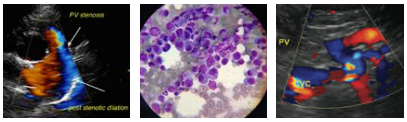
IMAGING PERFORMED BY

IntraPet.com



SonoPath
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DATE
5/23/22

PATIENT
Fletcher Bishop

SPECIES
Canine

BREED
Terrier Mix

SEX
Neutered male

AGE
8/6/08

WEIGHT
19.96 lbs

INTERPRETED BY
Lisa Carioto, DVM, DVSc, Diplomate ACVIM

HOSPITAL NAME
Healing Paws Veterinary Wellness

REFERRING VET
Dr. Levitsky

INVOICE
30664

PRESENTING CLINICAL SIGNS

Follow up U/S to re evaluate bladder stones, splenic nodules, liver, and adrenals. Dx on 2/22 with LDDS test as having Cushings dz but couldn't determine whether pituitary or adrenal based on level of suppression.
Current Medications: Levothyroxine 0.2 mg 1 po bid, RC S/O diet, Cefpodoxime 200 mg 1/2 po sid, Herbs.
Lab Results: 9/19 Ca 11.2, T4 1.3. 10/20 Ca 12.7, T4 1.0, GT4 0.7, ALKP 63, GGT 9. 11/20 Ca 12.8, T4 2.2, FT4 32.2, ALKP 381. 12/20 ALKP 303, iCA <0.2. 6/21 T4 2.8, FT4 22.3. 11/21 Ca 11.8, T4 2.4, FT4 33.8, ALKP 710, GGT 13.
Date of Previous IntraPet Ultrasound: 2/22/22. See attached.
Sedation: Not required to complete full diagnostic ultrasound.
Stat Report: Not requested.
Imaging Performed By: Stephanie Pearce RDCS, RVT.

ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN

Urinary System

The urinary bladder is well distended with anechoic contents. No abnormalities are noted with the trigone or proximal urethra, and there is no evidence of polyps or a mass. Multiple cystoliths of variable size and a very small amount of free floating sediment are present along the ventral wall. There is no evidence of an obstruction. The wall is smooth and regular despite the presence of cystoliths.

Prostate

The prostate is homogenous and measures 0.66 cm, which is within normal limits for a neutered male.

Kidneys

The **left** kidney measures 5.01 cm. The capsule is smooth. The cortex is moderately hyperechoic (i.e., it is hyperechoic to the spleen). A mild to moderate loss of the normal definition of the cortico-medullary junction is present. Mineralizations of the diverticulae and pelvis are present, without evidence of nephroliths or pyelectasia. Subjectively, blood flow appears mildly increased, i.e. possible hypertension may be present. The surrounding mesentery is not hyperechoic.

The **right** kidney measures 4.93 cm. Findings are similar to the left kidney. The cortex of the right kidney is hyperechoic to the liver, which is also hyperechoic compared to normal.

Aortic bifurcation/trifurcation

No abnormalities observed.

Adrenal Glands

Adrenomegaly; the **left** adrenal gland measures 0.97 cm at the cranial pole, 0.95 cm at the caudal pole and 2.32 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.

Adrenomegaly; the **right** adrenal gland measures 0.80 cm at the cranial pole, 0.94 cm at the caudal pole and 2.20 cm in length. No abnormalities are noted with the gland's overall architecture, echogenicity or echotexture. A well circumscribed hyperechoic nodule measuring 3.43 mm in diameter x 3.09 mm in length is noted at the caudal pole. A slight acoustic shadow is cast by the nodule, which is suggestive of mineralization/calcification. Fat and fibrosis may also be contributing to its hyperechogenicity. 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. Multifocal, homogenous, well-demarcated, nodules are present throughout the parenchyma. Perivascular cuffing is also noted. No abnormalities are observed with its vasculature, i.e. congestion and thrombi are not identified.

Liver
Hepatomegaly is suspected, however, this is better characterized at the time of the ultrasound or with radiographs. Liver borders are smooth and rounded. The liver's echotexture is homogeneous, but diffusely hyperechoic. Focal lesions are not observed. No abnormalities are observed with the hepatic vessels visualized.

The gallbladder (GB) is moderately distended with a moderate amount of free floating and gravity dependent echogenic material. The GB 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. There is no evidence of edema surrounding the GB.

Gastrointestinal
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 subtle fogging of the mucosa of the small intestines is observed.

The clinical significance of the latter finding is unknown. Abnormally dilated loops of bowel are not observed.

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

Heart
A brief video clip of the heart was submitted. Pericardial and pleural effusion are not identified. There is no evidence of a mass on evaluation of the right atrium or auricle. Note, a mass may be overlooked in the absence of pericardial effusion.

ULTRASONOGRAPHIC FINDINGS

- **Cystoliths**. Multiple cystoliths are present within the urinary bladder, which has a smooth and regular mucosa, i.e., there are no obvious signs of inflammation or an infection. There is no evidence of an obstruction.

- **Bilateral adrenomegaly** is consistent with adrenal hyperplasia secondary to pituitary dependent, which was diagnosed with blood work. There is no evidence of a mass to suggest neoplasia.

- A well circumscribed hyperechoic **nodule** is noted in the **caudal pole of the right adrenal gland**. The nodule casts a slight acoustic shadow. Differential diagnoses for the nodule include, mineralization/calcification, i.e. an age-related change, deposition of fat, previous infarct and fibrosis. There are no signs of neoplasia.

- **Liver**: high index of suspicion of hepatomegaly and diffuse hyperechogenicity, both of which are consistent with a vacuolar hepatopathy associated with hyperadrenocorticism. There are no signs of infiltrative disease. Hepatitis is considered unlikely. Other differential diagnoses of an enlarged, hyperechoic liver, such as, cholestasis, cholangitis/cholangiohepatitis, and cholecystitis, with a secondary bacterial infection cannot be excluded, due to the gallbladder sludge. Fletcher does not appear to be demonstrating clinical signs of these diseases.

- The presence of **gall bladder sludge** is often clinically insignificant, however, dogs with hyperadrenocorticism are more predisposed to developing sludge. Also, some dogs show clinical signs of gastroesophageal reflux disease as a result of the sludge, therefore, obtaining a history regarding signs of GERD from the client is suggested. Treatment with ursodeoxycholic acid may be required depending on the patient's history.

- **Bilateral renal changes** are present, which are suggestive of age related degeneration. However, glomerulonephritis associated with hyperadrenocorticism may also be contributing to the changes observed. Subjectively, the renal blood flow of the kidneys is mildly increased, which may be suggestive of hypertension. A systemic arterial blood pressure is recommended.

- Multiple, hyperechoic **splenic nodules**, some of which cast a shadow. The nodules may be calcifications (dystrophic calcification) and mineralizations associated with hyperadrenocorticism, and age-related changes. Deposition of fat, as well as nodular regeneration and fibrosis may also cause similar changes. There are no signs of neoplasia. The myelolipomas are clinically insignificant.

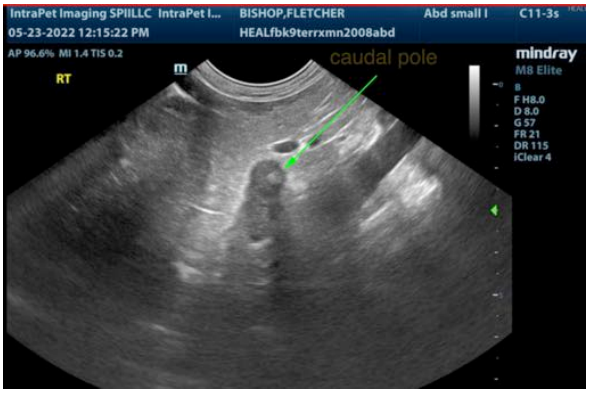
- Subjectively, very subtle fogging of the mucosa of the **small intestines** is observed. The latter may not be clinically significant, however, it may be suggestive of inflammation in some patients. Findings should be correlated with clinical signs (e.g. history of vomiting and/or diarrhea).

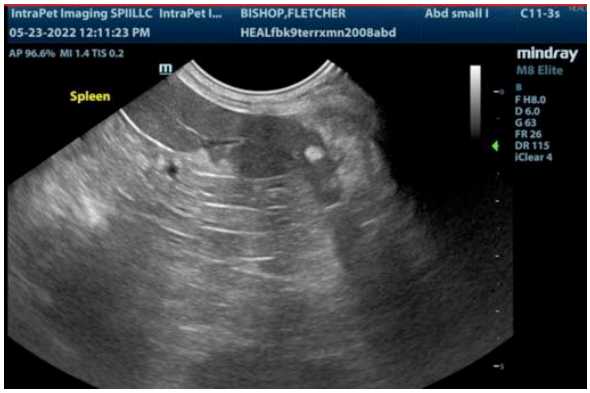
INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

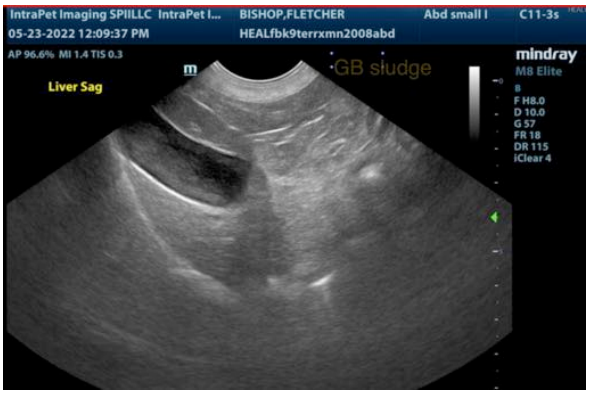
The following are suggested/recommended

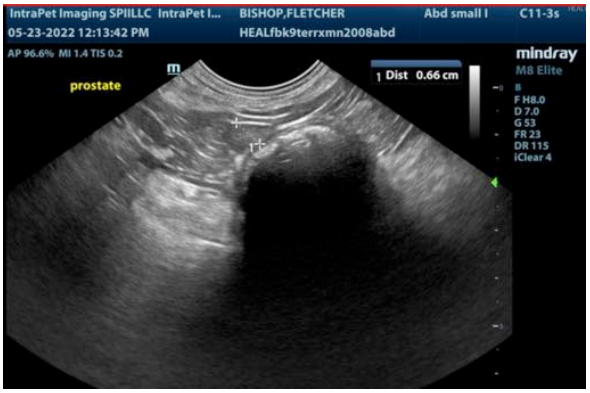
- A systemic arterial blood pressure.
- A urinalysis and urine culture, if not already performed.
- If the latter is negative, a urine protein: creatinine ratio to exclude proteinuria due to GN
- A SNAP 4Dx may be required to exclude GN
- A diet with the s/o index that is *not* elevated in fat (i.e. avoid Royal Canin Urinary s/o diets) is suggested, for example, RC Mature canned food, with additional water.
- Treatment of hypertriglyceridemia may be indicated.

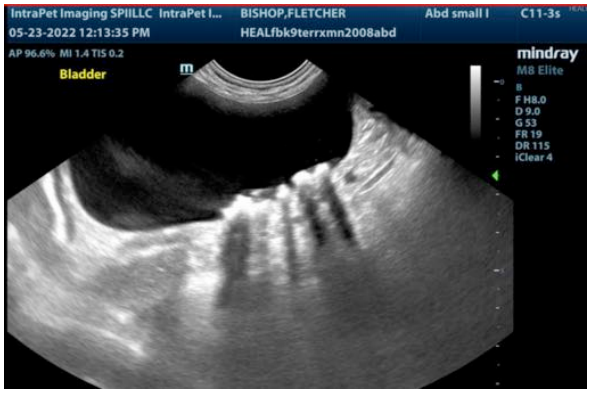
- Obtaining a history regarding signs of GERD from the client. Treatment with an anti-acid, proton pump inhibitor may be required depending on the Fletcher's history.
- If GERD is present, weight loss and/or sarcopenia are persisting, evaluation for malabsorptive and maldigestive conditions should be considered, in addition to a hypoallergenic (hydrolyzed) or novel protein diet, that is enticing to prevent further sarcopenia and cachexia
- Deworm with fenbendazole
- Consider treatment with ursodeoxycholic acid depending on history.

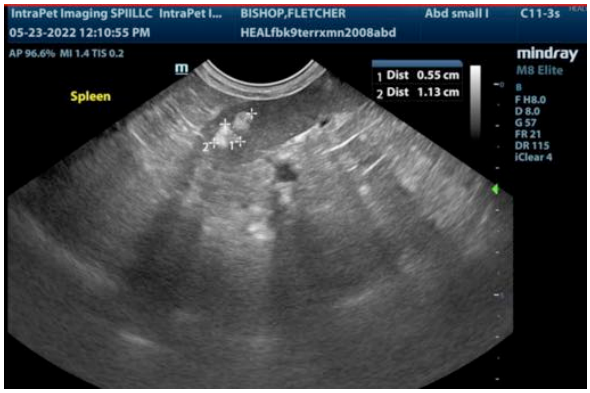












The information and recommendations provided are based on the images presented by the referring veterinarian. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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