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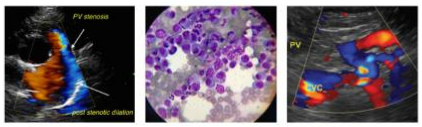

SonoPath
Clinical Sonography & Telecytology
EDUCATIONAL TELECONSULTATION SERVICES™
1-800-838-4268 info@sonopath.com SonoPath.com

PATIENT

Missy Brown

SPECIES

Canine

BREED

Pug

SEX

Spayed Female

AGE

10 Years

WEIGHT

24 Pounds

INTERPRETED BY

Lisa Carioto, DVM, DVSc, Diplomate ACVIM

IMAGING PERFORMED BY

Sarah Pender, CVT

HOSPITAL NAME

SVS Imaging QC

REFERRING VET

Dr. Casey Youngren

INVOICE

37891

DATE

5/23/22

PRESENTING CLINICAL SIGNS

O reported P all of a sudden stopped eating Saturday. They found some chunks on carpet saturday but did not know if it was V or D. Seems lethargic and tender on abdominal palpation. Had some urinary accidents in the house. O is not aware of anything she may have gotten into. Urine culture pending. UTD on vaccines and 4 DX test. History of Urinary Calculi (struvites), had surgery back in late 2018 (cystotomy) at another clinic. Has been on RC SO since and done well. Senior bloodwork done in Oct. 2021 and unremarkable.
Abnormal PE/Chem/CBC/UA Results: tense on abdominal palpation, increased RR, jaundice, dull/lethargic. UA: UTI, moderate amount of bilirubin noted CBC: Elevated WBC (Neutrophilia, Lymphocytosis and Monocytosis-moderate) Chem: Elevated SDMA (moderately), Phosph. and BUN (slight). GG/Bilirubin elevated (moderately), ALP elevated (over 2000+), ALT would not read.

ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN

Urinary System

The urinary bladder is well distended. A mild amount of echogenic debris is present within the bladder lumen, including scintillating debris that is adhered to the dorsal wall. The wall is mildly thickened (1.9 mm) and very mildly irregular at the apex. No abnormalities are present with the trigone or the proximal urethra, and there is no evidence of polyps or a mass.

The urinary bladder was re-evaluated at the end of the exam. A very small cystolith, measuring 2.3 mm is observed along the ventral wall, in addition to gravity dependent sediment. Approximately 1.22 cm of calcified sediment is observed along the ventral wall of the urinary bladder at the end of the ultrasound.

A scant amount of anechoic fluid is present at the ventral aspect of the bladder, which was not present at the initial part of the exam.

Kidneys

The **left** kidney measures 4.60 cm. The capsule is smooth. The cortex is mildly hyperechoic and a mild loss of the normal definition of the cortico-medullary junction is present. Mineralizations of the diverticulae and pelvis are present, in addition to very small nephroliths of the pelvis. There is no evidence of pyelectasia. The surrounding mesentery is very mildly hyperechoic.

The **right** kidney measures 4.73 cm. The capsule is smooth. The cortex is mildly hyperechoic and a mild loss of the normal definition of the cortico-medullary junction is present. Mineralizations of the diverticulae and pelvis are present. There is no evidence of pyelectasia. The surrounding mesentery is very mildly hyperechoic. Anechoic fluid is present surrounding the right kidney and duodenum.

Aortic bifurcation/trifurcation

No abnormalities observed.

Adrenal Glands

The **left** adrenal gland measures 0.66 cm at the cranial pole, 0.54 cm at the caudal pole and 2.35 cm in length. The cranial pole is very mildly increased for a dog of Missy's stature (high normal 0.60 cm). No abnormalities are noted with the gland's overall echogenicity or echotexture. The phrenico-abdominal vein and surrounding vasculature and mesentery are unremarkable.

The **right** adrenal gland measures 0.59 cm at the cranial pole (high normal), 0.71 cm at the caudal pole and 2.30 cm in length. The caudal pole is mildly increased. No abnormalities are noted with the gland's overall architecture, echogenicity or echotexture. The phrenico-abdominal vein and surrounding vasculature and mesentery are unremarkable.

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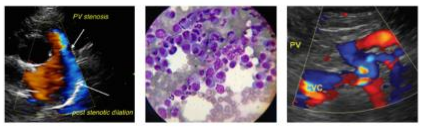

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Spleen

The spleen appears “swollen”, and is in the shape of a “tear drop”. The capsule is smooth. The echotexture, and echogenicity are within normal limits. No abnormalities are observed with its vasculature, i.e. congestion and thrombi are not identified. The mesentery surrounding the spleen is hyperechoic. A scant amount of anechoic effusion is also noted surrounding the spleen.

Liver

Mild hepatomegaly is suspected, however, size is better characterized at the time of the ultrasound or with radiographs. The liver appears “generous, and “swollen”. Its borders are smooth, but rounded. It is homogeneous, but mildly hyperechoic, i.e., it is isoechoic to the spleen. The walls of some of the larger blood vessels are mildly hyperechoic. The latter may be due to fat, mineralization, fibrosis, as well as inflammation. The mesentery surrounding the liver and stomach is moderately to severely hyperechoic. Decreased definition of the structures is noted in the cranial abdomen, which is due to inflammation.

The gall bladder (GB) is moderately distended and contains inspissated and hyperechoic bile that remains immobile. A depressed-like lesion is noted dorsally, and anechoic free fluid is present dorsally, i.e. a portion of the GB appears deflated, which is attributed to a rent or rupture in the wall. Although it does not have the typical “kiwi” or stellate shape, findings are consistent with a mucocele. The region surrounding the GB is severely hyperechoic, which is consistent with inflammation. The cystic and common bile ducts cannot be followed.

Gastrointestinal

A very small amount of fluid is present in the lumen of the stomach. The gastric wall is within normal limits in thickness and the wall layers are well defined. The submucosa is more prominent than usual and hyperechoic. No obvious abnormalities are observed with its peristalsis. The mesentery surrounding the stomach is severely hyperechoic.

A small amount of fluid and gas are present within the lumen of the duodenum. A mild ileus is observed. The mucosa of the duodenum is thicker than usual and fogging is present. The submucosa is also mildly prominent. Anechoic fluid is present surrounding the right kidney and duodenum.

The small intestinal wall thickness is within normal limits and the definition of the wall layers is preserved.

Gas is present in the transverse colon.

The colonic wall is not thickened and mural detail is considered normal.

Pancreas

The pancreas is very mildly hypoechoic in comparison to the surrounding mesentery. There are no signs of neoplasia.

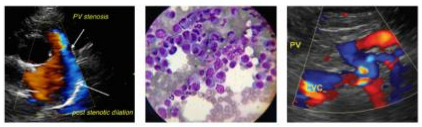
Other

Lymph nodes

No abnormalities are observed

Abdominal effusion

Anechoic fluid is present surrounding the right kidney and duodenum, as well as dorsal to the liver and surrounding the gall bladder.



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A scant amount of anechoic effusion is also noted surrounding the spleen.

A trivial amount of anechoic fluid is present at the ventral aspect of the bladder, which was not present at the initial part of the exam.

ULTRASONOGRAPHIC FINDINGS

- **Ruptured gall bladder mucocoele** with **high index of suspicion of bile peritonitis** and a severely hyperechoic mesentery of the cranial abdomen, worse in the right cranial quadrant.
- **Active pancreatitis** and an **ileus of the duodenum** are suspected secondary to the inflammation created by the ruptured mucocoele.
- **Liver**: Cholestasis, cholangitis/cholangiohepatitis and suppurative cholecystitis are suspected. Other causes of the hepatomegaly and diffuse hyperechogenicity of the liver may be due to a vacuolar hepatopathy secondary to stress (chronic illness). Hyperadrenocorticism cannot be excluded based on the appearance of the adrenal glands. Hepatitis (primary (immune-mediated) or secondary in origin), is considered unlikely.
- The appearance of the **spleen** may be due to antigenic stimulation and secondary inflammation, including immune mediated induced inflammation. Other differential diagnoses include extramedullary hematopoiesis, hypersplenism and reactive hyperplasia. Neoplasia, such as lymphoma, or other round cell tumour, is considered unlikely. However, a fine needle aspirate is required to obtain a definitive diagnosis.
- A single, very small **cystolith** – noted along the ventral wall, in addition to **calcified sediment**. A urinary tract infection is possible based on the thickened and very mildly irregular mucosa.
- The caudal pole of the **right adrenal gland** is enlarged. A nodule or mass is not observed. An emerging, benign adenoma is possible, as is adrenal hyperplasia secondary to stress (chronic illness). The cranial pole of the left gland is very mildly enlarged. Therefore, bilateral adrenal hyperplasia due to pituitary dependent hyperadrenocorticism (HAC) that has not become clinical yet is another possible differential. Sonographic results should be correlated with signs, i.e., further diagnostics are not necessary, nor should they be performed at the moment, even if Missy is demonstrating clinical signs of HAC.
- Both kidneys show mild mineralization and very small nephrolithiasis, as well changes suggestive of age related degeneration. There are no signs of an obstruction.

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

The following are suggested
Analgesia and intravenous fluids pending emergency surgery to perform a cholecystectomy

Aerobic and anaerobic cultures of the gallbladder contents

Intravenous broad spectrum antibiotics during hospitalization, followed by oral administration pending the
results.

Post-operative analgesia will be imperative, in addition to monitoring for sepsis.

Ursodeoxycholic acid should not be administered.

A urinalysis and urine culture and sensitivity

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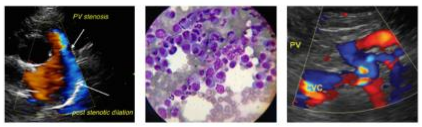

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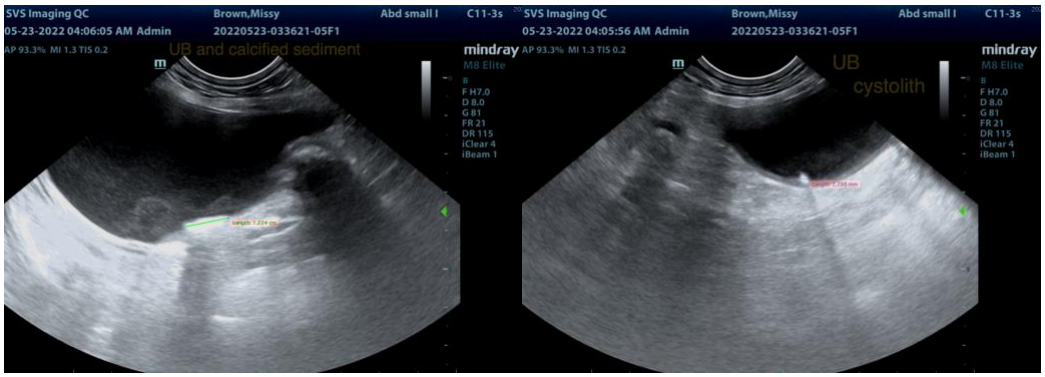

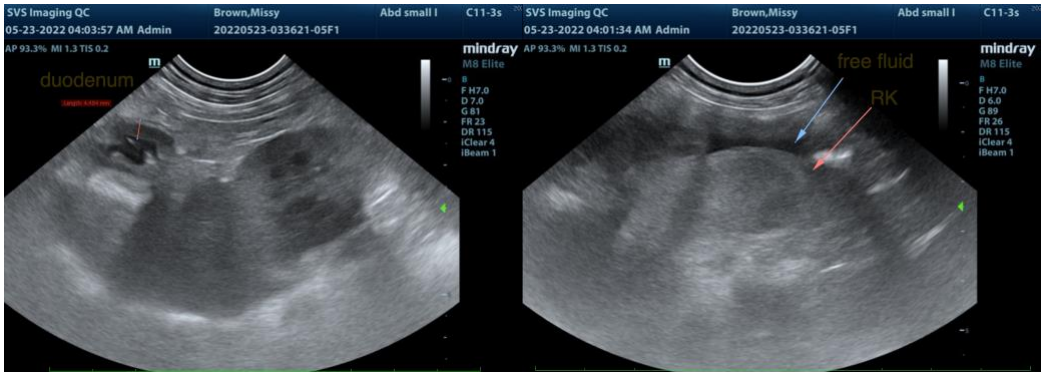

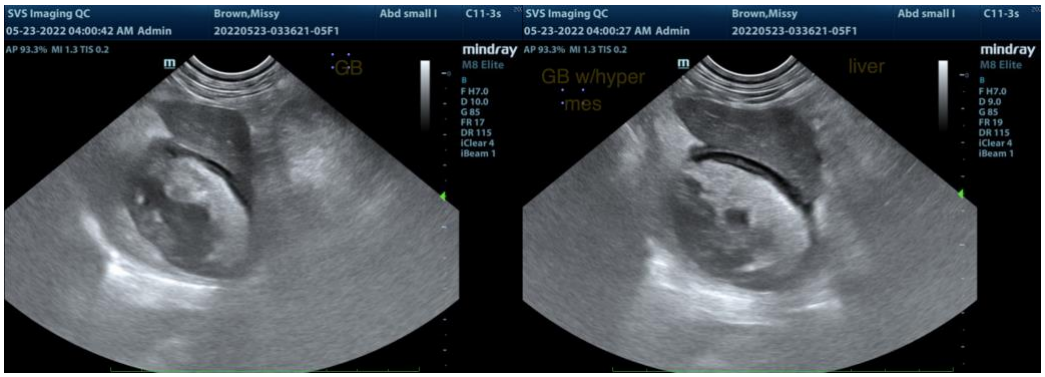

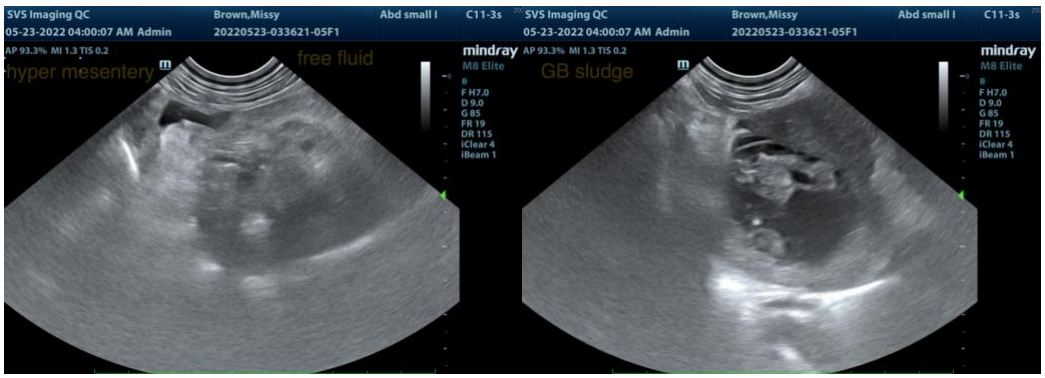

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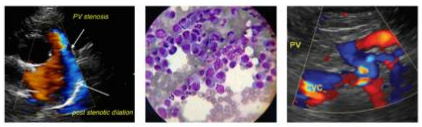

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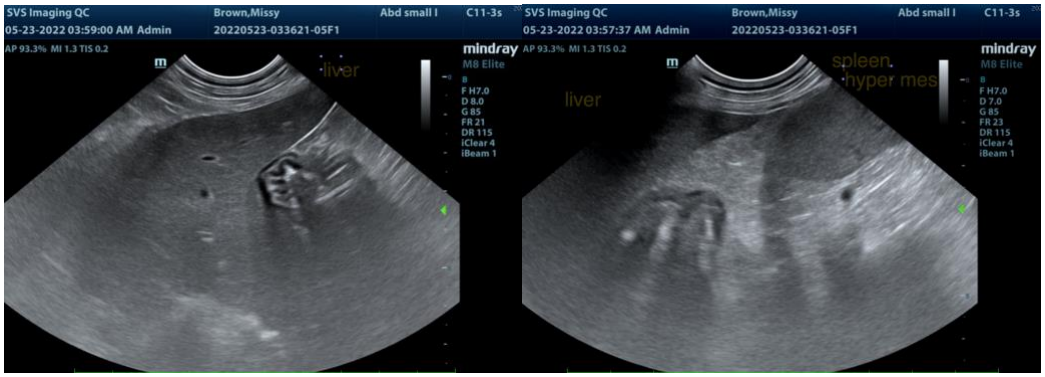

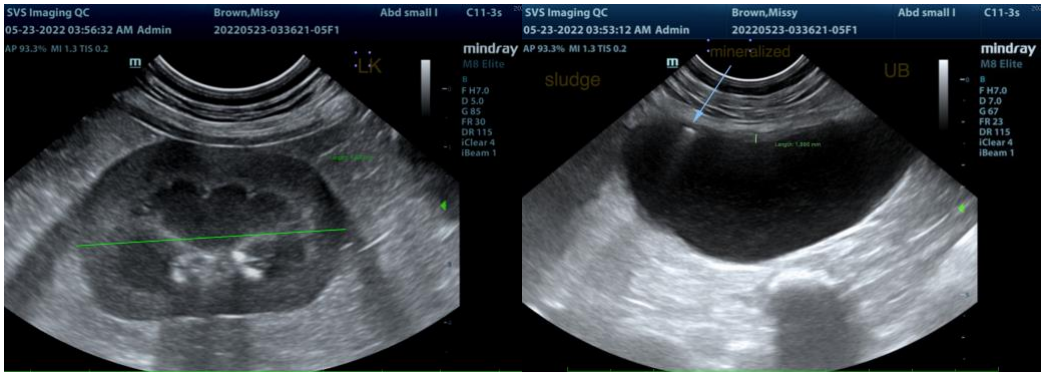

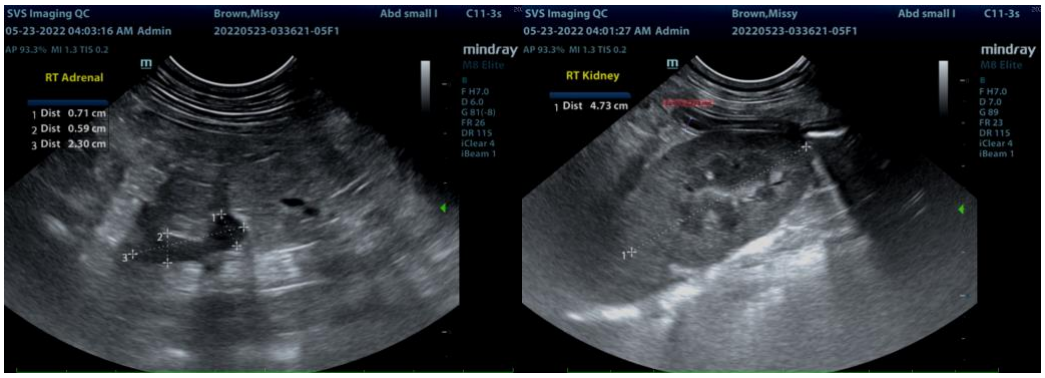

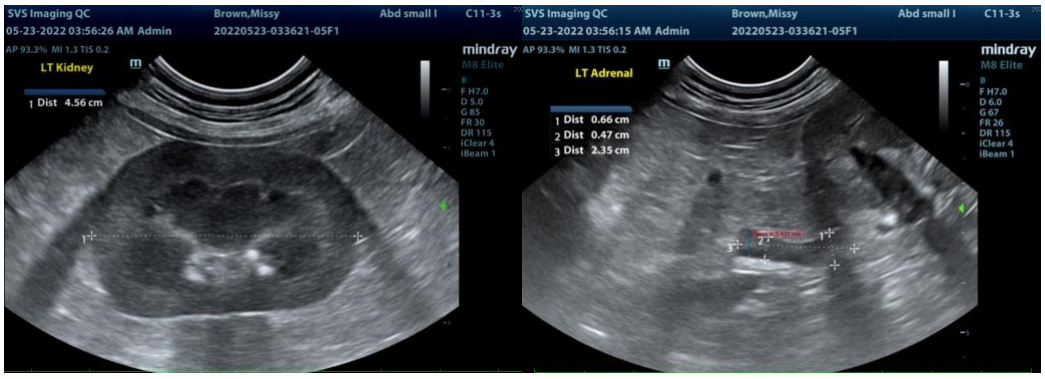

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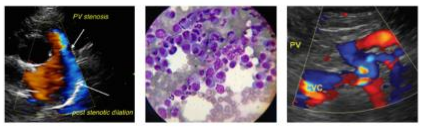

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The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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

Lisa.Carioto@sonopath.com