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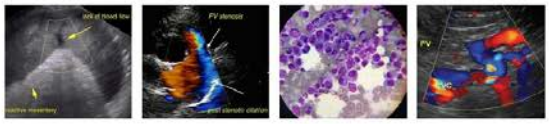

IMAGING PERFORMED BY
pawsonography@gmail.com 530-786-8340

PATIENT

Dorothy Alexander

SPECIES

Canine

BREED

Chihuahua

SEX

Spayed Female

AGE

13 Years

WEIGHT

14 Pounds

INTERPRETED BY

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

IMAGING PERFORMED BY

Loetitia Saint-Jacques, LVT

HOSPITAL NAME

MountainView AH

REFERRING VET

Dr. Bridget Landon

INVOICE

43406

DATE

6/22/23

PRESENTING CLINICAL SIGNS

Patient has a history of isosthenuria and inappropriate elimination in the house ucort creat ratio was <34 2/2023 however acth stim test was positive for HAC 5/2023 Insulin growth factor negative MEDS vetprofen 25 mg 1/2 t po bid gabapentin 50 mg/ml 0.65 ml po bid

Abnormal PE/Chem/CBC/UA Results: Insulin-like Growth Factor 1 (RIA) 26 [4-95] nmol/L Cortisol, Baseline 222 H [15-110] nmol/L Cortisol 2hr post ACTH 651 H [220-550] nmol/L February: elevated cholesterol hx of persistent isosthenuria with negative culture trace urine protein pu/pd at home

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 (3.12 cm) with a hyperechoic cortex and occasional small pinpoint non-obstructive nephroliths and significant pyelectasia at 0.44 cm. Overall echogenicity is normal with adequate 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 infarcts or hydroureter. Renal vasculature is normal.

The right kidney has a normal shape and size (3.72 cm) with a hyperechoic cortex and occasional small pinpoint non-obstructive nephroliths and significant pyelectasia at 0.53 cm. Overall echogenicity is normal with adequate 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 infarcts or hydroureter. Renal vasculature is normal.

Adrenal Glands

The left adrenal gland is normal in size measuring 0.60 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 0.50 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. The spleen echotexture is heterogenous and mildly mottled, the splenic capsule is smooth with no irregularities. The blood flow through the hilus and splenic parenchyma appears normal. There is a hypoechoic nodule visualized within the splenic parenchyma measuring 0.49 cm in diameter.

Liver

The liver is subjectively normal in size, and echogenicity with smooth peripheral margins. The parenchyma is homogenous echotexture. The visible portions of the vasculature and biliary tract appear normal. No focal nodules or cystic lesions are observed.

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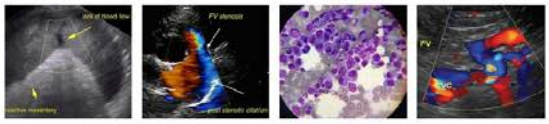

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The gall bladder lumen is moderately distended. The wall of the gall bladder is not thickened and has a smooth mucosal surface. There is a moderate amount of non-organized echogenic debris. The cystic and common bile ducts are normal/not visible.

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. Jejunum wall measures 0.26 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 area of 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.

Other

The right auricle and pericardium were visualized and were unremarkable. No obvious pathology is visualized. If cardiac function evaluation is desired a full echocardiogram is warranted.

ULTRASONOGRAPHIC FINDINGS

- Abnormal kidneys with hyperechoic cortex and significant bilateral pyelectasia – Pyelectasia of the kidney(s)could be consistent with pyelonephritis, chronic renal disease, secondary to PU/PD or fluid therapy (if applicable), other. The changes observed with the kidneys are non-specific but possibly consistent with interstitial nephritis.
- Mildly mottled spleen with a hypoechoic nodule – There is a non-cavitated, hypoechoic splenic nodule visualized. Differentials include lymphoid hyperplasia, extramedullary hematopoiesis, infiltrative neoplasia, inflammation, other. Cytology or histopathology would be necessary to get a definitive diagnosis.
- 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.

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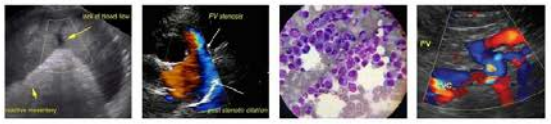

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INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Both kidneys appear somewhat irregular with a hyperechoic cortex and significant pyelectasia with no evidence of obstructive disease visualized. Recommend a blood pressure, urinalysis and culture as a baseline. Based on these findings, I would be concerned that renal disease could be associated with the isosthenuria reported. Additionally, you could consider evaluation of an SDMA and a urine protein to creatinine ratio.

There is a hypoechoic nodule visualized associated with the spleen and mild mottling. Options moving forward for further evaluation would include a fine needle aspirate or continued monitoring with ultrasound.

The relatively normal appearing adrenals and normal cortisol to creatinine ratio make a diagnosis of Cushing's less likely, although not impossible. These are some considerations when further evaluating for PU/PD.

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

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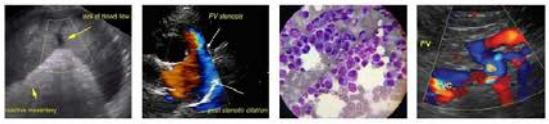

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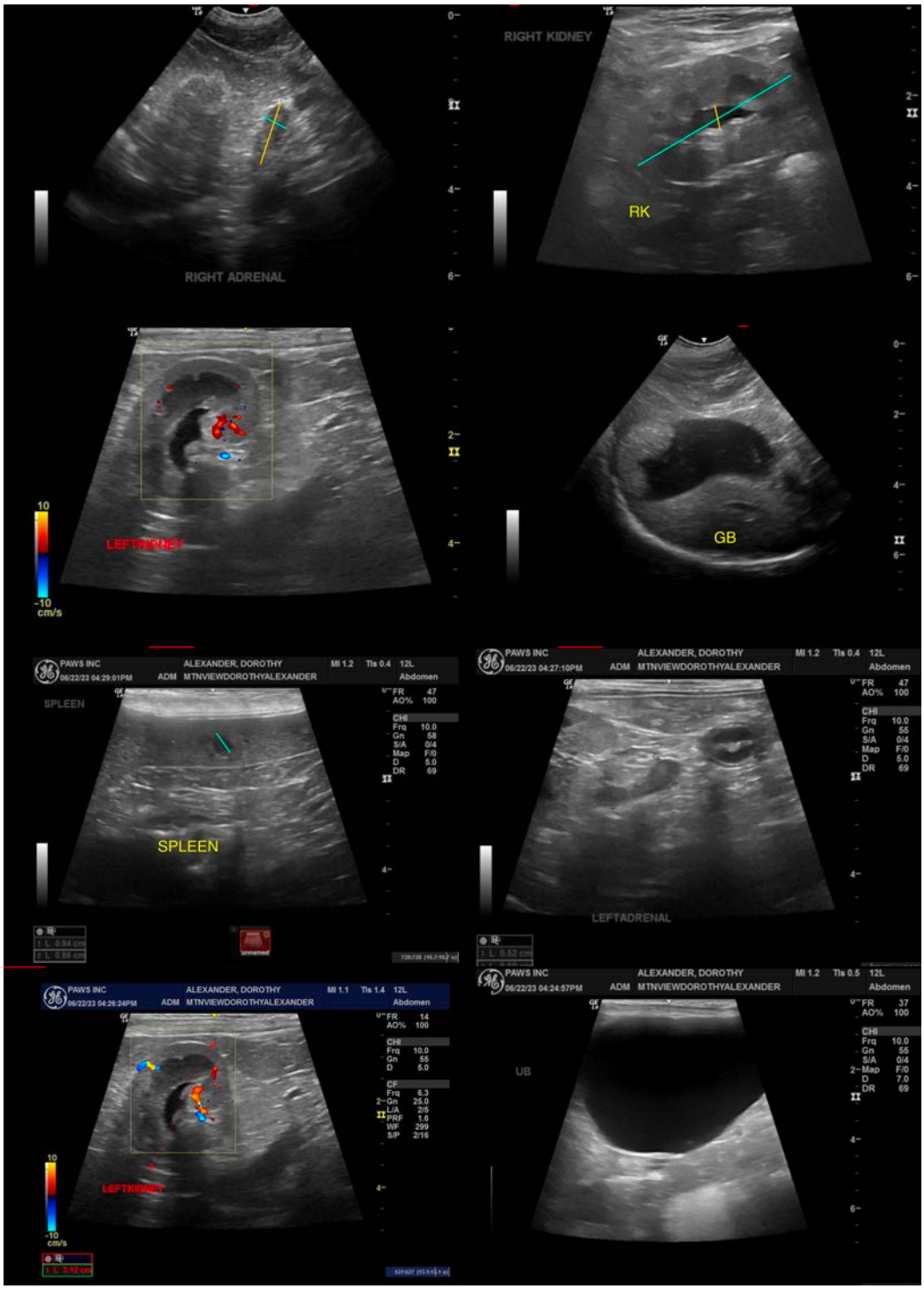

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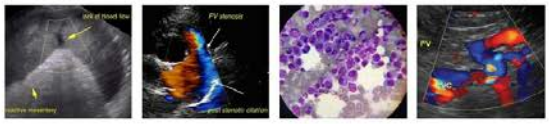

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The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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.

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

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