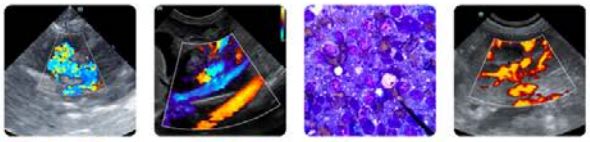


PATIENT

Jojo Bruce

SPECIES

Canine

BREED

Mixed

SEX

Spayed Female

AGE

9

WEIGHT

71.2

INTERPRETED BY

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

IMAGING PERFORMED BY

Shane Stafford

HOSPITAL NAME

West Newton Animal Clinic

REFERRING VET

Dr. Brandon Holmes

INVOICE

75975

DATE

6/17/26

PRESENTING CLINICAL SIGNS

Jojo, a 10-year-old female canine, presented for not feeling well for the last several months. There has been a significant increase in water consumption and a subsequent increase in the frequency and volume of urination, including new incidents of inappropriate urination inside the house. Her tail carriage has been lower than normal during this time. Her energy level is decreased; she is reluctant to go up steps or get into vehicles, and she tires easily and pants heavily during short walks. Her appetite has also decreased, and it takes her a long time to eat her meals. There has been no vomiting or diarrhea. Jojo has a history of allergies and is fed a Hill's prescription diet. She is on Bravecto for flea and tick prevention and is due for another dose soon.

Abnormal PE/Chem/CBC/UA Results: - Primary problem is polydipsia (increased thirst) and polyuria (increased urination) with isothenuria (dilute urine). - Differentials include Cushing's disease, chronic kidney disease, thyroid dysfunction, an occult (hidden) urinary tract infection, and Lyme disease. Neoplasia is also a possibility. - Mobility issues and lethargy are likely secondary to the primary underlying disease process. - Bilateral nuclear sclerosis is an age-related change. Labwork is attached below

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 (6.16 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 pyelectasia, nephroliths, infarcts or hydroureter. Renal vasculature is normal.

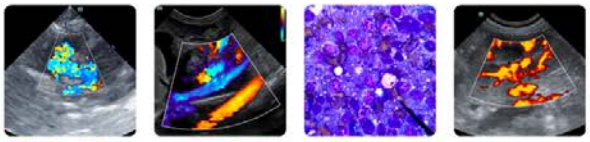
The right kidney has a normal shape and size (6.97 cm) with mild pyelectasia at 0.34 cm. Overall echogenicity is normal with adequate corticomedullary distinction and a typical 1:3 cortex:medulla ratio. There is no evidence of focal perinephric inflammation or effusion. There is no evidence of nephroliths, infarcts or hydroureter. Renal vasculature is normal.

Adrenal Glands

The left adrenal gland is borderline plump, measuring 0.62 cm at the cranial pole and 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 1.17 cm at the cranial pole and 0.63 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



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The spleen is subjectively normal in size (2.08 cm), 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 echogenicity 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. Jejunum wall measures 0.34 cm. Visualized peristalsis appears appropriate. There were no focal lesions consistent with obstruction or a mass effect observed.

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

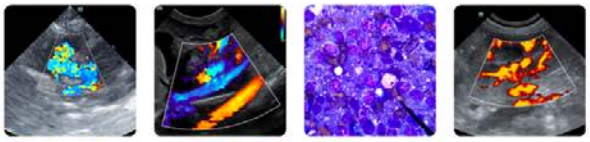
Evaluation of the peritoneal cavity did not reveal any evidence of effusion, or subjective lymphadenomegaly. The Medial iliac nodes appear normal and there was no evidence of a caudal aortic thrombus at the bifurcation. The omentum is of normal uniform echogenicity.

ULTRASONOGRAPHIC FINDINGS

- 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



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The liver subjectively appears heterogeneous. No distinct focal lesions are observed. Findings are suggestive of a general hepatopathy, possibly a vacuolar hepatopathy given the extreme elevation in ALP. A fine needle aspirate of the liver and pre- and post-prandial bile acids to assess liver function could be considered.

There is no evidence of significant adrenal gland enlargement. The left adrenal gland is somewhat plump. If classic signs of Cushing's are present, consider adrenal function testing.

A definitive cause for the PU/PD is not observed. The urine is hyposthenuric, making underlying renal disease less likely. There is very mild right-sided pyelectasia associated with the right kidney. Recommend a urine culture for further evaluation.

This is a list of differentials I would through when trying to evaluate patients 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, cushings 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.

- Diabetes Mellitus
- 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)
- Hypercalcemia
- Urinary tract infection
- 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))
- Hyperthyroidism
  Hypokalemia
- Liver Disease (hepatic encephalopathy may be a mixed primary PU and PD)
  Pyelonephritis
- Polycythemia
- Renal Tubular Diseases (glycosuria or Fanconi & Fanconi-like syndromes or RTA)
- Hyperadrenocorticism (may be a mixed primary PU and PD)
- Hypoadrenocorticism (either Addison's or hypocortisolism)
- Paraneoplastic Syndromes (particularly splenic hemangiosarcoma?)
- Pericardial Effusion
- Pyometra (including stump pyometra in spayed dogs)
- Chronic Partial Urinary Obstruction or Post-Obstructive Diuresis
- Pheochromocytoma
- Psychogenic Polydipsia (as in a true behavior disorder with a compulsive element)
- 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")
- 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)
- Atypical Cushing's and SARDS
- Central Diabetes Insipidus

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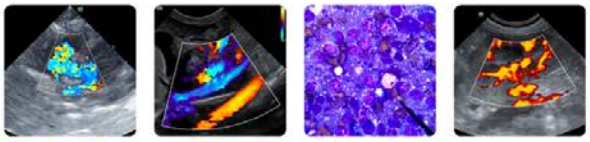

Clinical Sonography & Telecytology
Educational Teleconsultation Services™

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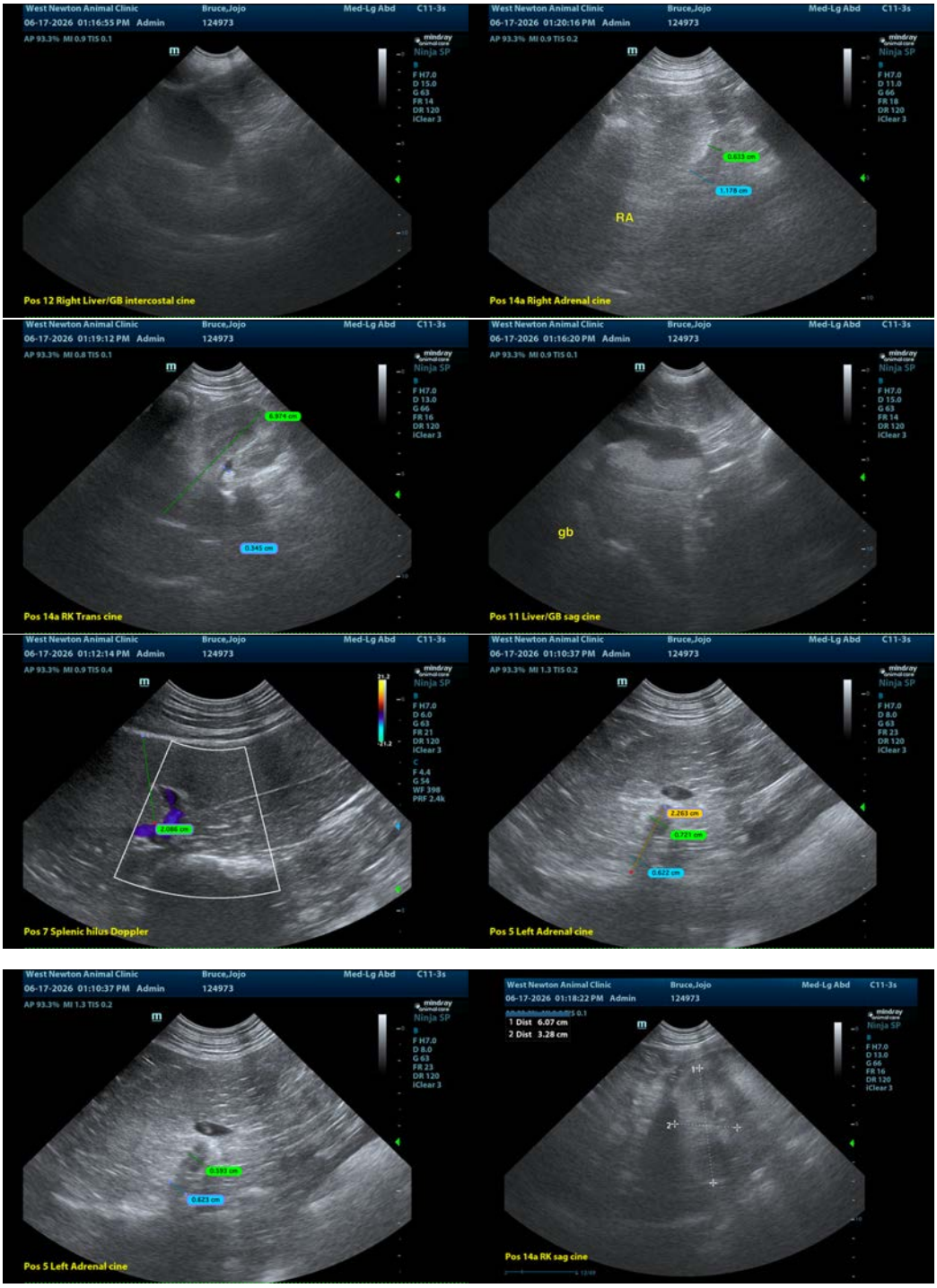

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The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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)

info@sonopath.com