



**PATIENT**

Sadie Moss

**SPECIES**

Canine

**BREED**

Mixed Large Breed

**SEX**

Spayed Female

**AGE**

10 Years

**WEIGHT**

28.2 kg

**INTERPRETED BY**

Lisa Carioto, DVM,  
DVSc, Diplomate  
ACVIM

**IMAGING PERFORMED BY**

Dr. Jolee Stegemoller

**HOSPITAL NAME**

North Idaho AH

**REFERRING VET**

Dr. Jolee Stegemoller

**INVOICE**

36218

**DATE**

3/15/22

**PRESENTING CLINICAL SIGNS**

Has had epilepsy since 5 years old; treated with phenobarbital, levetiracetam, and CBD and has done very well with minimal dose change and normal bloodwork. Presented for wellness exam 3/11/22 and owner reported that she's been polydipsic and had vomited once the day before. The day of the exam, she was feeling well, and seemed herself. Submitted bloodwork for wellness screening/phenobarbital levels over the weekend. Came in for follow up exam 3/15/22 for vomiting over the last 24 hours, would only keep pills down but not food. Seemed more lethargic and was breathing heavily. Had an episode of pancreatitis about 5 years ago.

Abnormal PE/Chem/CBC/UA Results: Current medications: Phenobarbital 60mg q12h, levetiracetam ER 750mg BID, levothyroxine 0.6mg BID PE: Pendulous abdomen with organomegaly, no pain on palpation. Slow to stand (stiff in rear limbs), tachypnea with clear lung sounds Labs 3/11/22: CBC WNL, Chem - Glc 281, CI 103, ALT 293, AST 251, ALP 354, TT4 6.8 (6 hours post-pill), UA - USG 1.023, pH 8, negative urine protein, 3+ glucosuria, trace ketonuria, 0-2 WBC/hpf, WBC 0-2/hpf, occasional granular casts (0-1/lpf), pheno level 22.7 Labs 3/15/22: Chem - Glc 322, BUN 6, ALT 405, ALP 518, UA - USG 1.023, pH 7, 30mg/dL proteinuria, Glucose 3+, Ketones 15mg/dL, WBC >50/hpf, RBC 7/hpf, cocci and rods present Urine culture and specCPL pending. Radiographs show multiple radiopaque stones in urinary bladder, moderate-severe hip OA. Currently hospitalized on IV fluids, insulin, and antibiotic therapy.

**ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN**

**Urinary System**

The urinary bladder is inadequately filled, thereby making it difficult to measure or evaluate the wall thickness. Multiple cystoliths of variable size are present within the lumen, as well as a cystolith within the urethra. There is no evidence of a polyp or a mass. A proper evaluation of the mucosa is not possible. The cystolith within the urethra measures 0.42 cm in diameter x 0.50 cm. An image a few frames later shows a cystolith within the urethra; it is difficult to determine if this is the same one or if it is a second cystolith.

The left kidney is within normal limits in size for the patient's weight (7.8 cm). The capsule is smooth. Its overall architecture is preserved. However, the definition of the corticomedullary junction is exaggerated due to a hyperechoic line observed which traverses between the medulla and the cortex. The cortex is hyperechoic (i.e., it is isoechoic to the spleen). Mild diverticular mineralizations, in addition to a few small nephroliths are observed without signs of pyelectasia. A mild accumulation of fat is present within the pelvis. The surrounding mesentery is not hyperechoic. Blood flow is normal.

The right kidney is within normal limits in size for the patient's weight (7.14 cm). Similar findings to left kidney. Blood flow is within normal limits.

**Adrenal Glands**

The left adrenal gland measures 0.41 cm at the cranial pole, 0.50 cm at the caudal pole, and 2.68 cm in length. No abnormalities are noted with the gland's shape, overall architecture, echogenicity or echotexture. The phrenico-abdominal vein and surrounding vasculature and mesentery are unremarkable.

The right adrenal gland measures 2.4 cm in length. The caudal pole is slightly rounder than the cranial pole, possibly a nodule, but definitely not a mass. It measures 0.59 cm x 1.4 cm in length. The cranial pole measures 0.43 cm.

**Spleen**



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The spleen is within normal limits in size, architecture, echotexture, and echogenicity. It is hyperechoic to both the liver and renal cortex. The capsule is smooth. No abnormalities are observed with its vasculature, i.e. congestion and thrombi are not identified.

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**Liver**

Mild hepatomegaly is observed; this is a subjective finding. The liver is diffusely hyperechoic; it is isoechoic to the kidneys. Multiple hypoechoic nodules of variable size are observed diffusely throughout the parenchyma. One of the nodules measures 2.0 mm in length x 1.6 cm in diameter. There are no target lesions.

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The gall bladder wall appears to be within normal limits in thickness and echogenicity. There is a mild amount of sludge present. The cystic and common bile ducts are not dilated or tortuous.

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**Gastrointestinal**

The gastric wall and pylorus are normal in thickness. There is no loss of definition of the normal architecture of the layers of the stomach wall. No obvious abnormalities are observed with its peristalsis.

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The small intestinal wall thickness is within normal limits and there is no evidence of dilation. The definition of the wall layers is preserved. No abnormalities are noted with the duodenum. A loop of bowel with "odd" luminal contents was observed on one cine loop, between the stomach and spleen. The latter may be due to artifact, particularly if there is no history of ingestion of a foreign body. There were no abnormalities with the intestines cranial or caudal to the segment of intestine. A re-evaluation may be considered in 24 hours. The colonic wall is not thickened and mural detail is considered normal. There are no obvious signs of a mass, foreign body, infiltrative disease or an obstruction.

**WEIGHT**

28.2 kg

**Pancreas**

A mildly coarse echotexture is observed, which is most likely due to age-related changes and possible fibrosis. There is no evidence of hyperechogenicity of the mesenteric fat; there are no signs of active pancreatitis.

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**Other**

Lymph nodes: No abnormalities are observed.

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Abdominal effusion is not visualized.

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**ULTRASONOGRAPHIC FINDINGS**

- The rounded cranial pole of the right adrenal gland may be due to a benign adenoma or hyperplasia. There are no signs of a mass. A re-evaluation of the adrenal glands may be performed in 2-3 months once Sadie's diabetes is well controlled.
- The diffuse hyperechogenicity of the liver is highly suggestive of a vacuolar hepatopathy, which is most likely due to the diabetes mellitus. It may also be associated with chronic administration of phenobarbital. Target lesions are not observed and the appearance of the hypoechoic nodules are more suggestive of nodular hyperplasia, which is a benign age related change. Neoplasia is considered unlikely, but cannot be ruled out with certainty.
- Multiple cystoliths are present with at least one cystolith within the urethra. There are no obvious signs of an obstruction and may pass. A secondary urinary tract infection is present based on the urinalysis, which is due to the diabetes mellitus.

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- The renal changes may be due to glomerulonephritis secondary to diabetes mellitus. Although there are no obvious signs of pyelonephritis, the latter cannot be excluded based on the absence of sonographic abnormalities.

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- A loop of bowel with “odd” luminal contents was observed on one cine loop, between the stomach and spleen. The latter may be due to artifact, particularly if there is no history of ingestion of a foreign body. There were no abnormalities with the intestines cranial or caudal to the segment of intestine. A re-evaluation of the region may be considered in 24 hours. A re-evaluation of the abdominal radiographs for an obstructive pattern is also suggested, although considered very unlikely.

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**INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS**

The fact that there are no target lesions in the liver does not rule out neoplasia with certainty. A fine needle aspirate of liver or tissue biopsy would be required to achieve a definitive diagnosis. However, the appearance of the nodules is much more suggestive of nodular hyperplasia/regeneration.

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Although unlikely, Sadie should be monitored for signs of a urinary obstruction. If Sadie passes a stone, it would be ideal to send the stone for analysis in case it is struvite in origin, in which case antibiotics and diet may be used to dissolve them.

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A re-evaluation of the abdominal radiographs for signs of an abnormal gas pattern is suggested, in addition to a possible re-evaluation of the region between the spleen and stomach. The image is likely artifact, particularly if there is no history of foreign body ingestion.

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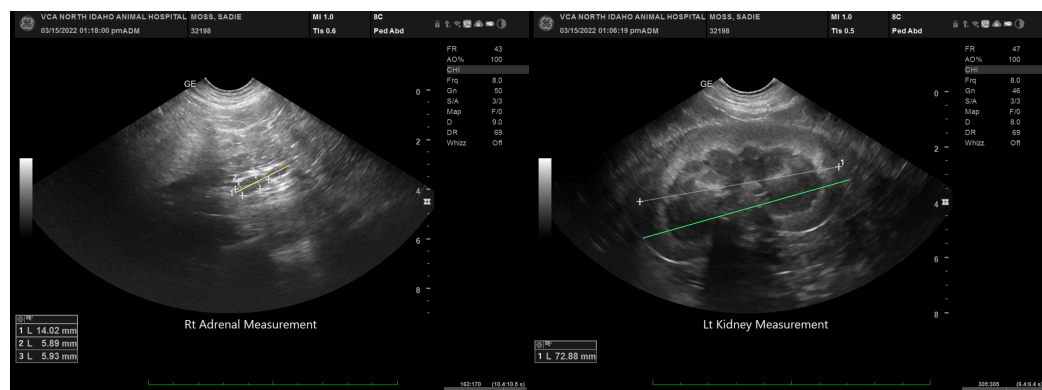
Sadie is a rather complicated case. An internal medicine consultation may be pursued to discuss treatment of the diabetes, seizures, and cystoliths.

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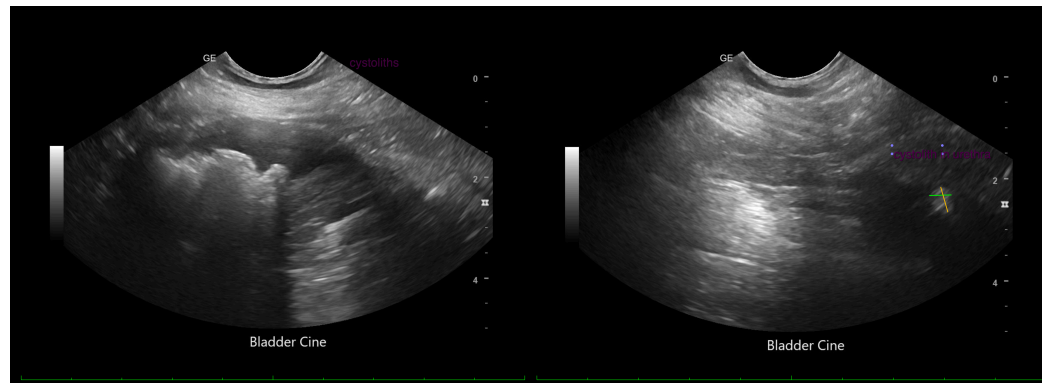
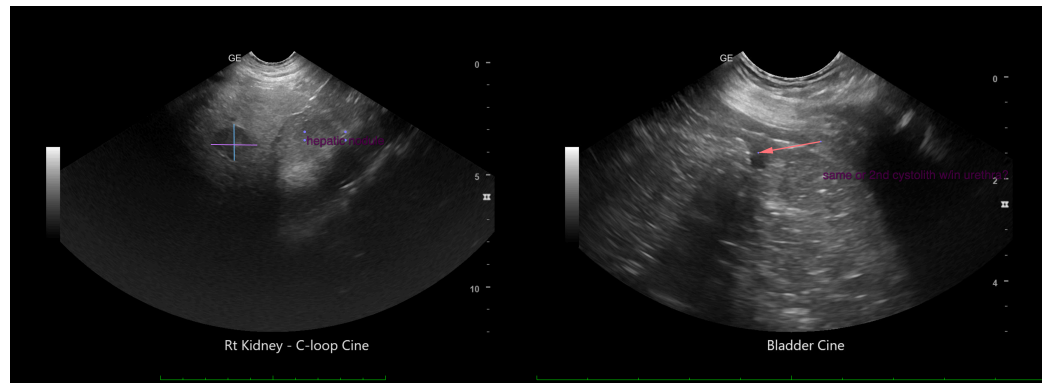
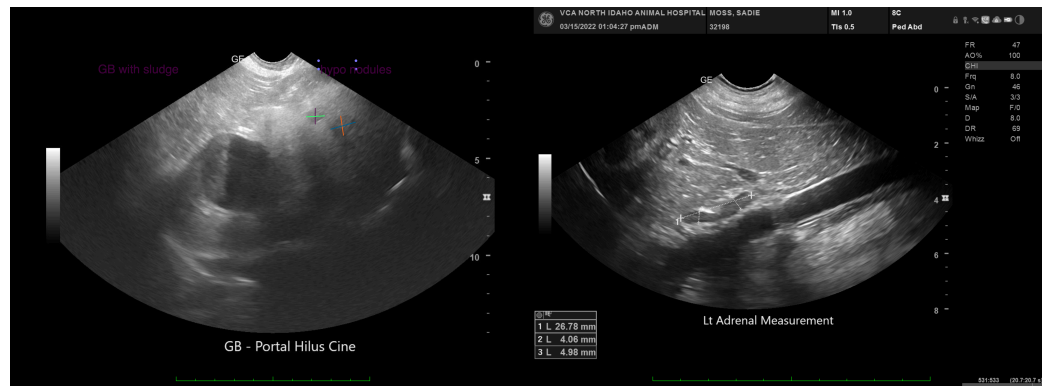
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The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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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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[Lisa.Carioto@sonopath.com](mailto:Lisa.Carioto@sonopath.com)

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