**DATE PRESENTING CLINICAL SIGNS**

3/8/22 PU/PD since September. Cat is on Prednisolone, Cerenia and Famotidine. Cat is eating KD.

PATIENT

Hurricane Snowboots
Proctor

Current Medications: Cerenia 24mg ½ SID, Prednisolone 1mg daily to EOD, Famotidine 10mg ½ SID, Lactulose 1mL BID or PRN, Mirtazapine 1.8mg daily or PRN.

Lab Results: neutropenia, albumin 4.4. Urine dilute persistently. Multiple urine cultures negative. Date of Previous IntraPet Ultrasound: No previous.

Sedation: Not required to complete full diagnostic ultrasound.

Stat Report: Not requested.

SPECIES

Feline

ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN**BREED**

DSH

SEX

Neutered Male

AGE

3/19/11

WEIGHT

14.8 Pounds

INTERPRETED BY

Kathleen Sennello DVM,
MS, Diplomate ACVIM
(Small Animal Internal
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IMAGING PERFORMED BY

Rachel Brillhart RDMS

HOSPITAL NAME

Swancreek at
Greenbrier Vet

REFERRING VET

Dr. Hubbard

INVOICE

35966

Urinary System

The urinary bladder is moderately distended with mild primarily suspended echogenic debris present. 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 calculi. Echogenic debris of this type can be associated with small crystals, cellular debris and proteinaceous debris.

The left kidney has a normal shape and size (4.62 cm) with mild pyelectasia of 0.21 cm. Overall echogenicity is slightly hyperechoic with poor corticomedullary distinction and a typical 1:3 cortex:medulla ratio. There is no evidence of perinephric inflammation or effusion. There is no evidence of nephroliths, infarcts or hydroureter. Renal vasculature is normal.

The right kidney has a normal shape and size (4.59 cm) with mild pyelectasia at 0.14 cm. Overall echogenicity is slightly hyperechoic with poor corticomedullary distinction and a typical 1:3 cortex:medulla ratio. There is no evidence of perinephric inflammation or effusion. There is no evidence of nephroliths, infarcts or hydroureter. Renal vasculature is normal.

Adrenal Glands

The left adrenal gland is normal in size measuring 0.33 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 0.33 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 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 gallbladder lumen is moderately distended. The wall of the gall bladder is not thickened and has a smooth mucosal surface. Luminal contents are primarily anechoic. The cystic and common bile ducts are normal/not visible.

Gastrointestinal

The stomach contains minimal luminal contents. It measures at a normal thickness of <0.36cm 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. The duodenum measured as normal (between 0.13-0.38cm in wall thickness) and the jejunum measured as normal (between 0.15-0.36cm.) 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

- Echogenic debris in the urinary bladder – The echogenic debris in the bladder lumen could be consistent with cells, crystals, and/or mucus.
- Mildly reduced corticomedullary distinction in both kidneys with mild pyelectasia – The bilateral renal findings are consistent with age-related change. Pyelectasia of the left/right kidney could be consistent with pyelonephritis, chronic renal disease, secondary to PU/PD or fluid therapy (if applicable), other.

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

No large focal lesions are visualized today to explain the PU/PD reported. There is some debris within the urinary bladder. Recommend urinalysis and culture (I believe this has already been done).

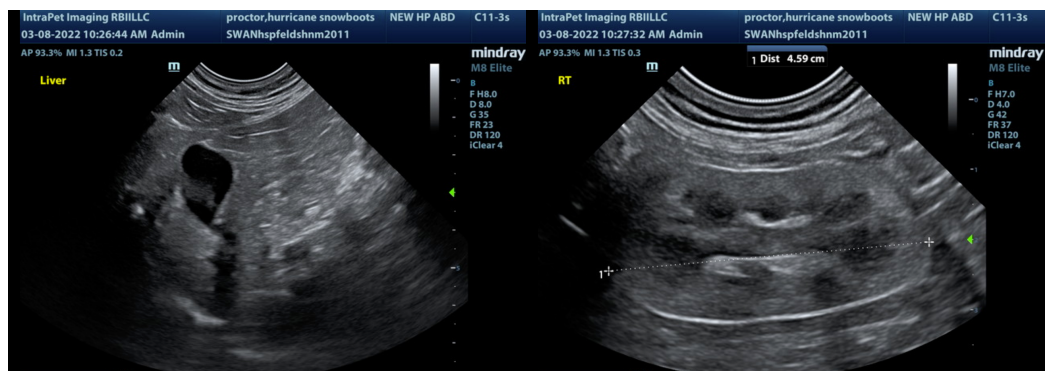
The changes in the kidneys are mild, and could be related to the increased thirst and urination reported. Recommend blood pressure evaluation.

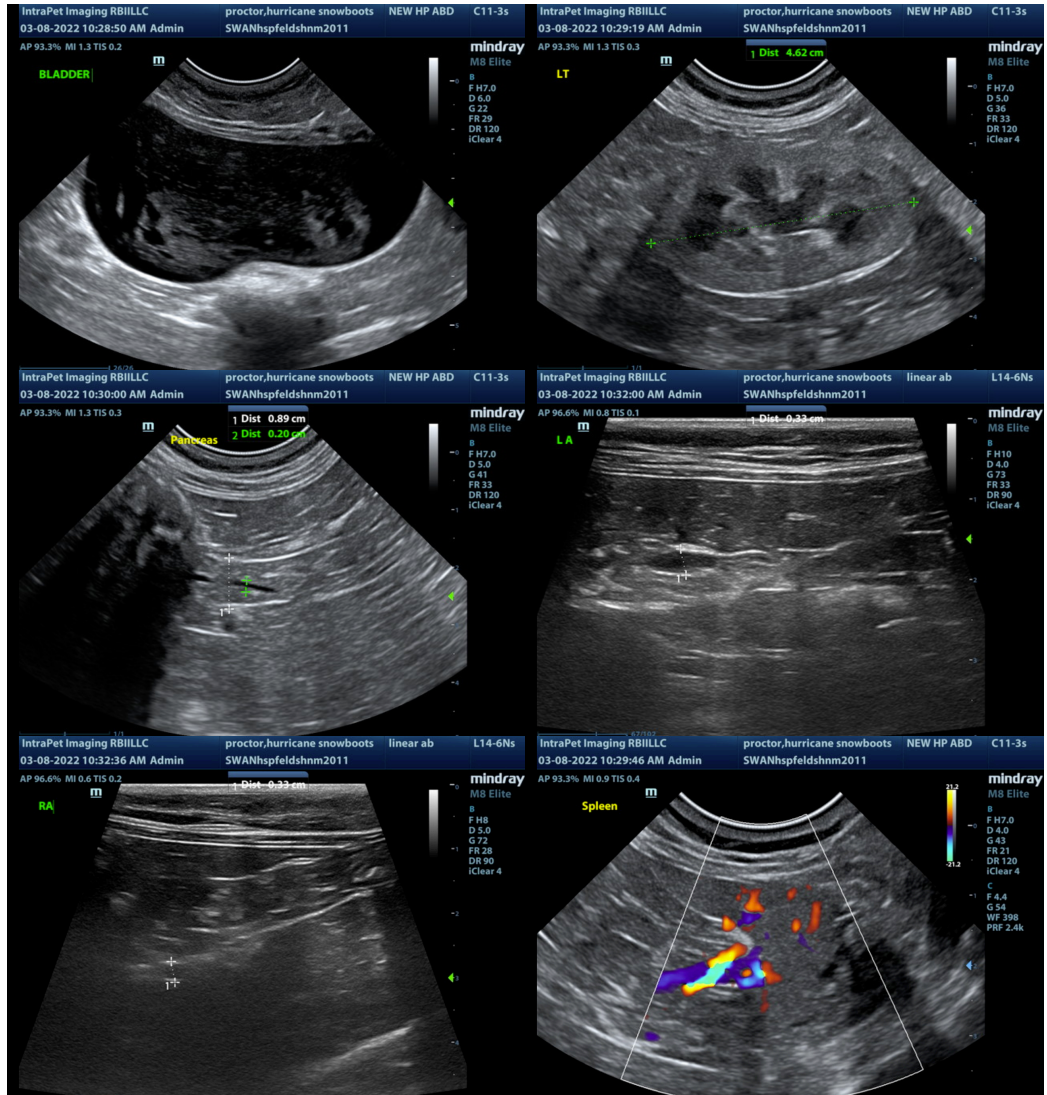
An obvious cause for the PU/PD reported is not visualized. Renal insufficiency is possible, and it is also possible that a low protein diet and steroid use is contributing somewhat. Below is a list of differentials for PU/PD, which I use most commonly in dogs, but can be applied to cats as well. Many causes such as early renal disease, Cushing's disease, behavioral disease, neurologic, dietary, electrolyte disturbances, etc. are not able to be diagnosed with ultrasound alone.

- (1) Hyperadrenocorticism (may be a mixed primary PU and PD)
- (2) Hypoadrenocorticism (either Addison's or hypocortisolism)
- (3) Hypercalcemia
- (4) Diabetes Mellitus

- (5) Liver Disease (hepatic encephalopathy may be a mixed primary PU and PD)
- (6) Pyelonephritis
- (7) Leptospirosis (can present without azotemia)
- (8) 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)
- (9) Hyperthyroidism
- (10) Hypokalemia
- (11) Pyometra (including stump pyometra in spayed dogs)
- (12) Renal Tubular Diseases (glycosuria or Fanconi & Fanconi-like syndromes or RTA)
- (13) Chronic Partial Urinary Obstruction or Post-Obstructive Diuresis
- (14) 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))
- (15) Pheochromocytoma
- (16) Polycythemia
- (17) Hypertension Acromegaly (expect these patients to have diabetes)
- (18) Paraneoplastic Syndromes (particularly splenic hemangiosarcoma?)
- (19) Pericardial Effusion
- (20) Atypical Cushing's and SARDS Psychogenic Polydipsia (as in a true behavior disorder with a compulsive element)
- (21) 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")
- (22) Psychogenic Polydipsia (as in a true behavior disorder with a compulsive element)
- (23) Acromegaly (expect these patients to have diabetes)
- (24) 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)
- (25) Central Diabetes Insipidus

**Keep in mind that diabetes insipidus is a VERY rare disorder and that water deprivation tests are rarely/if ever recommended-if possible consider referral to an internal medicine specialist if reaching that point





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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