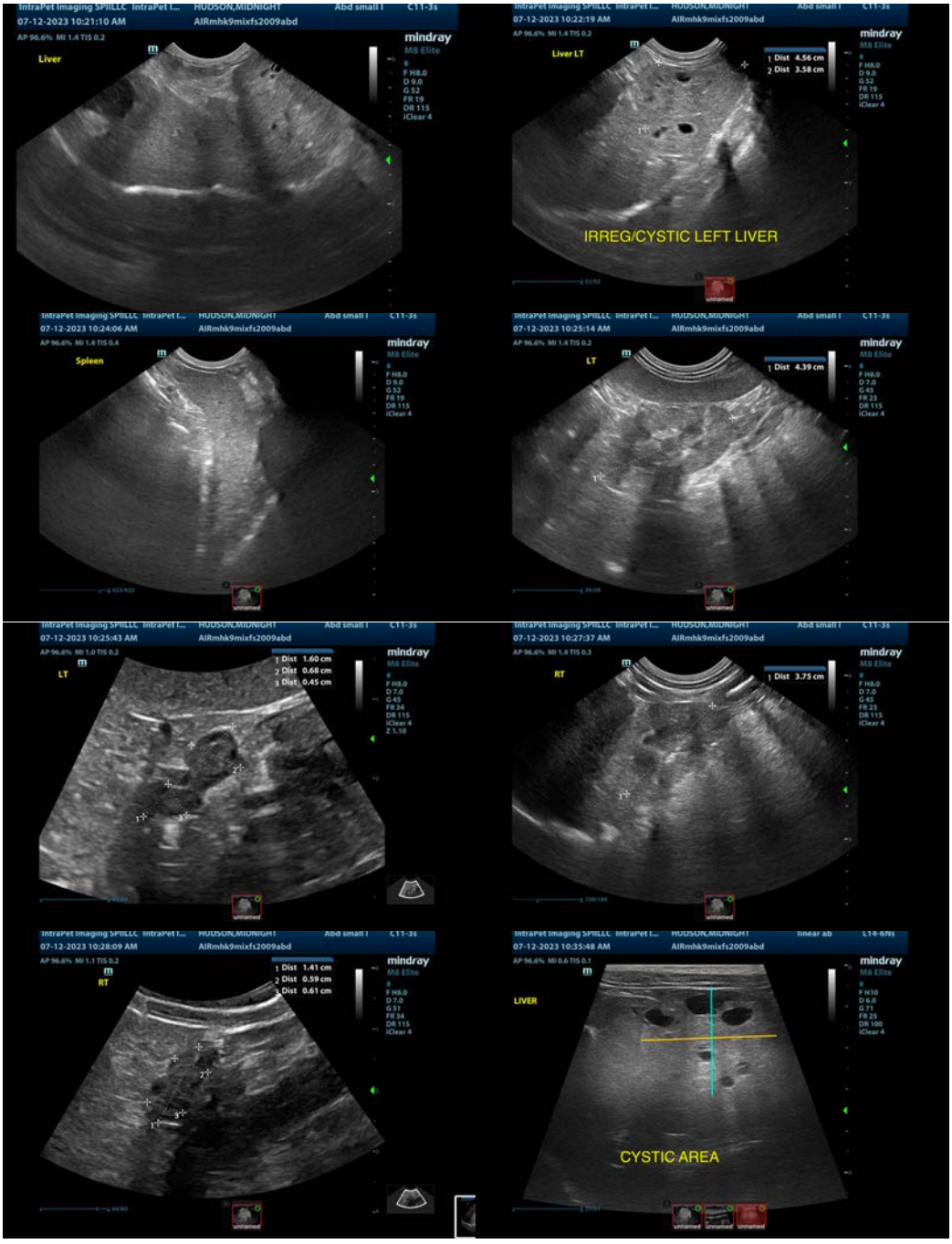
INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

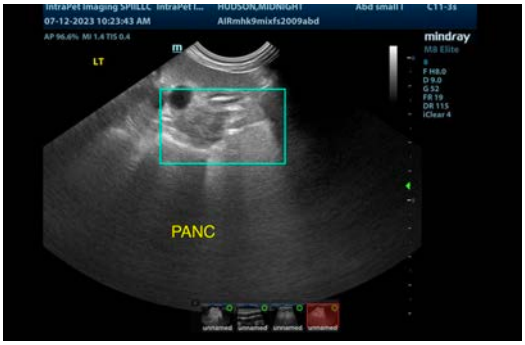
The changes on today's scan are relatively mild. There is a rounded, slightly hyperechoic region on the left liver, which has a cluster of cystic areas. This area has a slightly different appearance to the parenchyma of the remainder of the liver, creating the appearance of an ill-defined mass effect. This could be an area of hyperplasia, a benign cystadenoma, an adenoma, less likely this could be an ill-defined primary hepatic mass lesion such as a carcinoma, etc. A fine needle aspirate of a more solid area of this liver could be considered. Additionally, a contrast CT scan could better evaluate the liver globally. This could result in PU/PD, but could just as likely be an incidental finding at this time.

The changes observed associated with the kidneys are most consistent with chronic age related renal changes. Based on the information provided, a concentrated urine sample (USG 1.038) was obtained, making the likelihood of significant renal disease lower.

An obvious cause for the symptoms described is not observed. The urine samples obtained were typically not concentrated but not hyposthenuric, so I might take a step back and have the owner quantitate water intake. Additionally, I would consider 3-view thoracic radiographs to evaluate if regurgitation or dysphagia could be an issue. Below are my general recommendations and a checklist for workup and further evaluation of a pet with PU/PD:

1. Diabetes Mellitus
2. Chronic Renal Disease/Renal Failure (can present pre-azotemic, especially in dogs, but expect the BUN & creatinine not to be at the low end of the reference range)
3. Hypercalcemia
4. Urinary tract infection
5. Iatrogenic Disease due to medications (diuretics, phenobarbital, KBr; diets either high in salt [such as S/D] or very low in protein (such as U/D))
6. Hyperthyroidism
7. Hypokalemia
8. Liver Disease (hepatic encephalopathy may be a mixed primary PU and PD)
9. Pyelonephritis
10. Polycythemia
11. Renal Tubular Diseases (glycosuria or Fanconi & Fanconi-like syndromes or RTA)
12. Hyperadrenocorticism (may be a mixed primary PU and PD)
13. Hypoadrenocorticism (either Addison's or hypocortisolism)
14. Paraneoplastic Syndromes (particularly splenic hemangiosarcoma?)
15. Pericardial Effusion
16. Pyometra (including stump pyometra in spayed dogs)
17. Chronic Partial Urinary Obstruction or Post-Obstructive Diuresis
18. Pheochromocytoma
19. Psychogenic Polydipsia (as in a true behavior disorder with a compulsive element)
20. Primary Non-Medical Polydipsia (aka "I drink a lot because I like it or I engage in activities that promote it, but that doesn't mean I'm sick")
21. Primary Nephrogenic Diabetes Insipidus (Congenital Nephrogenic Diabetes Insipidus, other diseases that cause primary PU other than Congenital Diabetes Insipidus would be considered Acquired Nephrogenic Diabetes Insipidus)
22. Atypical Cushing's and SARDS
23. Central Diabetes Insipidus


Liver
Liver LT
1 Dist 4.56 cm
2 Dist 3.58 cm
IRREG/CYSTIC LEFT LIVER
Spleen
LT
1 Dist 4.39 cm
LT
1 Dist 1.60 cm
2 Dist 0.68 cm
3 Dist 0.45 cm
RT
1 Dist 3.75 cm
RT
1 Dist 1.41 cm
2 Dist 0.59 cm
3 Dist 0.61 cm
LIVER
CYSTIC AREA



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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