



PATIENT PRESENTING CLINICAL SIGNS

Nikki Smith History: Weight loss, loss of appetite.

SPECIES ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN

Canine Urinary System

The urinary bladder is not fully distended, but its contents are anechoic. The wall is smooth, but mildly irregular in certain regions. The latter may be due to the bladder not being well distended. No abnormalities are noted with the trigone or proximal urethra. A very small amount of free floating sediment is present, however, there is no evidence of cystoliths, polyps or a mass.

BREED

Siberian Husky

SEX

Spayed Female

AGE

13 Years 11 Months

WEIGHT

38.8 Pounds

Kidneys

The **left** kidney measures 5.60 cm. The capsule is smooth. The cortex is hyperechoic, i.e., it is isoechoic to the spleen. The normal definition of the cortico-medullary junction is well preserved. Mineralizations of the diverticulae and pelvis are observed. Occasional acoustic shadowing is noted, therefore, small nephroliths are present, without signs of pyelectasia. An accumulation of intrapelvic fat is noted. Blood flow is within normal limits. The surrounding mesentery is mildly hyperechoic.

The **right** kidney measures 6.10 cm. The capsule is smooth. The cortex is mildly hyperechoic, however, the normal definition of the cortico-medullary junction is well preserved. Mineralizations of the diverticulae and pelvis are observed. Occasional acoustic shadowing is noted, therefore, small nephroliths are present, without signs of pyelectasia. An accumulation of intrapelvic fat is noted. Blood flow is within normal limits. The surrounding mesentery is not hyperechoic.

Aortic bifurcation/trifurcation

High index of suspicion of a thrombus, approximately 0.45 cm in diameter and 1.7 cm in length at the level of the aortic bifurcation. Further evaluation of the entire aorta and remainder of the vasculature with colour Doppler at multiple angles would be required to determine if other blood vessels are involved.

Addendum June 25th, 2022: The sonographer returned two days later to re-evaluate the region. A thrombus is not present.

INTERPRETED BY

Lisa Carioto, DVM,
DVSc, Diplomate
ACVIM

IMAGING PERFORMED BY

Shari Reffi, CVT

HOSPITAL NAME

ACC Flanders

Adrenal Glands

The **left** adrenal gland measures 0.43 cm at the cranial pole, 0.51 cm at the caudal pole and 2.07 cm in length. A well-circumscribed nodule is noted at the caudal pole. Occasional hyperechoic foci are observed throughout the gland, which are attributed to age-related changes. The phrenico-abdominal vein and surrounding vasculature and mesentery are unremarkable.

The **right** adrenal gland measures 0.98 cm ("Shepherd's hook"), rather than true enlargement) at the cranial pole, 0.47 cm at the caudal pole and 2.01 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.

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Spleen

The spleen is within normal limits in size, architecture, echotexture, and echogenicity. The capsule is smooth. No abnormalities are observed with its vasculature, i.e. congestion and thrombi are not identified.

Liver



PATIENT

Nikki Smith

There are no obvious signs of hepatomegaly. The liver's borders are smooth and vary between sharp to very mildly rounded. A diffuse, mildly coarse or granular echotexture is observed. The walls of the portal veins are more prominent than usual. No obvious abnormalities are noted with the hepatic veins. Focal lesions are not observed. The mesentery surrounding the liver is hyperechoic.

SPECIES

Canine

The gallbladder (GB) is moderately distended with a moderate amount of free floating and inspissated echogenic material. The GB wall is within normal limits in thickness and echogenicity. The parenchyma surrounding the GB is hyperechoic. The walls of the cystic duct are prominent and more echogenic (hyperechoic), and slightly tortuous. There are no obvious signs of an obstruction.

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Siberian Husky

Gastrointestinal

A large amount of gas is present in the lumen of the stomach. The gastric wall is within normal limits in thickness and the wall layers are well defined. An in-depth evaluation of the stomach is difficult due to the large amount of gas. No obvious abnormalities are observed with its peristalsis.

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The small intestinal wall thickness, including the duodenum, is within normal limits and the definition of the wall layers is preserved. Abnormally dilated loops of bowel are not observed.

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Gas and ingesta are present in the transverse colon.

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 in the gastrointestinal tract.

WEIGHT

38.8 Pounds

Pancreas

The pancreas has a mildly coarse echotexture, which is considered secondary to age related changes, however, previous episodes of pancreatitis cannot be excluded. There are no signs of active pancreatitis or neoplasia.

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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

- **Vasculature:** A clot is not present at the aortic bifurcation as per the follow-up images performed and reviewed on June 25th, 2022.

High index of suspicion of a *thrombus at the aortic bifurcation*. Further evaluation of the entire aorta and remainder of the vasculature with color Doppler would be required to determine if other blood vessels are involved.

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- **Liver:** Subtle changes are present that could represent a non-specific reactive hepatopathy. However, concomitant changes with the gallbladder and hyperechoic mesentery suggest an inflammatory process, such as cholangitis/cholangiohepatitis and possibly primary (immune-mediated) or secondary hepatitis. Evaluation of Nikki's history of travel and potential exposure to toxins, including medications and natural supplements, infectious agents, (parasites, viruses, or bacteria, including leptospirosis), is recommended. Cholestasis is also likely present.

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- **Gallbladder:** Cholecystitis is suspected. A suppurative form is often present. There are no signs of an obstruction. Gallbladder sludge is often clinically insignificant, however, gastroesophageal reflux disease (GERD), can occur in some patients. Obtaining a history regarding signs of GERD from the client is suggested. Treatment with an anti-acid, proton pump inhibitor, (and possibly eventually ursodeoxycholic acid) may be required.
- **Kidneys:** Subtle age-related degenerative changes are noted, in addition to mineralizations and very small nephroliths, without signs of an obstruction. Diseases, such as glomerulonephritis (GN) and pyelonephritis cannot be excluded.
- **Urinary bladder:** Sediment in the lumen of the urinary bladder is most likely clinically insignificant, however, subclinical bacteriuria may occur, including pyelonephritis, despite classical sonographic abnormalities.
- **Adrenal glands:** The nodule at the caudal pole of the left gland is suggestive of a benign adenoma or benign hyperplasia. However, given the thrombus in Nikki's aorta, hyperadrenocorticism (HAC), including the atypical form, may be present.

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Investigation of the causes of GN, such as leptospirosis, vector borne diseases and heartworm disease. The appropriate tests are suggested to exclude an underlying cause, for example, SNAP 4Dx (or equivalent test), *Leptospira* PCR and/or serology, +/- testing for *Bartonella* spp., as well as PCR tests for other vector borne diseases. [All tests are negative.](#)

A urinalysis, if not already performed

A urine culture and sensitivity

If negative, a urine protein: creatinine ratio; [within normal limits at 0.1](#)

Arterial blood pressure to rule out hypertension

Obtaining a history regarding signs of GERD from the client is suggested. Treatment with an anti-acid, proton pump inhibitor, (and possibly eventually ursodeoxycholic acid) may be required.

Although unassociated with GN, Nikki may be painful and a trial with gabapentin, +/- opioid may be pursued. Non-steroidal anti-inflammatories should be avoided.

Differential diagnoses include cholecystitis, cholangitis/cholangiohepatitis, and secondary ascending bacterial infections. Although indiscriminate use of antibiotics is not recommended, consider broad-spectrum antibiotics with reassessment of liver enzymes, including GGT, in a few weeks, while still receiving antibiotics. A more invasive approach is to obtain a liver biopsy and culture of the liver and bile.

Further diagnostics for HAC are not recommended unless Nikki is demonstrating other signs or she is proteinuric and/or hypertensive.

Depending on the above results, +/- TLI, serum cobalamin, folate to exclude malabsorptive and maldigestive diseases.



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Note, if ursodeoxycholic acid (Ursodiol) is eventually used (not indicated for the moment), it should be used judiciously and introduced gradually.

SPECIES

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Nikki is a complicated patient, and although some treatment recommendations have been described, referral to an internist or a medicine consultation may be pursued in order to describe all possible options in further detail.

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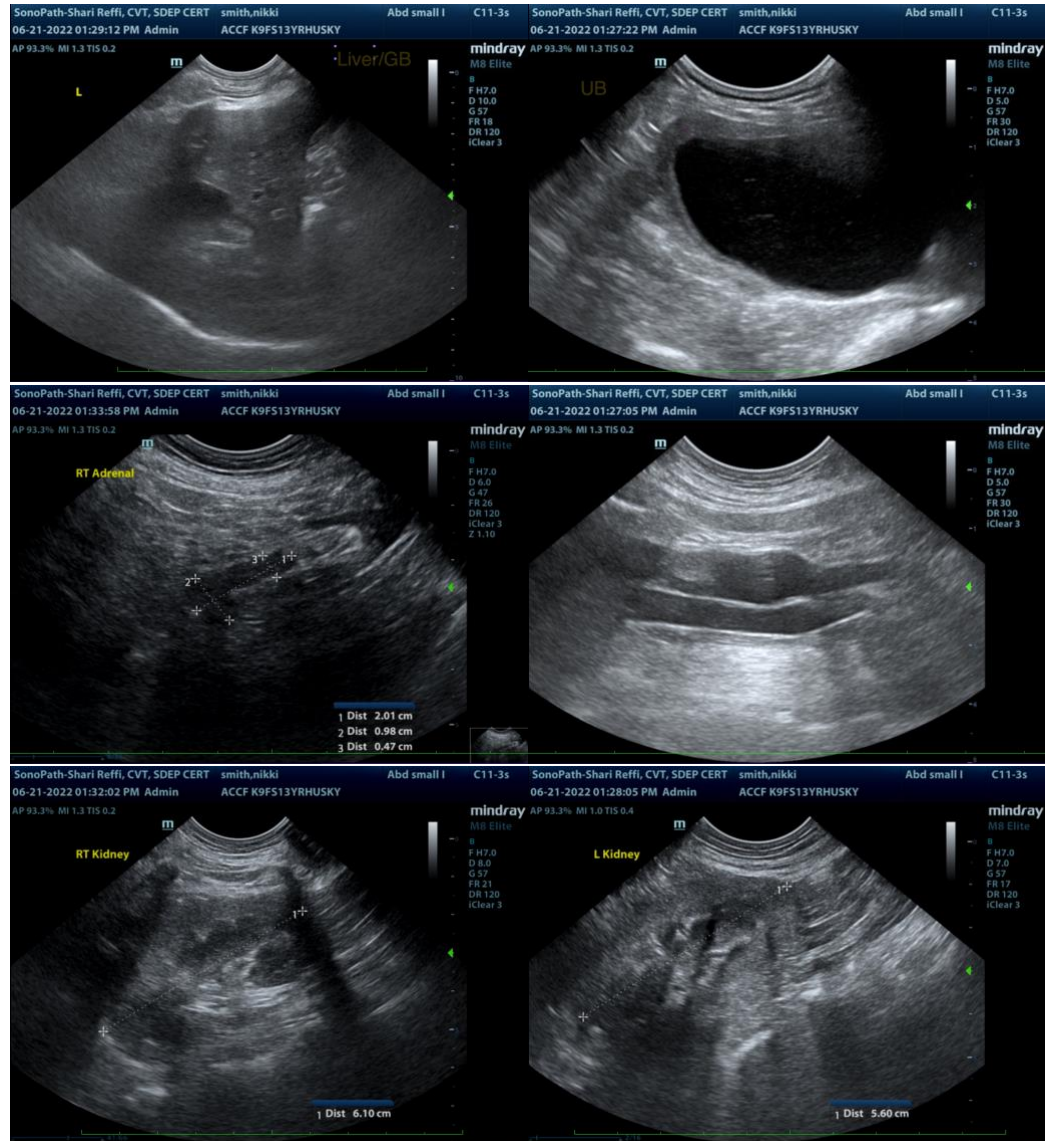
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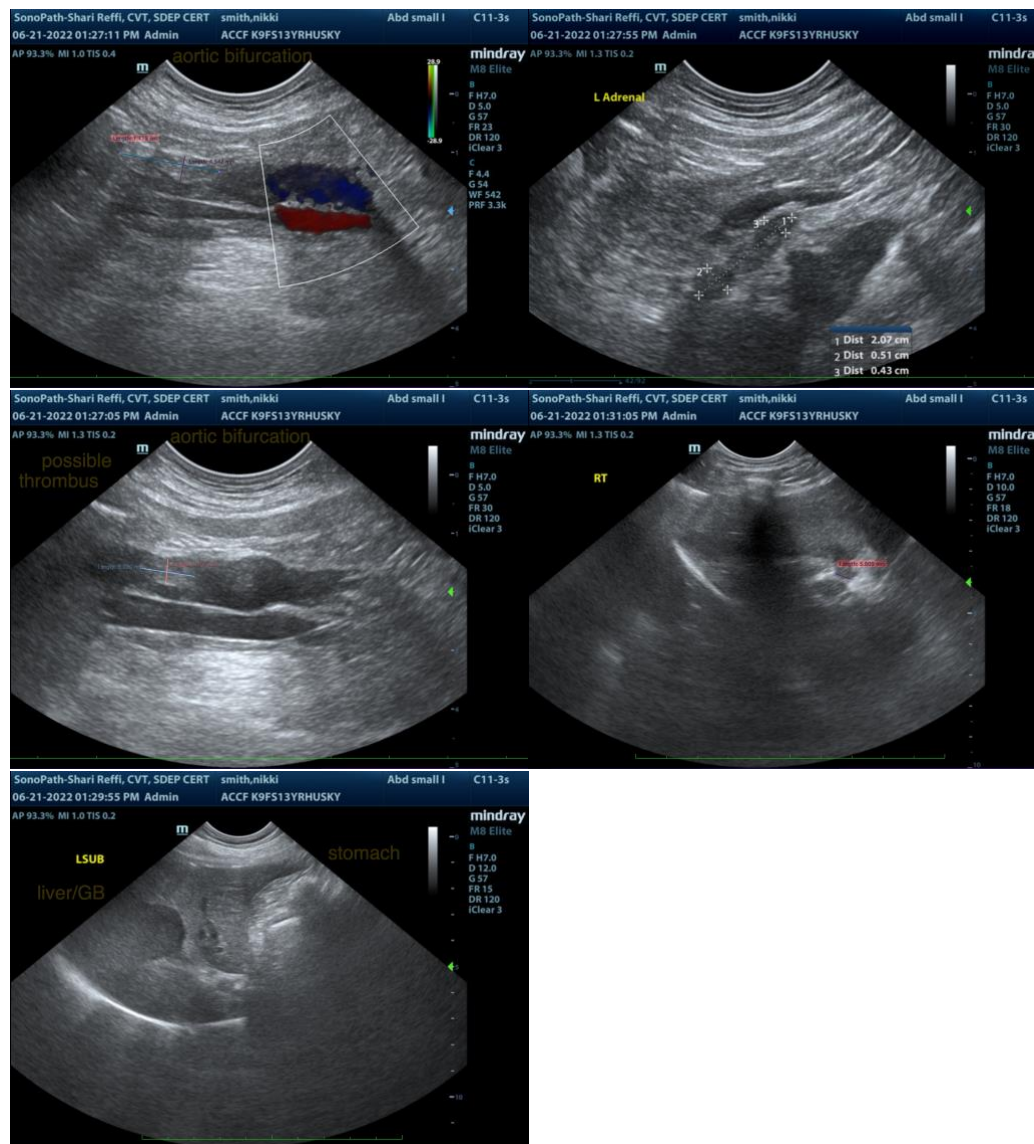
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The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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.

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