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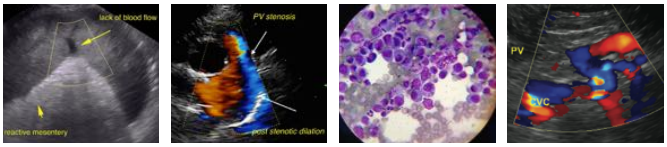


PATIENT
Opie Check

SPECIES
Canine

BREED
Border Collie Mix

SEX
Neutered male

AGE
10 years

WEIGHT
42.5 lbs

INTERPRETED BY
Lisa Carioto, DVM, DVSc, Diplomate ACVIM

IMAGING PERFORMED BY
Kelly Vazquez , CVT

HOSPITAL NAME
Westwood Regional VH

REFERRING VET
Dr. McConnell

INVOICE
31723

DATE
7/15/22

PRESENTING CLINICAL SIGNS

Patient presents due to suspicion of adrenal mass, R/O adrenal mass vs. neoplasia vs. other. Current meds: Ursodial (130mgs/ml) 1 ml BID, Vetoryl 90 mgs SID.
Abnormal PE/Chem/CBC/UA Results: 6/7/22: ALT 257, ALP 739, GGT 36, BUN/creat. ratio 36, chol. 371, ACTH stim: pre: 2.4 - post 5.6.

ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN

Urinary System

The **urinary bladder** is very well distended (history of polydipsia/polyuria) with anechoic contents. The wall is smooth and regular. No abnormalities are noted with the trigone or proximal urethra, and there is no evidence of sediment, cystoliths, polyps or a mass.

Although the **prostate** is at the high end of what is expected for a neutered male, the gland is homogenous and does not show any abnormalities in echotexture or echogenicity. It is symmetrical and the prostatic urethra is within normal limits.

Kidneys

The **left** kidney measures 6.80 cm. The capsule is smooth. The cortex is mildly hyperechoic, i.e., it appears isoechoic to the spleen. Its overall architecture, including the definition of the cortico-medullary junction, is preserved. Very small mineralizations along the arcuate arteries, 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 8.04 cm. The cortex is hyperechoic, i.e., it is hyperechoic to the liver. Its overall architecture, including the definition of the cortico-medullary junction, is preserved. Very small mineralizations along the arcuate arteries, diverticulae and pelvis are present, without evidence of nephroliths or pyelectasia. Blood flow is within normal limits. The surrounding mesentery is not hyperechoic.

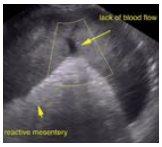
Aortic bifurcation/trifurcation No abnormalities observed.

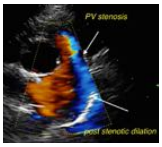
Adrenal Glands

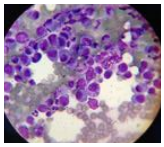
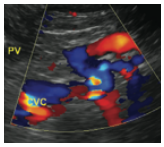
The **left** adrenal gland measures 1.37 cm at the cranial pole, 1.46 cm at the caudal pole and 3.84 cm in length. Occasional, pinpoint to punctate hyperechoic foci are noted at the caudal pole and mid gland. The foci are attributed to mineralization and/or fat. Ischemia and fibrosis are considered less likely. No overt 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 1.01 cm at the cranial pole, 1.25 cm at the caudal pole and between 2.42-2.88 cm in length, depending on where measured. The gland is "pudgy" and has more of a "boomerang" shape. No abnormalities are noted with the gland's overall echogenicity or echotexture. The phrenico-abdominal vein and surrounding vasculature and mesentery are unremarkable.

Spleen





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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 within the splenic vein, within the spleen or the vessels in the surrounding region.

Liver

Very mild hepatomegaly is suspected, however, this is better characterized at the time of the ultrasound or radiographically. The liver's borders are smooth, but appear "swollen" and rounded as a result of hyperadrenocorticism. It is diffusely hyperechoic and within normal limits in echogenicity. Occasional perivascular cuffing is present, suggestive of myelolipomas; these are not considered clinically significant. Focal lesions, including target-like nodules, are not observed. The turbulent blood flow within the celiac artery at the portal hilus and the mildly enlarged caudal vena cava at the entrance of the liver are considered within normal limits and likely a variant of normal, i.e. there is no evidence of pathology.

The **gallbladder** (GB) is severely distended with a large amount of free floating and gravity-dependent echogenic material (sludge). A small, 2 mm, free floating cholelith, is suspected within the GB. The GB wall is within normal limits in thickness and echogenicity. The cystic duct is very mildly dilated at 0.34 cm. Sludge is present within the duct. The common bile duct cannot be followed due to the gas in the surrounding region, however, there are no obvious signs of an obstruction.

Gastrointestinal

A large amount of gas is present within the lumen of the stomach. The gastric wall is within normal limits in thickness and the wall layers are well defined, however, the muscularis appears thickened and fogging is present. 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. Abnormally dilated loops of bowel are not observed.

A large amount of gas is present within the transverse colon.

The descending colon is empty and is followed toward the pelvic inlet. Its wall is not thickened and mural detail is considered normal. Gas is present at the distal portion (pelvic inlet).

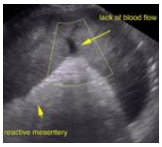
There are no obvious signs of a mass, foreign body, infiltrative disease or an obstruction in the gastrointestinal tract.

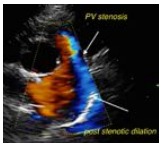
Pancreas

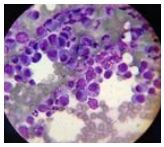
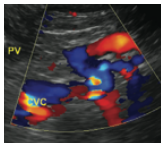
The pancreas has a mildly coarse echotexture, which is considered secondary to age related changes, however, previous episodes of pancreatitis cannot be excluded. There are no signs of active pancreatitis or neoplasia.

Other

Mesentery: Two hyperechoic nodules, 5.9 mm and 4.7 mm in length, are visualized ventral to the left kidney. They both cast subtle acoustic shadows, suggestive of calcification. Dystrophic calcification within the mesentery, associated with hyperadrenocorticism, is suspected.





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Lymph nodes No abnormalities are observed

Abdominal effusion is not visualized.

ULTRASONOGRAPHIC FINDINGS

- **Adrenal glands**: Bilateral adrenomegaly, without signs of neoplasia or invasion of the surrounding vasculature. Adrenomegaly may be secondary to hyperplasia due to pituitary-dependent hyperadrenocorticism, which does not improve or may actually increase with administration of trilostane (Vetoryl).
- **Gallbladder (GB)**: Dilated gallbladder with marked amount of sludge. The appearance of Opie's GB is not consistent with a classical mucocoele, however, a mucocoele in its early development cannot be excluded. Dogs with hyperadrenocorticism are predisposed to developing mucocoeles. Cholecystitis, including a suppurative form, cannot be excluded despite the absence of classical sonographic signs. 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 as treatment with an anti-acid or proton pump inhibitor may be required. An increase in the dose of Ursodiol is suggested (see below).
- **Liver**: The hepatic changes are consistent with *hyperadrenocorticism (HAC)*, i.e., possible hepatomegaly, "swollen", rounded borders, diffuse hyperechogenicity (*vacuolar hepatopathy).* There is no evidence of neoplasia.
- **Mesentery**: The two echogenic structures (nodules) are likely due to dystrophic calcification, also associated with HAC.
- **Kidneys**: Very mild age-related changes are noted. Hyperechoic cortices may be due to HAC associated glomerulonephritis. Obvious signs of pyelonephritis are not appreciated.
- **Gastrointestinal tract**: The cause of the subtle inflammatory changes observed with the stomach (prominent muscularis with fogging) is not known, however, it may be associated with GERD and/or recent episodes of vomiting, that may not have been mentioned in the history.

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

The following are suggested/recommended

A urine culture and sensitivity

If negative, a urine protein: creatinine ratio; to exclude proteinuria associated with HAC

Fasting triglycerides to exclude hypertriglyceridemia as a predisposing cause of gallbladder sludge.

An arterial blood pressure; if hypertensive, or proteinuric, telmisartan should be initiated

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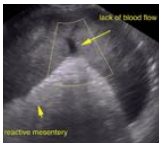
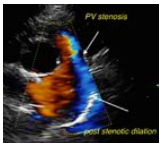
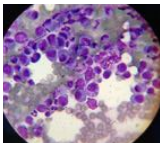
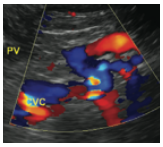

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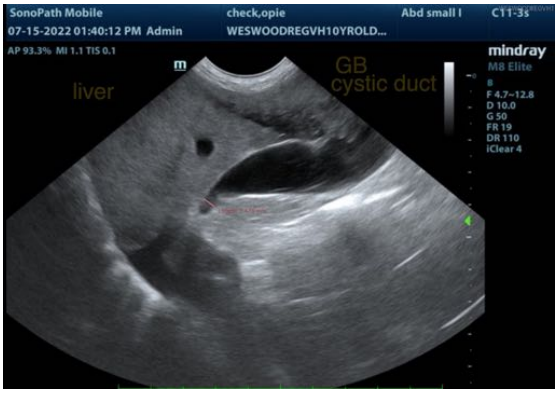
Obtaining a history regarding signs of GERD from the client is suggested. Treatment with an anti-acid, proton pump inhibitor (0.7-1 mg/kg PO **q12h**) for 10-14 days.

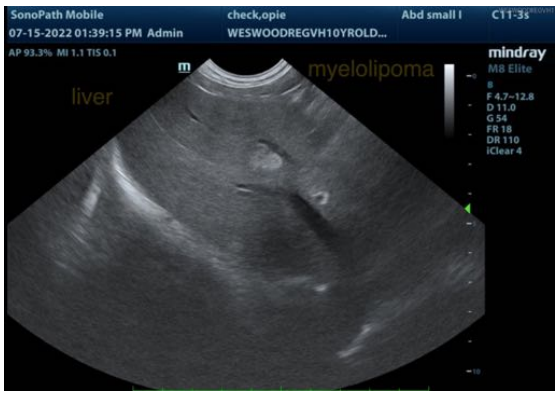
ursodeoxycholic acid (Ursodiol). Current dose 6.7 mg/kg PO every 12h. Adjustment of dose: slowly increase the dose (*over 3-4 weeks*) to 10 mg/kg PO every 12h (if tolerated). If tolerated, 500 mg tablets may be tried, e.g., ½ tablet in the morning and ¼ tablet in the evening (always with a full meal). The current dose may be too low based on the amount of sludge present. Also, some compounded forms of ursodeoxycholic acid are not well absorbed. Monitor for signs of nausea, hyporexia, vomiting, cramps and diarrhea. If any adverse effects occur, discontinue the medication for 3-5 days and restart at and maintain the dose that was tolerated.

trilostane (Vetoryl). Opie's HAC is not well controlled. Compounded forms are not always well absorbed compared to the proprietary form. To decrease costs, clients may wear a mask, gloves and protective eyeglasses and split the capsules. Twice a day administration has been shown to be more effective than once a day. The 90 mg dose may be divided q12 hours, or choose a dose that is easier to dose based on capsule size, or the client can reformulate them.

Consider pre-pill trilostane testing instead of ACTH stimulation tests (Dechra.com/uk)

An ultrasound of the GB is recommended in 3-4 months to ensure the new dose is effective.





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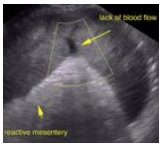
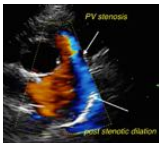
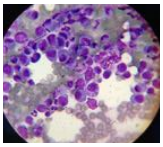
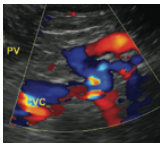

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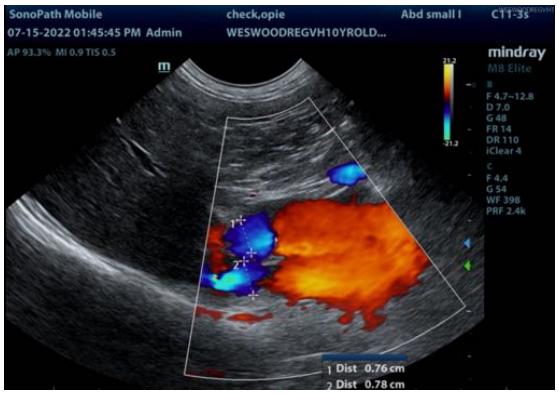

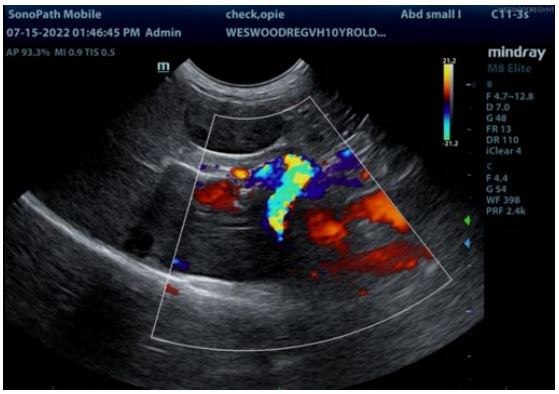

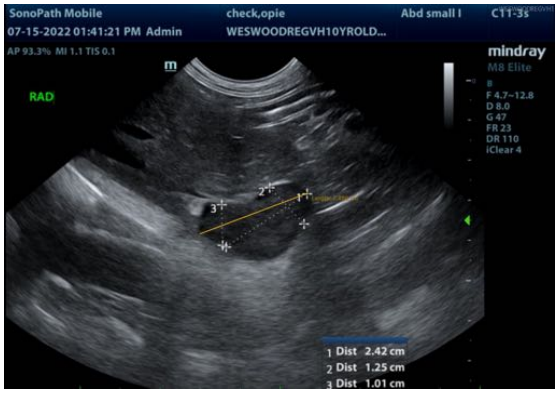

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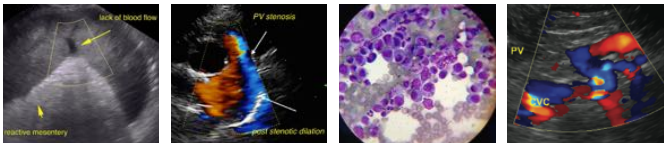

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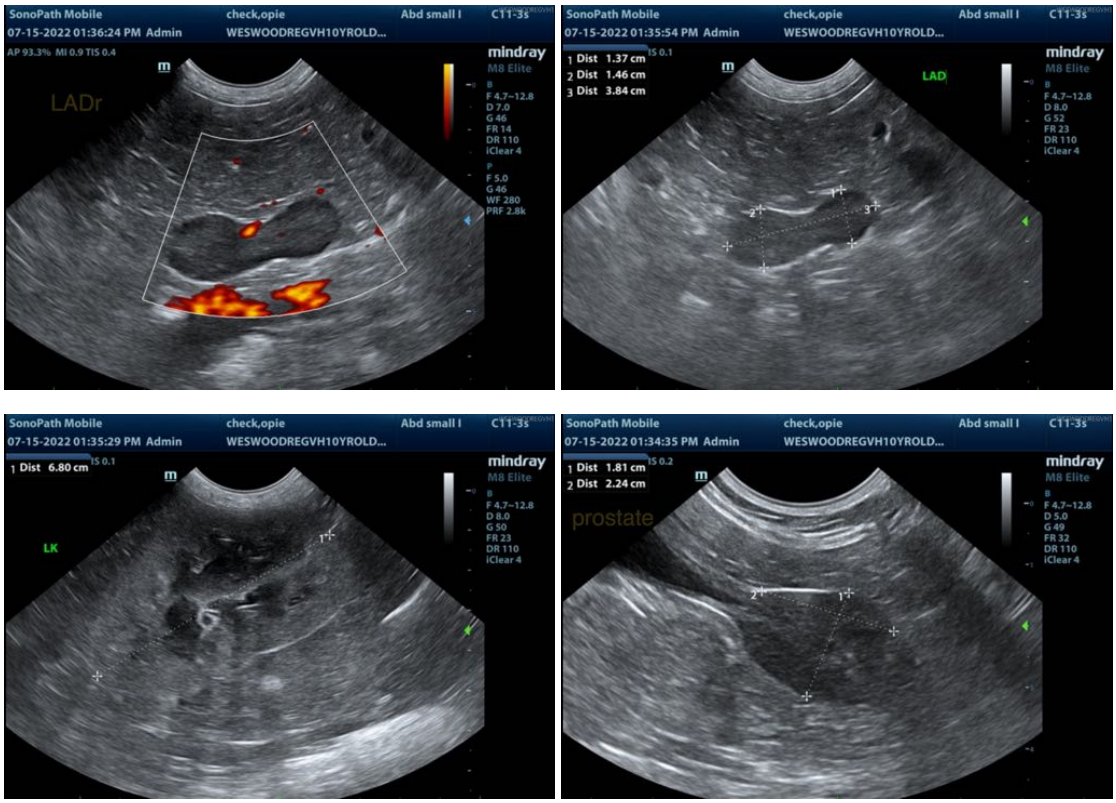

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The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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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