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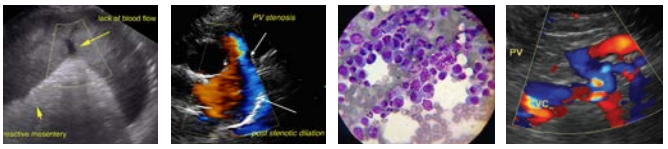

PATIENT
Staxx Erb

SPECIES
Canine

BREED
Pit Bull

SEX
Neutered Male

AGE
6 Years

WEIGHT
82 Pounds

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

IMAGING PERFORMED BY
Dr. Jack Reese

HOSPITAL NAME
Willow Run VC

REFERRING VET
Dr. Jack Reese

INVOICE
25439

DATE
9/15/21

PRESENTING CLINICAL SIGNS

Several week history of severe PU/PD - o reports is having accidents throughout house, drinking from toilets. Labwork showed hemoconcentration, hyposthenuria, normal ACTH stimulation test. Abnormal PE/Chem/CBC/UA Results: Hyposthenuria (1.005) on multiple urinary samples HCT >60% No other significant changes Concern for diabetes insipidus

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 prostate is normal in size 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 (7.5 cm). Overall echogenicity is normal with adequate corticomedullary distinction and a typical 1:3 cortex:medulla ratio. There is no evidence of 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 (6.37 cm). Overall echogenicity is normal with adequate corticomedullary distinction and a typical 1:3 cortex:medulla ratio. There is no evidence of 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 0.64 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 0.70 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 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 mild amount of non-organized echogenic debris. The cystic and common bile ducts are normal/not visible.

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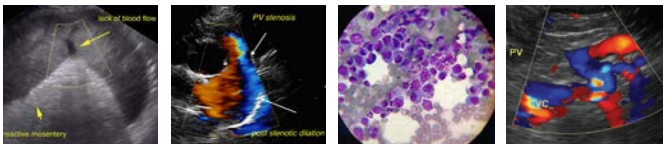

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Gastrointestinal

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. The duodenum measured as normal (between 0.3-0.5cm in wall thickness) and the jejunum measured as normal (between 0.2-0.47cm.) 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

- 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.

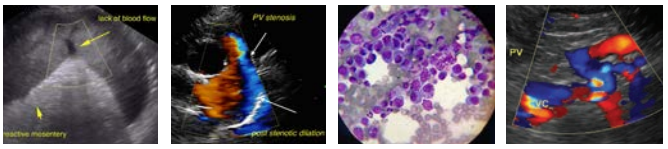
- Mild gallbladder sludge – The significance of the aggregated gallbladder sludge is unclear. This could represent an early mucocele, cholestasis, or may be secondary to fasting.

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

An obvious cause for the reported PU/PD is not observed. The liver does appear somewhat heterogeneous. This is a non-specific finding, which could be associated with liver disease or may be normal for this pet. Correlate findings with physical exam and lab work findings.

Red blood cell count is reported as >65%. If this is significantly elevated, this could be polycythemia rather than dehydration, which can cause PU/PD. Correlate with electrolyte evaluation to try to determine this. Additionally, if Cushing's is strongly suspected based on physical exam findings, then you could consider low-dose Dexamethasone test or testing for atypical Cushing's. The adrenal glands are relatively normal, but they are not always enlarged with an adrenal hormone excess.

There are numerous causes for PU/PD. If an obvious cause is not identified, then I typically follow a systemic approach to rule in or our causes until I am left with a diagnosis of diabetes insipidus, behavioral/psychogenic polydipsia or medullary washout, etc. At that point I recommend referral toa veterinary internal medicine specialist (or at any point actually). I will include my list of differentials below. I recommend urinalysis and culture and chest radiographs on all cases of PU/PD.



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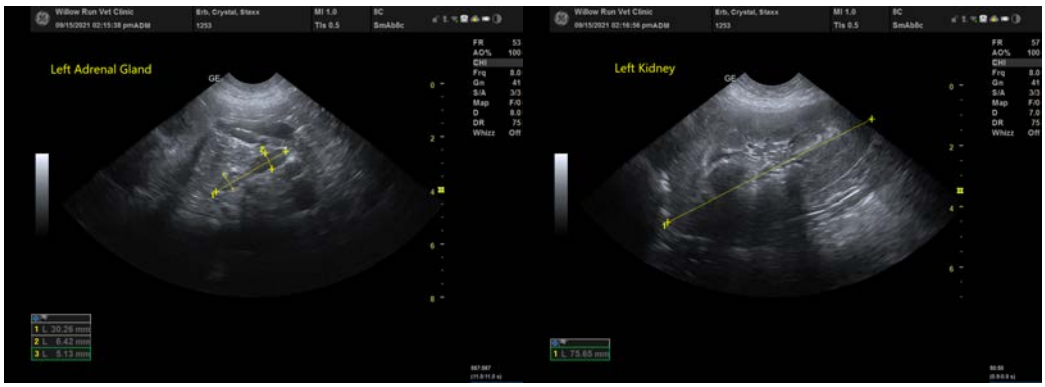
PU/PD list: Some of these can be ruled out immediately, as you work your way down the list these differentials are much more rare and difficult to diagnose.

(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.



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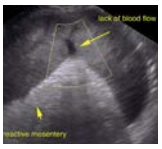
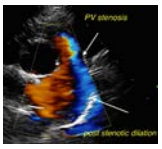
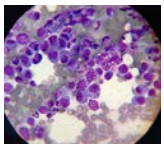
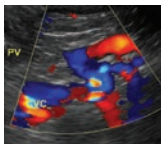

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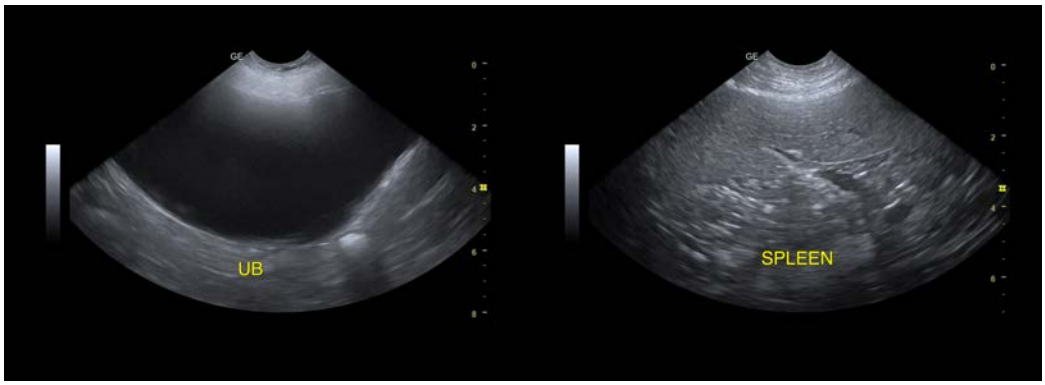

The information and recommendations provided are based on the images presented by the referring veterinarian. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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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