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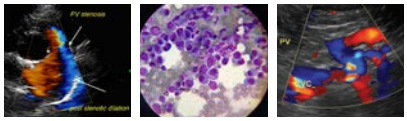
IntraPet.com



SonoPath
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DATE

6/28/23

PATIENT

Lucy Allyn

SPECIES

Canine

BREED

Sheltie

SEX

Spayed Female

AGE

8/11/16

WEIGHT

30 Pounds

INTERPRETED BY

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

HOSPITAL NAME

Airpark AH

REFERRING VET

Dr. Owens

INVOICE

43520

PRESENTING CLINICAL SIGNS

Lifelong history of abnormal neurologic episodes, pacing, stumbling, licking, diagnosis remains open, hypercholesterolemia, suspect familial. On hypoallergenic diet and slowly changing over to GI lowfat diet for hypercholesterolemia. Leaking urine in her sleep, PU/PD per owner for 1 month- UA shows proteinuria, elevated UPC at 2.9.

Current Medications: Just started Benazepril at 5 mg PO SID last week for proteinuria. Omeprazole 10 mg PO SID in PM, Tylan Powder 1 1/16 tsp on food BID long term for antibiotic responsive diarrhea
Proviable capsules daily
Lab Results: Severe hypercholesterolemia- 782, Proteinuria- UPC 2.9
Date of Previous IntraPet Ultrasound: No previous.
Sedation: Not required to complete full diagnostic ultrasound.
Stat Report: Not requested.
Imaging Performed By: Rachel Brilhart, RDMS.

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 (5.61 cm). The cortex is of increased echogenicity. Adequate corticomedullary distinction and a typical 1:3 cortex:medulla ratio is present. 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 (5.88 cm). The cortex is of increased echogenicity. Adequate corticomedullary distinction and a typical 1:3 cortex:medulla ratio is present. 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 0.72 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 0.61 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 subjectively normal in size, and hyperechoic 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. No focal nodules or cystic lesions are observed.

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 0.36 cm. Jejunum wall measures 0.34 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 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.

ULTRASONOGRAPHIC FINDINGS

- Hyperechoic cortical region of both kidneys – Findings could be consistent with interstitial nephritis, early renal disease, etc.

- Hyperechoic, heterogeneous liver – 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.

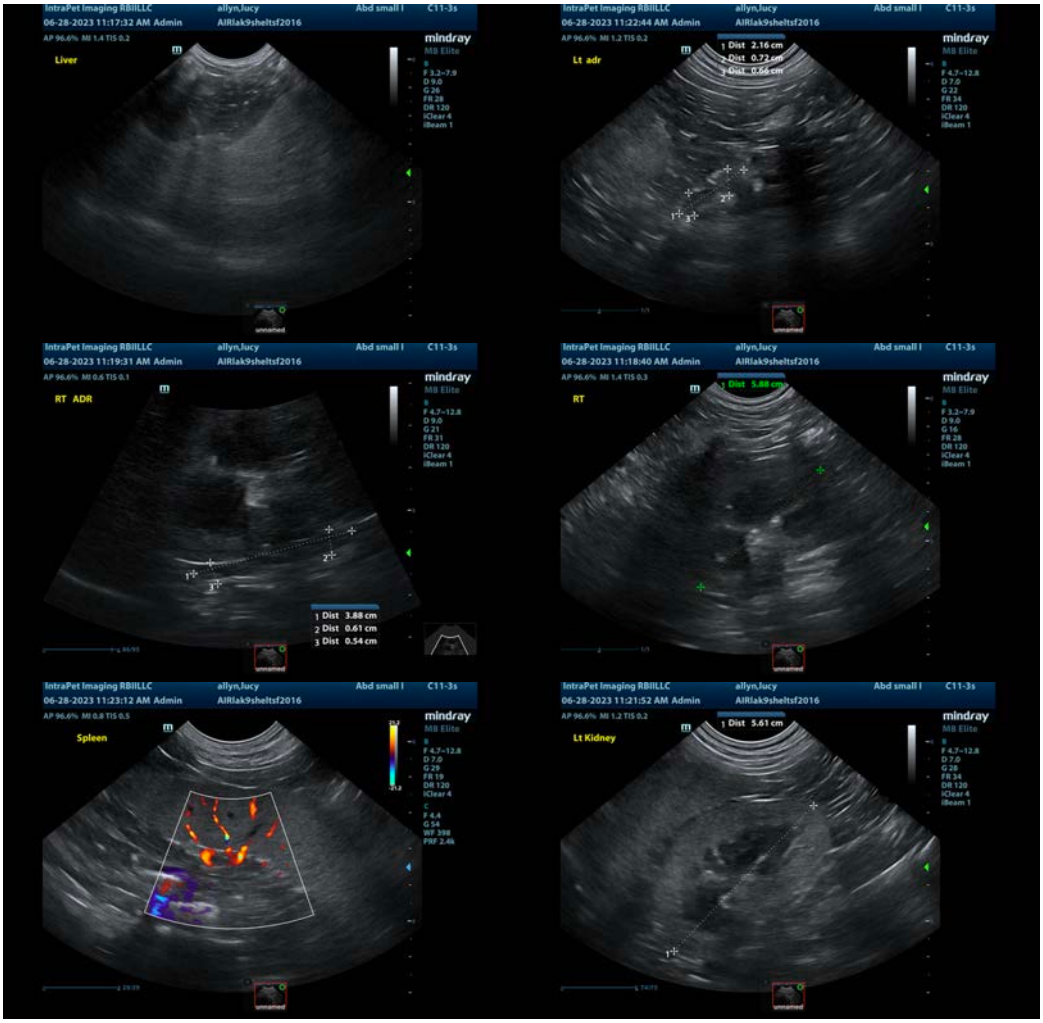
- Moderate gallbladder debris – The significance of the aggregated gallbladder debris is unclear. This could represent an early mucocele, cholestasis, or may be secondary to fasting but seems unlikely to be causing a current issue. Recommend continued monitoring.

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Minor changes are noted associated with the kidneys, and the liver appears somewhat heterogeneous. These are non-specific findings. If there is no tubular involvement in the current renal disease, then PU/PD should not be a significant symptom. Consider other potential causes as well. Additionally for proteinuria I will typically screen for infectious disease (I like NC State's vector borne disease lab's canine comprehensive profile), and you could consider consultation with a veterinary nutritionist to formulate a diet that is both hypoallergenic and low-fat (I've used University of Tennessee's nutrition service in the past).

An obvious lesion responsible for the reported increase in thirst and urination was not visualized. Some issues such as early renal disease, Cushing's disease, behavioral, neurologic, dietary, electrolyte disturbances etc.. are not able to be diagnosed with ultrasound alone. These can be challenging cases. The top 10 differentials can be ruled in/out with routine bloodwork, urinalysis and culture, several more can be evaluated with a good history and imaging. Unfortunately, as you work your way down the list the differentials become harder to definitively diagnose. This is the differential list I start with.

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



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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