

**PATIENT**

Korah Bennett

SPECIES

Canine

BREED

Australian Cattle Dog

SEX

Spayed Female

AGE

5 years

WEIGHT

28 lbs

INTERPRETED BYLisa Carioto, DVM,
DVSc, Diplomate
ACVIM**IMAGING
PERFORMED BY**

Sarah Pender, CVT

HOSPITAL NAME

SVS Imaging CT

REFERRING VET

Dr. Joyce Werning

INVOICE

30025

DATE

4/29/22

PRESENTING CLINICAL SIGNS

Vomited bile 4-27-22 evening, 30 minutes after eating. Very cuddly since vomiting, which is abnormal for her. Slightly lethargic. Previous hx: Incontinence issues since puppy, CT performed and conclusion was no cause for incontinence identified on CT. Has since been dx with decreased urethral tone.

12/15/21 seen at specialty center for difficulty defecating. Doctor at that time was suspicious of motility disorder or stricture at some point in the colon. Symptoms have gotten better since being on meds. Current Meds: Proin 50mg 1/4tab BID, Incurin 1/2 tab SID, Diphenhydramine 25mg BID, Provable SID, Hepato capsule SID, Omega Benefits SID, Benafiber BID, Denamarin SID, Current diet Royal Canin low calorie

Abnormal PE/Chem/CBC/UA Results: ALT 467 on 12-2-21, started Hepato liver supplement, rechecked 12-28-21 ALT 93. Rechecked 3-2-22, which was 1 month after finishing the liver supplement ALT 156, continued Hepato liver supplement. Rechecked 4-28-22 ALT 1540. All other liver values WNL and CBC unremarkable; cPL normal. 12/8/21 thyroid panel WNL, 12/17/21 Cobalamin and Folate WNL. 12/17/21 Lepto 6 MAT and Lepto PCR negative.

ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN**Urinary System**

The urinary bladder is inadequately filled, thereby affecting the ability to accurately measure wall thickness. The wall is very mildly irregular, however. No abnormalities are noted with the trigone or proximal urethra. There is no evidence of sediment, cystoliths, polyps, or a mass. The urinary bladder was re-evaluated at the end of the study, at which time it was more distended with urine. The bladder wall appeared smoother and more regular. No abnormalities were observed with the ureteral papillae. No signs of ectopic ureters were observed.

Kidneys

The **left** kidney measures 4.50 cm. The capsule is smooth and its overall architecture, including the definition of the cortico-medullary junction, is preserved. Very mild mineralization of the diverticulae is present, without evidence of nephroliths or pyelectasia. There are no signs of nephroliths or pyelectasia. The surrounding mesentery is not hyperechoic.

The **right** kidney measures 4.89 cm. Findings are similar to the left kidney.

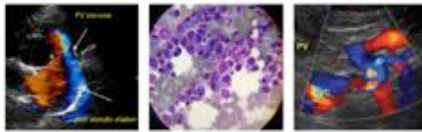
Aortic bifurcation/trifurcation

No abnormalities observed.

Adrenal Glands

The **left** adrenal gland measures 0.49 cm at the cranial pole, 0.41 cm at the caudal pole and 1.91 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 0.91 to 1.13 cm at the cranial pole, 0.54 cm at the caudal pole and 2.01 cm in length. A nodule is present at the cranial pole, i.e., it is enlarged and rounded. However, it is similar in echogenicity and echotexture when compared to the rest of the gland. 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

There are no obvious signs of hepatomegaly and its borders are smooth and sharp. The liver's echotexture is homogeneous, however, it may be mildly hyperechoic, i.e. it appears isoechoic to the spleen in one view. Focal lesions are not observed and no abnormalities are observed with the hepatic vessels visualized.

The gallbladder wall is within normal limits in thickness and echogenicity. There is no evidence of echogenic material within the GB or edema surrounding it. The cystic and common bile ducts are not visualized, however, there are no obvious signs of an obstruction.

Gastrointestinal

A small amount of fluid and gas are present within the lumen of the stomach. The gastric wall is within normal limits in thickness and the wall layers are well defined. No obvious abnormalities are observed with its peristalsis.

The small intestinal wall thickness, including the duodenum, is within normal limits and the definition of the wall layers is preserved. However, subjectively, the submucosa is mildly more prominent than usual. Abnormally dilated loops of bowel are not observed.

Gas is present within the transverse colon. The colonic wall is not thickened and mural detail is considered normal. Formed stools are present within the colon.

There are no obvious signs of a mass, foreign body, infiltrative disease or an obstruction in the gastrointestinal tract.

Pancreas

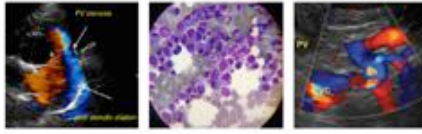
No overt abnormalities are observed with the echogenicity or echotexture of the left limb. There is no evidence of hyperechogenicity of the surrounding mesentery, i.e., signs of active pancreatitis are not present.

The right limb is homogeneous, however, the body has a mildly coarse echotexture with small punctate hyperechoic foci and occasional hypoechoic nodules of variable size. These changes may be due to fibrosis and nodular hyperplasia, respectively. Signs of active pancreatitis or neoplasia are not appreciated.

Other**Lymph nodes**

No abnormalities are observed

Abdominal effusion is not visualized.

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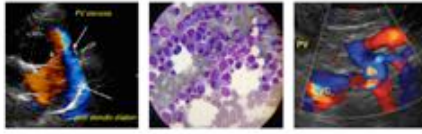
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ULTRASONOGRAPHIC FINDINGS

- No major gastrointestinal abnormalities are noted, however, a mild ileus is noted and, subjectively, the submucosa of the small intestines is more prominent. Korah may be suffering from a transient gastroenteritis. Is there a possibility of having received a new diet or new treats that she may have had an adverse reaction to (i.e. food intolerance)?
- A nodule is observed at the cranial pole of the right adrenal gland. Its appearance is similar in echotexture and echogenicity to the rest of the gland, i.e. neoplasia is considered highly unlikely. Differential diagnoses include adrenal hyperplasia secondary to stress (chronic illness) or development of a benign adenoma. Hyperadrenocorticism (HAC) is considered unlikely based on the absence of clinical signs. Sonographic results should be correlated with clinical signs, i.e., further diagnostics are not necessary if a patient is not demonstrating clinical signs of HAC.
- An obvious cause for the elevated ALT enzyme activity is not identified on today's abdominal ultrasound. The mild, diffuse hyperechogenicity of the liver is a non-specific finding and may be due to a vacuolar hepatopathy, which may occur secondary to stress or chronic illness. As mentioned above, HAC is considered unlikely. Gastrointestinal signs may cause elevations of the ALT enzyme activity, although not usually as high as 1540 U/L. Korah is receiving a number of medications, some of which may be causing intermittent hepatocellular damage. Therefore, evaluation of Korah's history regarding possible exposure to hepatitis due to infectious causes, toxin exposure, medications, or natural supplements, is recommended. A review of her medications is also suggested, for example, is diphenhydramine necessary, as this drug affects certain cytochrome P450 enzymes that may cause hepatocellular damage in some patients. Although Benefiber is an excellent source of fiber for constipation, could it be replaced by a natural form of psyllium, such as Bran Buds cereal? Also, some products, particularly generic drugs or supplements, have started using xylitol as a sweetener, therefore, a review of the label of the products currently being used is recommended to ensure xylitol is not being administered inadvertently. Could the dose of estradiol (Incurin) be decreased to every 3 to 5 days instead of once a day, as long term side effects may occur in some dogs, etc.
- The mild renal changes observed are suggestive of degeneration, however, glomerulonephritis cannot be excluded. Leptospirosis was excluded in December 2021. Tests to exclude other infectious diseases are suggested, for example, a SNAP 4Dx, as vector borne diseases may also cause elevated ALT enzyme activities in some individuals.
- The mucosa appeared smoother when the urinary bladder was re-evaluated at the end of the study, therefore, a urinary tract infection is considered unlikely.
- The left and right limbs are homogeneous, however, the body has a mildly coarse echotexture with small punctate hyperechoic foci and occasional hypoechoic nodules of variable size. These changes may be due to fibrosis and nodular hyperplasia, respectively. Signs of active pancreatitis or neoplasia are not appreciated.

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

A SNAP 4Dx is suggested to exclude an infectious cause for the elevated ALT enzyme activity.



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Deworming Korah with a broad spectrum dewormer is suggested, even if she receives a monthly heartworm prevention.

A review of all her medications is suggested, as mentioned above.

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A urine protein: creatinine ratio (UPCR) and arterial blood pressure are suggested to exclude proteinuria and hypertension based on the adrenal nodule identified. However, no further diagnostic tests for HAC are required if she is not demonstrating clinical signs or if the UPCR and arterial blood pressure are within the normal reference range. Note, a urinary tract infection should be excluded prior to performing a UPCR. Ideally, urine obtained on three consecutive days, pooled together and then submitted as one sample for the UPCR is suggested to obtain an average.

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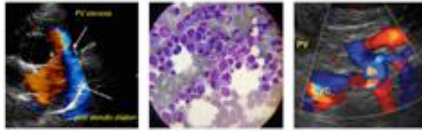
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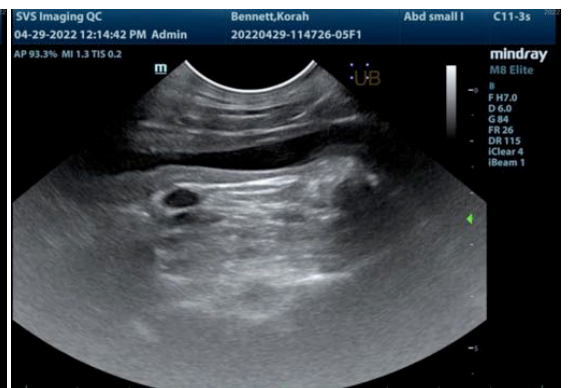
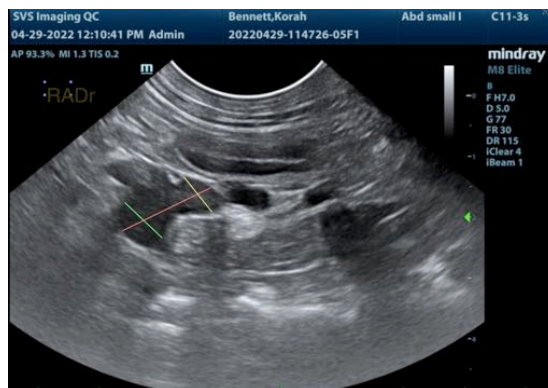
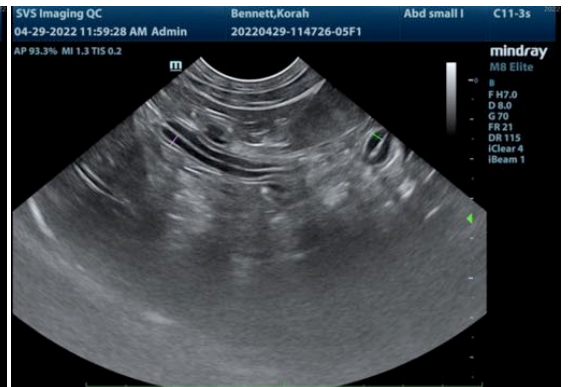
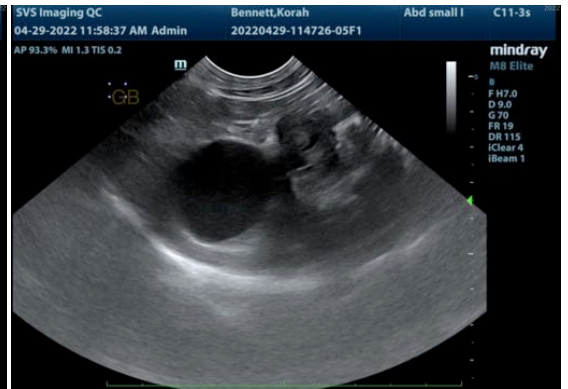
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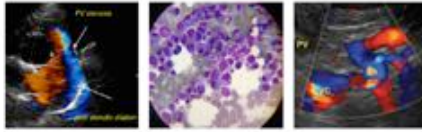
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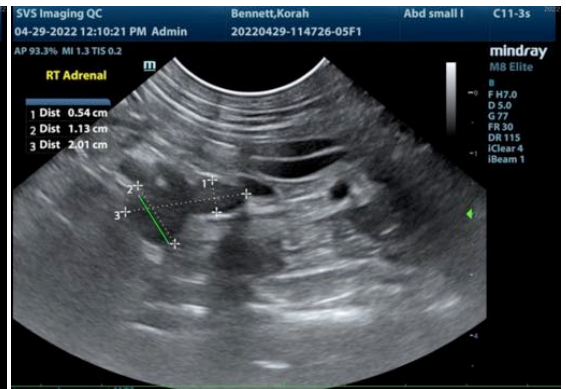
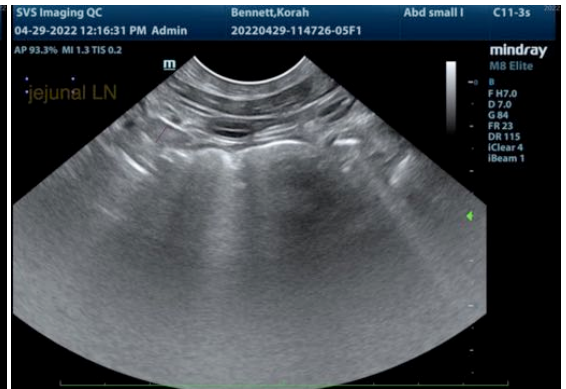
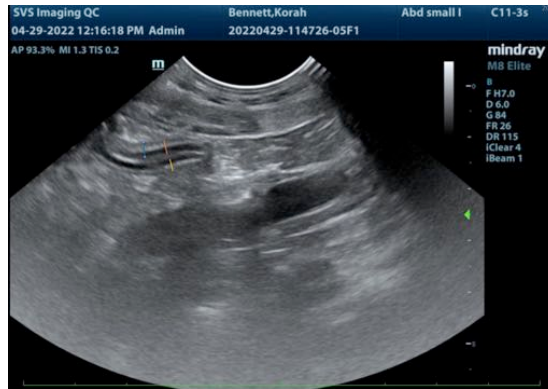
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The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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.

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