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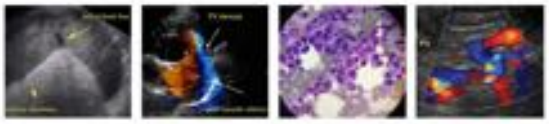

IMAGING PERFORMED BY
pawsonography@gmail.com 530-786-8340

PATIENT

Tillie Weil

SPECIES

Canine

BREED

King Charles Cavanlier Spaniel

SEX

Spayed female

AGE

7 years

WEIGHT

32 Pounds

INTERPRETED BY

Lisa Carioto, DVM, DVSc, Diplomate ACVIM

IMAGING PERFORMED BY

Loetitia Saint-Jacques, RVT

HOSPITAL NAME

Donner Truckee

REFERRING VET

Dr. Greg H

INVOICE

31545

DATE

7/8/22

PRESENTING CLINICAL SIGNS

Regular rhythm; II/VI left systolic murmur detected; strong femoral pulses; CRT < 2 sec. NO sedation. Asymptomatic for heart disease- doing well at home- DIET: Homemade vegetables and chicken, no grain.
Abnormal PE/Chem/CBC/UA Results: NSAID chem: ALKP=1604 (H), BUN=6 (L), Crea=0.4 (L), rest WNL. ALKP=633 in 4/2021 before Galliprant trial. ALKP=499 in 5/2021 after Galliprant trial. Currently on Galliprant, but increase in ALKP not likely from Galliprant due to post NSAID lab results in 2021. Also on Denamarin.

ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN

Urinary System

The **urinary bladder** is well distended, however, it is evident that the wall is thickened (4.30 mm at its thickest area) and irregular. A moderate to marked amount of free floating ("swirling") and gravity-dependent sediment is present. The sediment is slightly mineralized based on the "twinkling effect" produced. There is no evidence of cystoliths, polyps or a mass. No abnormalities are noted with the trigone or proximal urethra,

Kidneys

The **left** kidney measures 6.42 cm. The capsule is smooth. Its overall architecture, including the definition of the cortico-medullary junction, is preserved. Mineralizations of the diverticulae and pelvis are present, without evidence of nephroliths or pyelectasia. Blood flow is within normal limits. The surrounding mesentery is not hyperechoic.

The **right** kidney measures 6.26 cm. The capsule is smooth. Its overall architecture, including the definition of the cortico-medullary junction, is preserved. Mineralizations of the diverticulae and pelvis are present, without evidence of nephroliths or pyelectasia. The surrounding mesentery is not hyperechoic.

Aortic bifurcation/trifurcation No abnormalities observed.

Adrenal Glands

The **left** adrenal gland measures 0.41 cm at the cranial pole, 0.43 cm at the caudal pole and 2.52 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 0.52 cm at the cranial pole, 0.52 cm at the caudal pole and 2.51 cm in length. Two hyperechoic foci are present at the caudal pole, which is most likely due to fat, mineralization and/or ischemia. 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, architecture, echotexture, and echogenicity. The capsule is smooth. No abnormalities are observed with its vasculature, i.e. congestion and thrombi are not identified.

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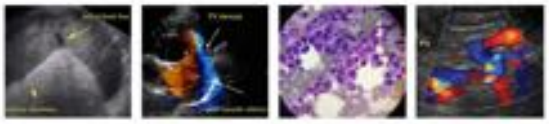

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Liver

Mild hepatomegaly is suspected, however, this is better characterized at the time of the ultrasound or radiographically. The liver's borders are smooth and sharp, to mildly rounded. The overall echotexture is homogeneous, and is diffusely hyperechoic, i.e., it is isoechoic to the spleen. No obvious abnormalities are noted with the hepatic vessels. Multiple hypoechoic well-defined nodules are observed, for example,

- A hypoechoic nodule measuring 0.60 cm in diameter x 0.90 cm in length.
- A second hypoechoic nodule measures 0.51 cm in diameter.
- A third hypoechoic nodule is present in the left liver, 0.66 cm in diameter x 1.42 cm in length.
- A small hypoechoic nodule is also present (in the right liver lobe).

The **gallbladder** (GB) is moderately dilated. It is filled with a small to moderate amount of free floating, gravity-dependent and inspissated echogenic material (sludge), as well as mucus strands. There is no evidence of fluid or edema surrounding the GB. The wall is within normal limits in thickness and echogenicity. The portions of the cystic and/or common bile ducts observed are not dilated or tortuous, i.e. there are no signs of an obstruction.

Gastrointestinal

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. 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. Subjectively, very mild fogging of the mucosa of the duodenum is noted. Abnormally dilated loops of bowel are not observed.

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.

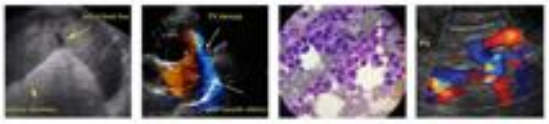
Pancreas

The **right limb** is enlarged and has mildly irregular contours, however, overt abnormalities with the echogenicity or echotexture of the limb are not observed. The surrounding mesentery is moderately hyperechoic. Signs of neoplasia are not appreciated.

The **left limb** has a mildly coarse echotexture, however, it is diffusely hypoechoic with mildly irregular contours. A small number of hypoechoic nodules of variable size and pinpoint to punctate hyperechoic foci are scattered throughout the parenchyma. The changes are suggestive of nodular hyperplasia and fibrosis, respectively. Fibrosis may be an age-related change, or may occur secondary to previous episodes of pancreatitis, mineralization, fat and amyloid deposition. The mesentery surrounding the left limb is moderately hyperechoic. The changes are suggestive of age-related changes and active pancreatitis.

Other

Lymph nodes No abnormalities are observed



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Abdominal effusion is not visualized.

ULTRASONOGRAPHIC FINDINGS

- **Pancreas:** The changes are suggestive of age-related changes and active pancreatitis. Signs of neoplasia are not appreciated.
- **Urinary bladder**: High index of suspicion of a urinary tract infection and cystitis. Cystoliths are not present, however, mineralized sediment is visualized.
- **Liver**: The changes are non-specific. The hypoechoic nodules are most likely due to nodular hyperplasia, which is a benign, age-related change. Target-like lesions are not visualized, i.e. there are no signs of neoplasia.

  Hepatomegaly (if present), and diffuse hyperechogenicity are non-specific changes. Differential diagnoses include hepatitis, which may be primary (immune-mediated) or secondary in origin. Evaluation of Tillie's travel history, and possible exposure to infectious agents, such as vector borne agents, parasites, and viruses, is suggested. Leptospirosis is considered unlikely due to chronicity. Other possible causes include exposure to medications, and natural supplements. Differential diagnoses for a diffusely hyperechoic liver include, cholestasis and cholangitis/cholangiohepatitis. Finally, a vacuolar hepatopathy secondary to stress or chronic illness may also be contributing to the sonographic abnormalities observed. Hyperadrenocorticism is considered unlikely given the lack of clinical signs.
- **Gallbladder**: The gallbladder **sludge** is most likely 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 or ursodeoxycholic acid may be required. There is no evidence of a mucocele and obvious signs of cholecystitis are not noted.
- **Kidneys**: Very mild age-related changes are observed.

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

The following are suggested/recommended

Urinalysis and urine culture and sensitivity

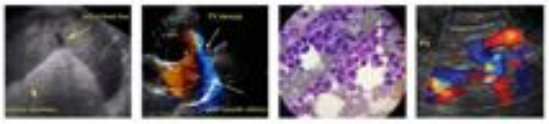
Evaluate regarding travel history, and other predisposing factors for hepatitis.

SNAP 4Dx and PCR tests to exclude vector borne diseases

Deworming (fenbendazole) 50 mg/kg PO once a day for 3 days and repeat 3 weeks later in case of aberrant parasitic infection

Obtaining a history regarding signs of GERD from the client is suggested.

If signs of GERD, 10-14 day trial with famotidine or omeprazole (0.7-1 mg/kg PO q12h)



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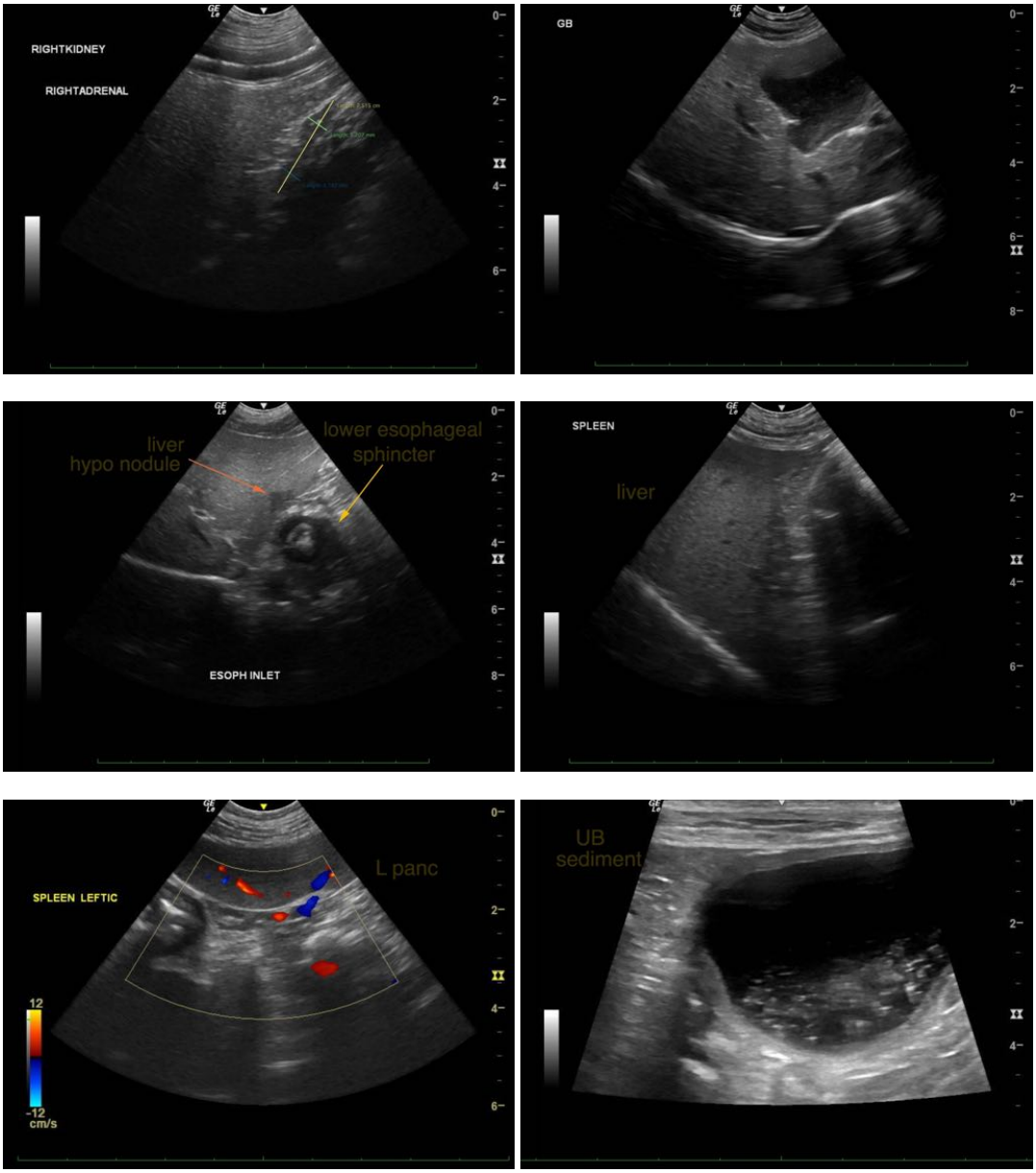
Differential diagnoses include cholecystitis, cholangitis/cholangiohepatitis, and secondary ascending bacterial infections. Although indiscriminate use of antibiotics is not recommended, consider broad-spectrum antibiotic with reassessment of liver enzymes, including GGT, in a few weeks, while *still receiving* the antibiotics. If an improvement is observed, continue antibiotic for an additional two weeks.

If there is still no improvement noted with the hepatic enzyme activities, a liver biopsy is suggested, in addition to copper quantification and culture of bile, pending results of a coagulation profile.



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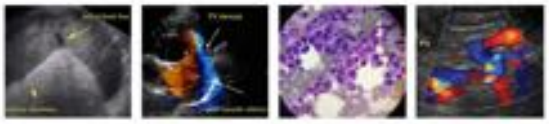

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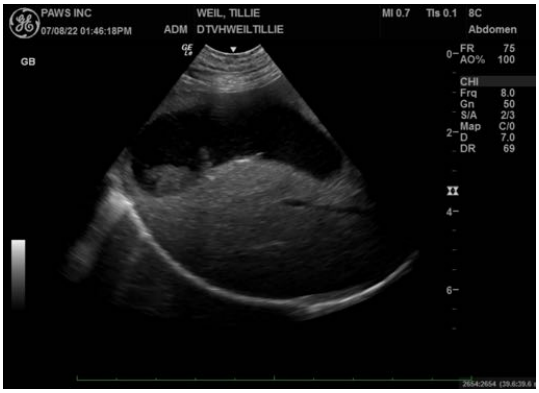

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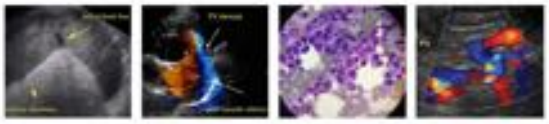

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The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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