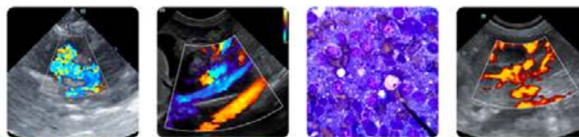

PATIENT

Shiloh Chojnowski

SPECIES

Canine

BREED

Beagle x

SEX

Neutered Male

AGE

12 Years 4 Months

WEIGHT

22.4

INTERPRETED BY

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

IMAGING PERFORMED BY

Dr. Miranda Fritz

HOSPITAL NAME

Richmond Animal Hospital

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PRESENTING CLINICAL SIGNS

Sudden onset of pu/pd 3 months ago. No v/d/c/s. App/energy normal. P has low grade HM - stage B1 based on last echocardiogram. Low USG but otherwise normal UA. Full bw done and wnl. LCC urine culture negative. Three view chest x-rays wnl. Baseline cortisol 1.8. Desmopressin trial - no improvement/no change in urine concentration. P generally anxious but not new or worse recently. Hx of IVDD but managed only on gabapentin 50mg BID. Also on OFA and glucosamine.

Abnormal PE/Chem/CBC/UA Results: CBC - wnl Chem - wnl USG consistently between 1.013 and 1.020, pH 5.0, no protein LCC urine culture- no growth Baseline cortisol - 1.8 Three view chest x-rays - nsf

ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN

Urinary System

The urinary bladder is moderately distended with anechoic urine. The Bladder wall appears diffusely thickened and slightly irregular, particularly in the apical region, measuring 0.39 cm. The region of the trigone, ureteral papillae and proximal urethra appear free of any mass lesions or calculi.

The prostate is normal in size (0.69 cm) and shape for this neutered male dog. The parenchyma is homogenous and the external margins are smooth. The prostatic urethra appears normal with no evidence of irregularity, invasion, mass effect or calculi.

The left kidney has a normal shape and size (4.42 cm) with occasional pinpoint cortical mineralizations. Overall echogenicity is slightly hyperechoic with mildly reduced 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 (4.01 cm). Overall echogenicity is slightly hyperechoic with mildly reduced 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.

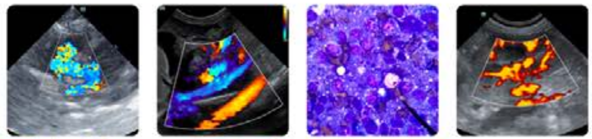
Adrenal Glands

The left adrenal gland is normal in size measuring 0.52 cm at the cranial pole and 0.48 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 0.55 cm at the cranial pole and 0.55 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 (1.71 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.



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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.

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 mild fluid. 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 0.35 cm. Jejunum wall measures 0.28 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

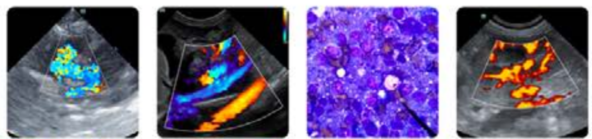
Evaluation of the peritoneal cavity did not reveal any evidence of effusion, or subjective lymphadenomegaly. The Medial iliac nodes appear normal and there was no evidence of a caudal aortic thrombus at the bifurcation. The omentum is of normal uniform echogenicity.

ULTRASONOGRAPHIC FINDINGS

- Mild age related change visualized associated with both kidneys.
- Thickened, irregular bladder wall, particularly in the apical region – The bladder mucosal changes could be consistent with cystitis or artifactual due to lack of adequate luminal distension. Bladder neoplasia cannot be ruled out but is considered unlikely in this patient.
- 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 bladder wall appears somewhat thickened and irregular and has the appearance most consistent with cystitis, although the recent urine culture is reported as negative. This could make an atypical neoplastic lesion more likely. If the culture is not current or is performed close to antibiotic therapy,



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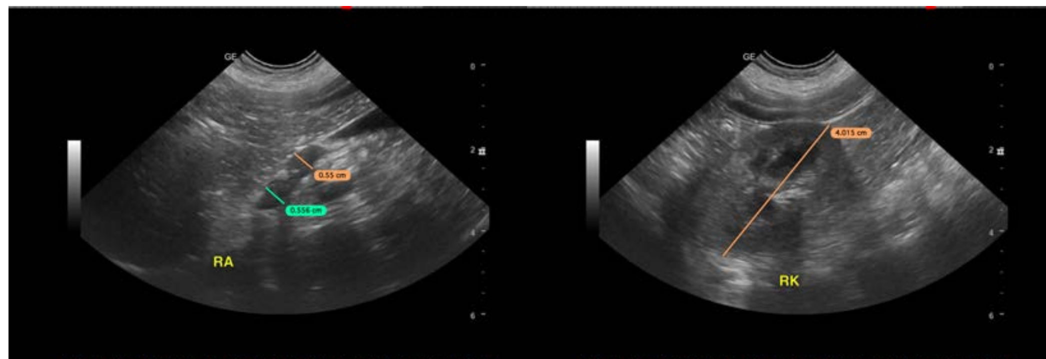
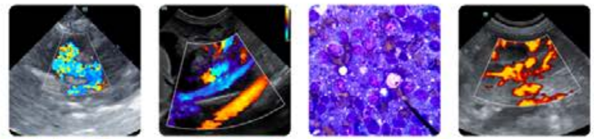
consider repeat culture. Otherwise, you could consider traumatic catheterization for cytologic evaluation.

The cause for the PU/PD is not readily apparent. Some issues such as early renal disease (mild renal changes observed), Cushing's disease, behavioral issues, neurologic issues, dietary changes, and electrolyte disturbances are unable 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 good history and imaging. Unfortunately, as you work your way down the list, 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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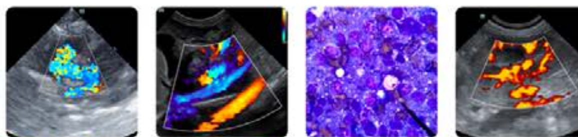

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The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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