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Clinical Sonography & Telecytology
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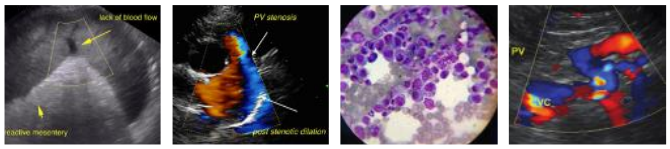


PATIENT
Dobby Ortenzio

SPECIES
Canine

BREED
Shih Poo

SEX
Neutered Male

AGE
9 Years

WEIGHT
8.5 Pounds

INTERPRETED BY
Lisa Carioto, DVM, DVSc, Diplomate ACVIM

IMAGING PERFORMED BY
Dr. Meghan Myers

HOSPITAL NAME
Hershire AH

REFERRING VET
Dr. Meghan Myers

INVOICE
37872

DATE
5/23/22

PRESENTING CLINICAL SIGNS

pet presented for dental cleaning today. Pre-surgery blood work showed a very increased alt and alkp. Has history of very mild increases in past (highest ever was 240, usually around 170). No clinical signs at home. Pet was fasted.
Abnormal PE/Chem/CBC/UA Results: alt: greater 1000 alkp; 1393 GGT: 37 (0-11) cholesterol: mild increase 358 t.bili - normal

ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN

Urinary System

The urinary bladder is well distended. The wall is smooth and regular. No abnormalities are present with the trigone or proximal urethra. A trivial amount of free floating sediment is present, however, there is no evidence of cystoliths, polyps or a mass.

Prostate

The prostate is homogenous and within normal limits for a neutered male.

Kidneys

The **left** kidney measures 3.16 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 and small nephroliths of the diverticulae and pelvis are present, without evidence of pyelectasia. An accumulation of intrapelvic fat is noted. The surrounding mesentery is very mildly hyperechoic.

The **right** kidney measures 3.24 cm. Findings are similar to the left kidney. Renal blood flow is within normal limits. The surrounding mesentery is very mildly hyperechoic. Note, the right kidney is isoechoic to very mildly hyperechoic to the liver.

Aortic bifurcation/trifurcation

No abnormalities observed.

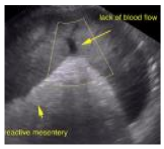
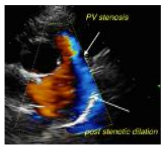
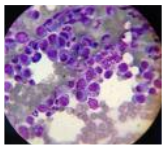
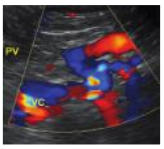
Adrenal Glands

The **left** adrenal gland measures 0.48 cm at the cranial pole, 0.58 cm at the caudal pole and 1.44 cm in length. Both poles are “plump”, with the caudal pole being slightly larger than the cranial. An obvious mass or nodule is not observed. 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 0.88 cm at the cranial pole, 0.40 cm at the caudal pole and 1.25 cm in length. The gland has the shape of a “T” due to the enlarged cranial pole. A mass and nodule are not evident. No abnormalities are noted with the gland’s overall echogenicity or echotexture. The phrenico-abdominal vein and surrounding vasculature and mesentery are unremarkable.

Spleen

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

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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", however, its borders are smooth and sharp. It is homogeneous, but mildly hyperechoic, i.e., it is isoechoic to the spleen. The walls of the portal veins are mildly hyperechoic/prominent. No abnormalities are observed with the hepatic veins visualized. Fat is notes surrounding a few of the larger blood vessels, which may be due to fat, mineralization, fibrosis, as well as inflammation. The mesentery surrounding the liver and stomach is mildly hyperechoic.

The gallbladder wall is within normal limits in thickness (1 mm) and echogenicity. A very small amount of echogenic material (sludge) is present within the GB. There are at least three polyp type structures attached to the intraluminal wall. One of the polyp like structures measures 3.9 mm in diameter x 2.9 mm in length. The area surrounding the cystic duct is hyperechoic. 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 and a very small amount of fluid are 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. Fogging, stippling and very subtle striations are noted in some of the segments of the jejuni. Abnormally dilated loops of bowel are not observed.

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

Pancreas

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

Other

Lymph nodes

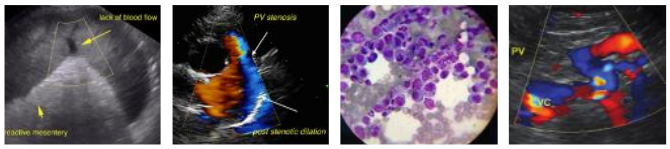
No abnormalities are observed

Abdominal effusion is not visualized.

ULTRASONOGRAPHIC FINDINGS

- The hepatomegaly and diffuse hyperechogenicity of the **liver** may be due to hepatitis, which may be primary (immune-mediated) or secondary in origin. Examples of secondary causes include, toxins, including medications and natural supplements, infectious agents, such as, parasites, viruses, or bacteria. Other causes of a diffusely hyperechoic liver and hepatomegaly include, cholestasis, cholangitis/cholangiohepatitis and cholecystitis. A component of the changes observed may also be due to a vacuolar hepatopathy, which may occur due to stress (chronic illness), hyperadrenocorticism, or exogenous administration of steroids, (e.g. topical).

- Presence of **gallbladder sludge** and what appears to polyp like structure. Obvious signs of neoplasia are not observed. Gallbladder sludge is often clinically insignificant, however, some



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dogs may show clinical signs of gastroesophageal reflux disease (GERD), therefore, 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 depending on the patient's history.

- The subtle **jejunal changes** present are suggestive of inflammation. An evaluation of Dobby's albumin is suggested to exclude possible lymphangiectasia.

- The cranial pole of the **right adrenal gland** is enlarged. A nodule or mass is not observed. A benign adenoma is possible, as is adrenal hyperplasia secondary to stress (chronic illness), or hyperadrenocorticism (HAC). Sonographic results should be correlated with clinical signs, i.e., further diagnostics are not necessary if Dobby is not demonstrating clinical signs of HAC. However, an evaluation of his arterial blood pressure and a urine protein: creatinine ratio are recommended (see below).

- Mild degenerative changes of both **kidneys** are present, which are suggestive of age related degeneration. Both kidneys show mild mineralization and nephrolithiasis, as well as mild degenerative changes, which are suggestive of age related degeneration. There are no signs of an obstruction. The surrounding mesentery is very mildly hyperechoic, therefore, pyelonephritis cannot be excluded.

- The free floating sediment within the lumen of the **urinary bladder** is most likely composed of mucus, crystalline material and exfoliated cells. The debris is likely clinically insignificant given the lack of inflammatory changes to the bladder wall, however, findings should be correlated with clinical signs and a urinalysis.

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

The following are suggested
Evaluation of medications, natural supplements, etc. travel history.

SNAP 4Dx and PCR test for *Leptospira* spp. (if not treated with penicillins or beta-lactamase antibiotics in the last 2 months) to exclude infectious cause of hepatitis

Urinalysis and urine culture and sensitivity.

If a urinary tract infection is excluded, perform a urine protein: creatinine ratio.

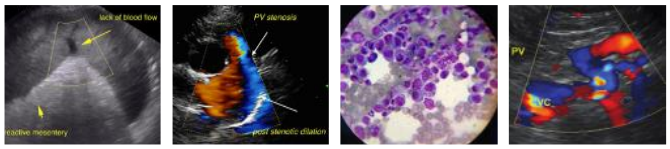
Arterial blood pressure

Obtaining a history regarding signs of GERD from the client is suggested. Treatment with an anti-acid, proton pump inhibitor and ursodeoxycholic acid may be required depending on the patient's history.

Exclude possibility of topical steroids, including steroids client may be using that Dobby may be ingesting inadvertently (licking of clients' arms, legs, etc.).

A sonographic re-evaluation of the GB is recommended in 6 to 8 weeks to monitor the evolution of the polyp-like structures.

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*



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receiving the antibiotics. If an improvement is observed, continue antibiotic for an additional two weeks.

Deworm to exclude parasites, including an aberrant parasite infection of the liver

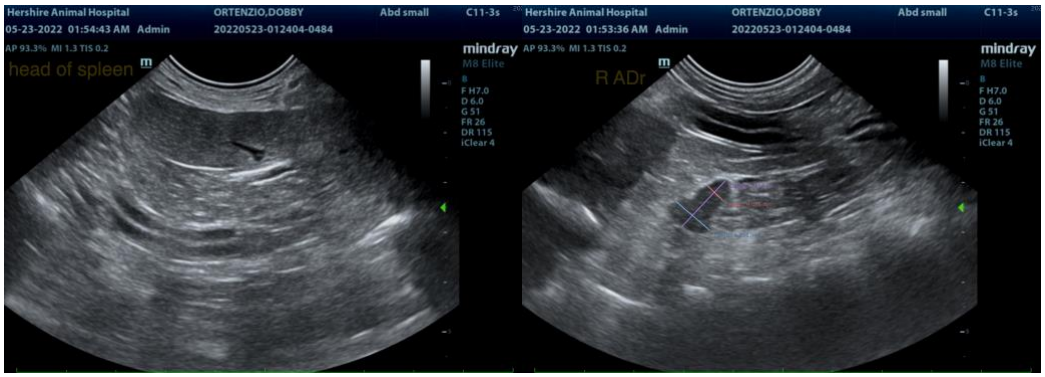
+/- Hepatoprotectant (possible nausea and vomiting)

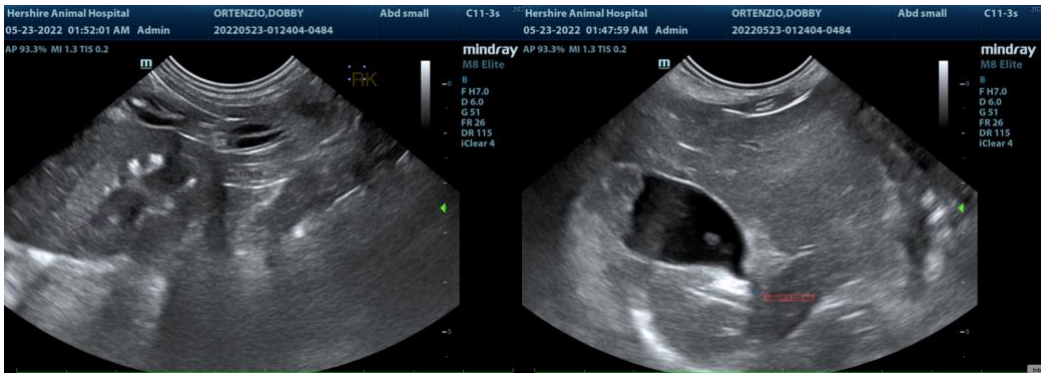
Fine needle aspirates of the liver may be performed. However, a tissue biopsy is ideal (evaluates hepatic architecture).

A coagulation profile is suggested prior to FNA.

Vitamin K (0.5 mg/kg SQ q8-12h for 1-3 doses) is suggested, even if PT/PTT within normal limits.

Further diagnostics for hyperadrenocorticism are suggested if Dobby has proteinuria, and/or is hypertensive.





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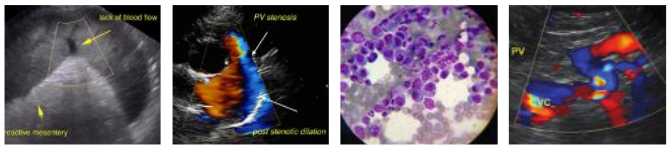

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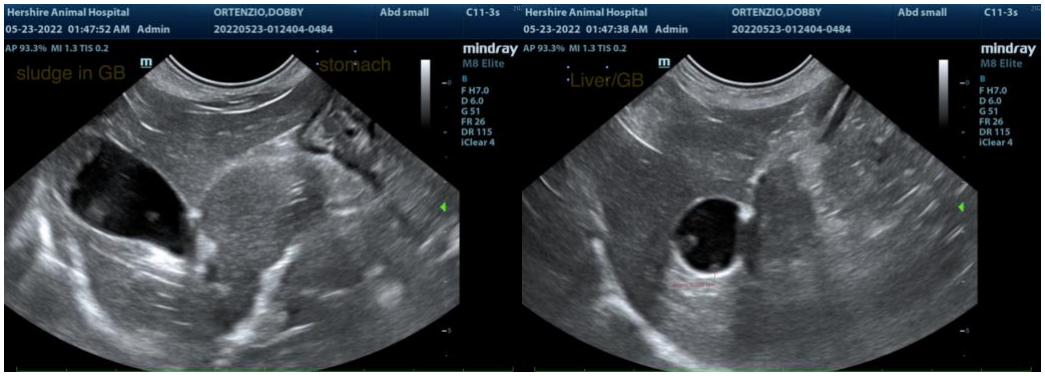

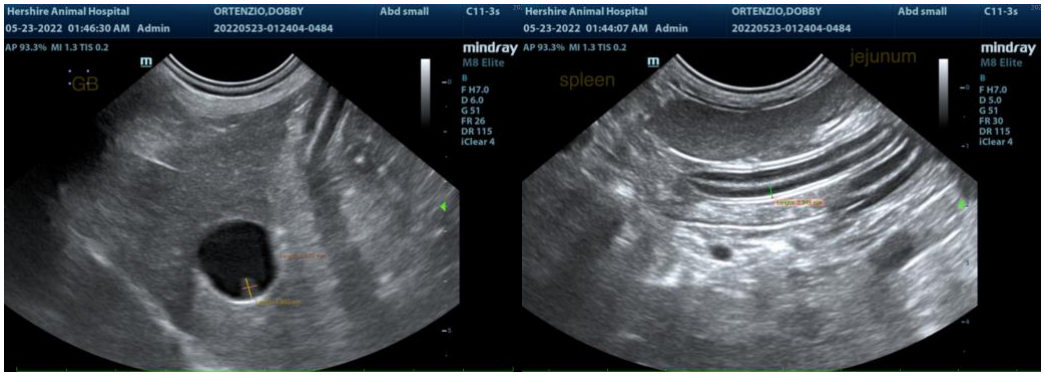

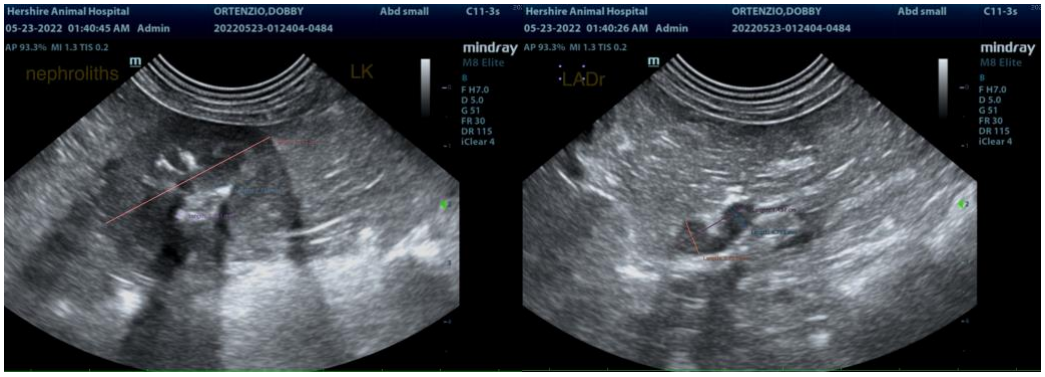

The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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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