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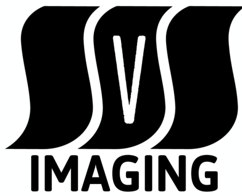

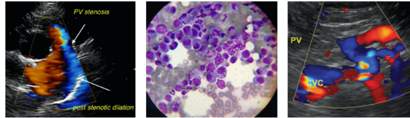

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PATIENT
Mila Lodge

SPECIES
Canine

BREED
Rottweiler

SEX
Intact Female

AGE
17 Weeks

WEIGHT
39.7 Pounds

INTERPRETED BY
Lisa Carioto, DVM, DVSc, Diplomate ACVIM

IMAGING PERFORMED BY
Sarah Pender, CVT

HOSPITAL NAME
SVS Imaging QC

REFERRING VET
Dr. Rigg

INVOICE
37008

DATE
4/19/22

PRESENTING CLINICAL SIGNS

urinary issues
Abnormal PE/Chem/CBC/UA Results: bloodwork shows low urine SG, abnormal renal values and electrolytes.

ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN

Urinary System

The urinary bladder is well distended with anechoic contents. The wall is thicker than normal and irregular. No abnormalities are noted with the trigone or proximal urethra, and there is no evidence of sediment, cystoliths or a mass. Early development of polyps is possible in the region of the apex. The ureteral papillae are visualized and filling of the bladder is normal. Ectopic ureters are not identified, however, these can be missed on ultrasound and are diagnosed more easily with cystoscopy.

Kidneys

The **left** kidney measures 6.30 cm, which is increased compared to normal within normal limits for a dog of Mila's weight, and also seems enlarged based on her age. The capsule is mildly bossilated. Severe hyperechogenicity and thickening of the cortex are present, in addition to focal areas of hyperechogenicity dispersed throughout the cortex. The cortex measures up to 9.86 mm. Pyelectasia (longitudinal: 4.6 mm; transverse: 9.4 mm) and hydroureter are present. The urine within the pelvis is anechoic. Blood flow is considered decreased. The mesentery surrounding the kidney and ureter is hyperechoic. These changes are highly suggestive of pyelonephritis.

The **right** kidney measures 5.80 cm. Although it is within normal limits for a dog of Mila's weight, it seems enlarged for a dog of her age. The capsule is mildly bossilated. Severe hyperechogenicity and thickening of the cortex are present, in addition to focal areas of hyperechogenicity dispersed throughout the cortex. The cortex is hyperechoic to the liver. Pyelectasia (transverse: 1.07 cm) and hydroureter are present. The ureter measures 2.7 mm cranially and 2.5 mm caudally. The urine within the pelvis is anechoic. Blood flow is considered decreased. The mesentery surrounding the kidney and ureter is hyperechoic. These changes are highly suggestive of pyelonephritis.

Aortic bifurcation/trifurcation

No abnormalities observed.

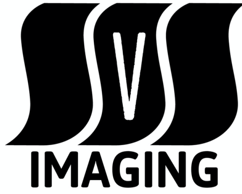
Adrenal Glands

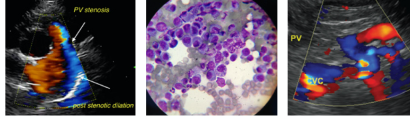
The **left** adrenal gland measures 0.38 cm at the cranial pole, 0.42 cm at the caudal pole and 2.56 cm in length. No abnormalities are noted with the gland's overall architecture, echogenicity or echotexture. The phrenico-abdominal vein and surrounding vasculature and mesentery are unremarkable.

The **right** adrenal gland measures 0.45 cm at the cranial pole, 0.46 cm at the caudal pole and 2.11 cm in length. No abnormalities are noted with the gland's overall architecture, echogenicity or echotexture. The phrenico-abdominal vein and surrounding vasculature and mesentery are unremarkable.

Spleen

The spleen is within normal limits in size and the capsule is smooth. A diffuse "lacy" appearance of the parenchyma is observed. Differential diagnoses for this echotexture include splenitis and extramedullary hematopoiesis. No abnormalities are observed with its vasculature, i.e. congestion and thrombi are not identified.





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Liver

There are no obvious signs of hepatomegaly and its borders are smooth and sharp. The liver's echotexture is homogeneous and it is within normal limits in echogenicity. No abnormalities are observed with the hepatic vessels visualized.

The gallbladder wall is moderately dilated for a dog who has not been fasted (assuming not fasted due to large amount of food in stomach). It is within normal limits in thickness and echogenicity. There is no evidence of echogenic material within the GB or edema surrounding it. The cystic duct is dilated at 6.2 mm and the common bile duct appears dilated, but not tortuous, at 1.03 cm, in the region of the stomach. An obvious obstruction is not identified, however, the duct cannot be followed in its entirety due to the large amount of gas and ingesta in the surrounding area. The intrahepatic bile ducts are within normal limits.

Gastrointestinal

The gastric wall is within normal limits in thickness and the wall layers are well defined. A marked amount of ingesta, fluid and gas are present within the lumen. Decreased peristalsis is evident ("to and fro" motion). An obvious foreign body is not visualized, however, one could be missed due to the contents in the stomach.

The small intestinal wall thickness, including the duodenum, is within normal limits and the definition of the wall layers is preserved. A large amount of gas, moderate amount of fluid and ingesta are present within the lumen of the small intestines, however, they are not abnormally dilated.

A large amount of gas and ingesta is present within the transverse colon. The colonic wall is not thickened and mural detail is considered normal.

"Ineffective" peristalsis is noted throughout the entire GI tract, i.e., a "to and fro" motion is observed.

Pancreas

No overt abnormalities are observed with the parenchymal echogenicity or echotexture. The hyperechogenicity of the surrounding mesentery is attributed to the abnormal kidneys, i.e., signs of active pancreatitis are not present.

Other

Lymph nodes

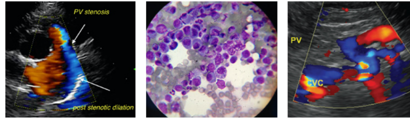
Mild lymphadenomegaly and mild hypoechogenicity of the lymph nodes are observed, including the sublumbar lymph node (LN): it is bilobed: 6.72 mm and 6.58 mm in diameter x 2.10 mm; splenic LN 0.59 cm x 1.27 cm. One of the medial iliac LNs is 4.55 mm. The mesentery surrounding the LNs is mildly to moderately hyperechoic.

Abdominal effusion is not visualized.

ULTRASONOGRAPHIC FINDINGS

- A urinary tract infection is strongly suspected. A polyploid cystitis in its early development cannot be excluded. The ureteral papillae are visualized and filling of the bladder is normal. Ectopic ureters are not identified, however, these can be missed on ultrasound and are diagnosed more easily with cystoscopy.

- The urinary bladder is well distended with anechoic contents. The wall is thicker than normal and irregular. No abnormalities are noted with the trigone or proximal urethra, and there is no



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evidence of sediment, cystoliths or a mass. of polyps is possible in the region of the apex. The ureteral papillae are visualized and filling of the bladder is normal. Ectopic ureters are not identified, however, these can be missed on ultrasound and are diagnosed more easily with cystoscopy.

- Bilateral pyelonephritis, hydroureter, and ureteritis are strongly suspected. Bilateral renal dysplasia cannot be excluded at this time due to the changes associated with an infection.

- Differential diagnoses for the abnormal splenic echotexture include splenitis and extramedullary hematopoiesis.

- The gastrointestinal and biliary tract abnormalities may be due to irritation, inflammation and secondary ileus due to administration of antibiotics (if currently receiving). A foreign body (FB) is highly unlikely and was not observed, but a subtle obstruction cannot be excluded due to the large amount of gas and ingesta the precluded evaluation of certain regions of the stomach and GI tract. The possibility of a FB should be correlated with Mila's history.

- Mild lymphadenomegaly, due to reactive hyperplasia, is suspected.

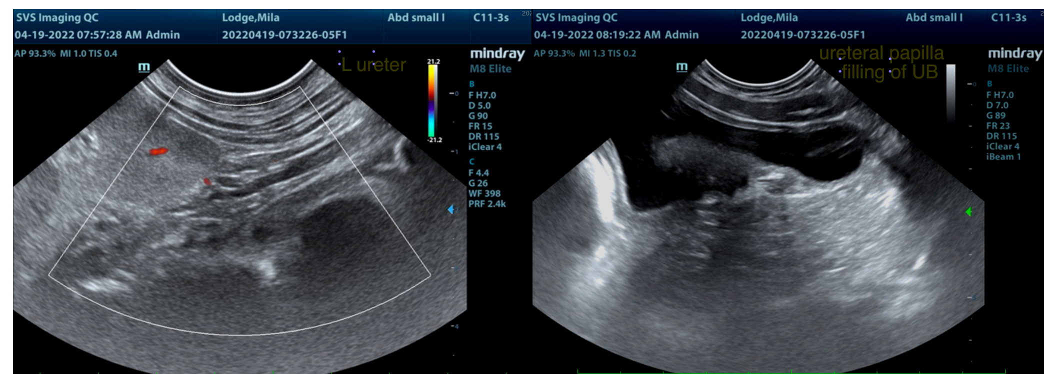
INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

A urine culture and sensitivity are suggested to exclude possible pyelonephritis; although one or several may have already been performed, resistance to antibiotics may have developed and a new culture will help determine if current antimicrobials are effective. Long term antibiotics, 12-16 weeks may be required with follow up ultrasounds to monitor evolution of the renal changes.

Although controversial in puppies, enrofloxacin is strongly recommended to treat pyelonephritis pending the results. Discussion with clients regarding articulations is necessary, however, abnormalities identified during the research were obtained at a much higher dose than used clinically.

A vaginal and rectal exams are suggested to rule out anatomical abnormalities that aren't visible sonographically.

As mentioned above, cystoscopy is also recommended.



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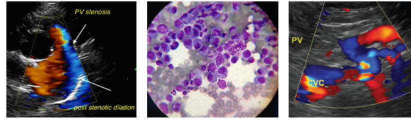

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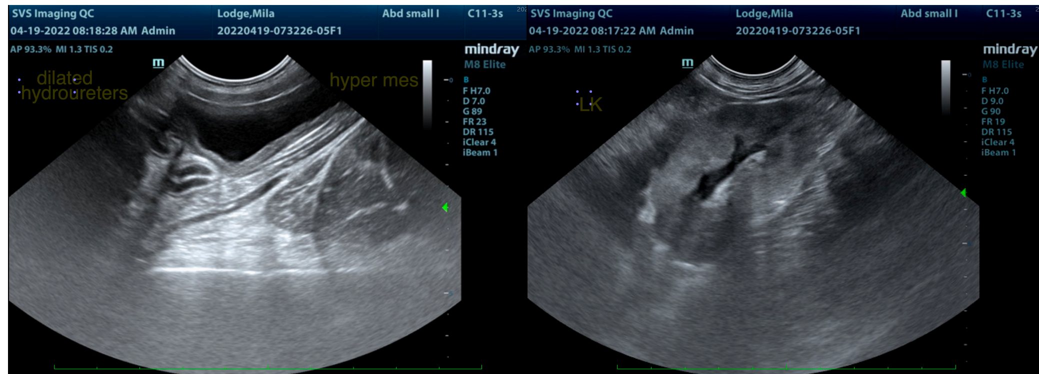

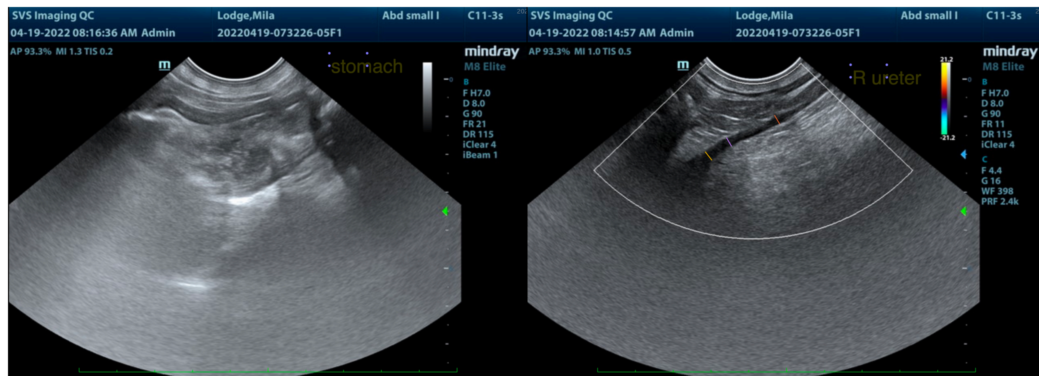

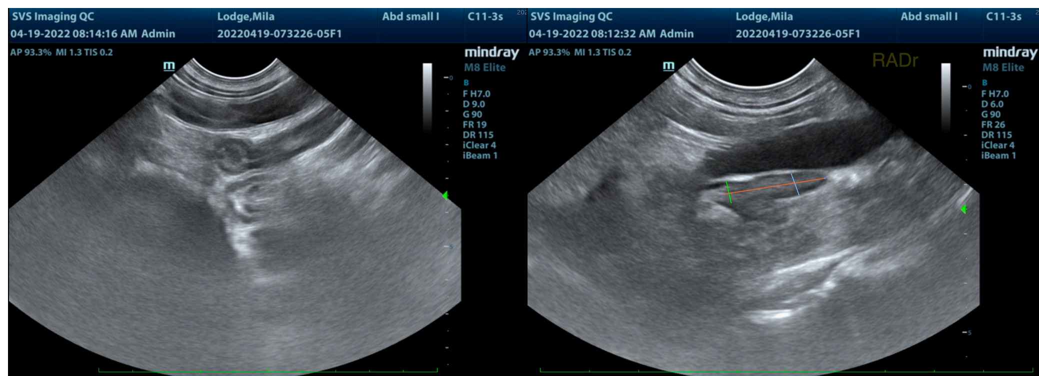

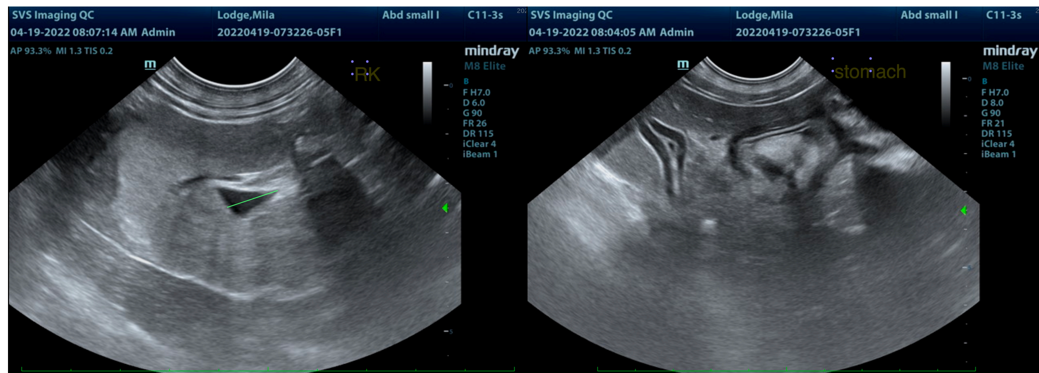

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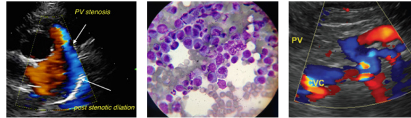

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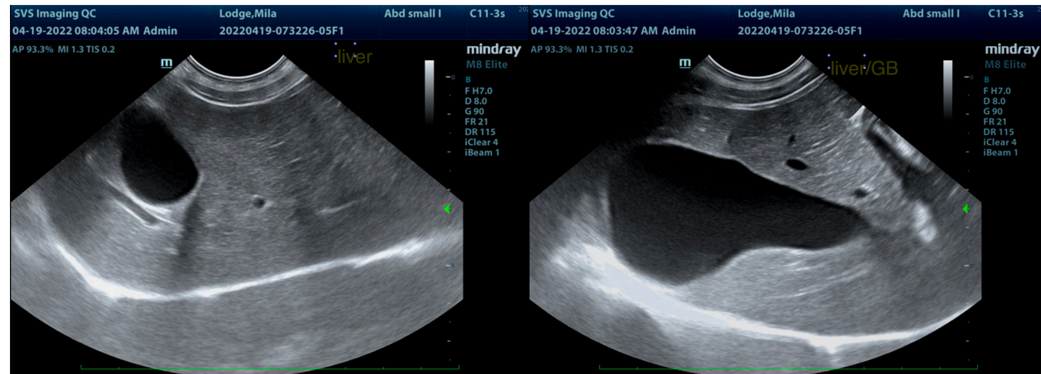

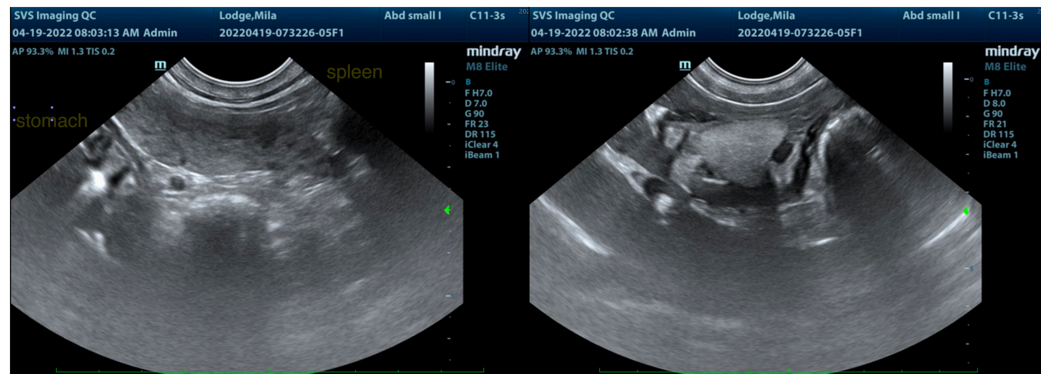

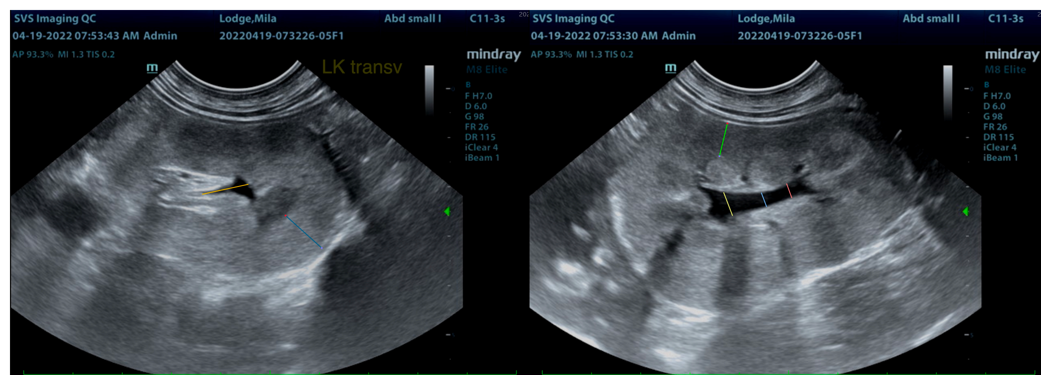

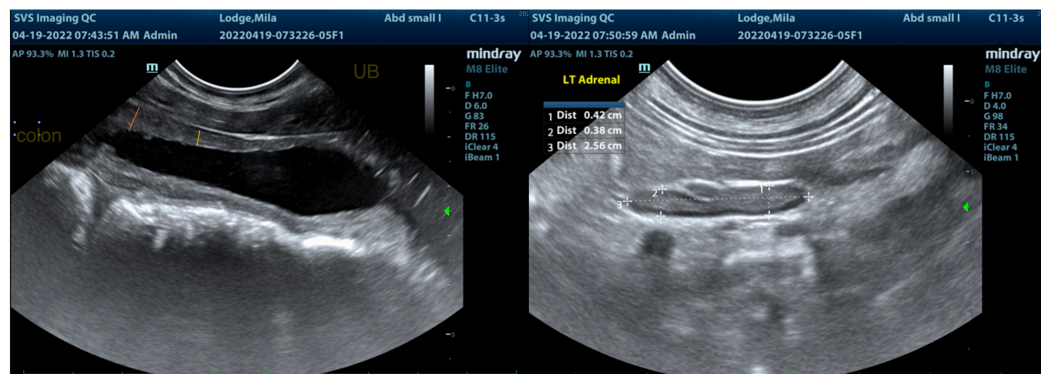

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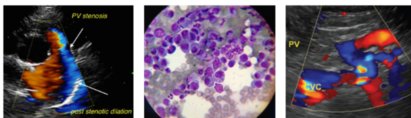

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The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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.

Lisa Carioto, DVM, DVSc, Diplomate ACVIM

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