

**DATE PRESENTING CLINICAL SIGNS**

9/22/22

In the past 2-3 months pet has been PUPD x 30 days. Had a dental cleaning with extractions 5/2022. Pt eats an all canned diet with some water added since post op dental. Stopped adding the extra water 2 weeks ago due to increased urination (outside litter box). Water intake from the bowl seemed to increase a ton. Urinating large amounts. Sunday 9/4 pt did not eat breakfast and seemed lethargic. Monday am (9/5) pt got SQ fluids, Cerenia & Famotidine and ate well. Pt is currently getting Cerenia 6mg PO, Gabapentin 25 mg PO and is eating. Still PUPD, drinks a lot.

PATIENT

Angus Elliott

SPECIES

Feline

Current Medications: Cerenia 6 mg PO, Gabapentin 25 mg PO BID since 9/5/22

Lab Results: NSF other than UA spG of 1.012. Preliminary US at DS showed changes in the kidneys consistent with age, thick area in GI (stomach) and hyperechoic liver.

BREED

DSH

Date of Previous IntraPet Ultrasound: No previous.

Sedation: Not required to complete full diagnostic ultrasound.

Stat Report: Not requested.

SEX

Neutered Male

ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN**Urinary System****AGE**

4/17/12

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.

WEIGHT

6.3 Pounds

The left kidney has a normal shape and size (3.38 cm). Overall echogenicity is slightly increased 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.

INTERPRETED BY

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

The right kidney has a normal shape and size (3.38 cm). Overall echogenicity is slightly increased 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.

IMAGING PERFORMED BY

Rachel Brilhart RDMS

Adrenal Glands**HOSPITAL NAME**

DocSide Veterinary Medical Center

The left adrenal gland is normal in size measuring 0.32 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. There are occasional hyperechoic foci noted, most consistent with small mineralizations.

REFERRING VET

Dr. Tierney

The right adrenal gland is normal in size measuring 0.32 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. There are occasional hyperechoic foci noted, most consistent with small mineralizations.

Spleen

The spleen is subjectively normal in size (0.72 cm in width at the level of the hilus), 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.

INVOICE

41538

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 mild and 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 uniform diameter with minimal fluid distension. Wall thickness is normal to slightly increased. Bowel loops follow a typical curvilinear path with distinct wall layering, but some areas display a prominent muscularis layer which does not display the typical 1:3 muscularis:mucosa layer ratio. Jejunum wall measures 0.24 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

- Subjectively mildly hyperechoic kidneys – The significance of this is unclear but could be an indicator of early renal disease.
- Pinpoint mineralizations in both adrenals – This can be a normal finding in older cats.
- Mildly prominent muscularis layer in the small intestine – The small intestinal wall changes could be consistent with an underlying inflammatory process. These types of changes can sometimes be seen in normal older cats. Correlate with clinical signs.

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Today's scan is largely normal. There may be a mild increase in echogenicity in the kidneys. Consider an SDMA level to further evaluate for the possibility of very early renal disease. Additionally, you could consider a blood pressure and urine protein to creatinine ratio to check for proteinuria.

The muscularis layer of the small intestine is very mildly prominent. This can be a normal finding in some older cats. If underlying GI disease is suspected you could consider a diet change to a hydrolyzed protein diet and consider a GI panel to Texas A&M for evaluation of a quantitative fPLI, TLI, cobalamin and folate to look

for further evidence of underlying GI disease.

An obvious lesion responsible for the reported increase in thirst and urination was not visualized. Some issues such as early renal 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.

Many of these differentials apply to dogs more than cats, but I think it is still useful. Also consider 3-view thoracic radiographs to establish a baseline.

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)

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Atypical Cushing's and SARDS

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.

Kathleen Sennello DVM,MS, Diplomate ACVIM (Small animal Internal Medicine)
kathleen.sennello@sonopath.com