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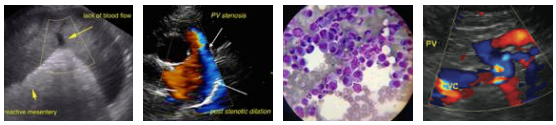


ANIMAL SOUNDS NW
MOBILE VETERINARY ULTRASOUND
IMAGING PERFORMED BY
AnimalSoundsNW.com 541-357-9423

PATIENT
Blazer Myers

SPECIES
Canine

BREED
Parsons Terrier

SEX
Neutered male

AGE
13 years

WEIGHT
15.2 lbs

INTERPRETED BY
Lisa Carioto, DVM, DVSc, Diplomate ACVIM

IMAGING PERFORMED BY
Sara Hansen

HOSPITAL NAME
VCA McKenzie AH

REFERRING VET
Dr. Arpaia

DATE
6/6/22

Invoice
30871

PRESENTING CLINICAL SIGNS

April began to have poor appetite Act nauseated. lip licking Has had diarrhea (initial stool sometimes formed but then diarrhea) Periodic vomiting of food Grade 2/6 systolic heart murmur w occasional dropped beat Continuing to lose weight
Abnormal PE/Chem/CBC/UA Results: platelets 654K- suspect reactive thrombocytosis secondary to inflammation WBC 44.2 (4-15.5) -neutrophilia 38012 (2060-10600) - monocytosis 2652 (0-840) - eosinophilia 1326 (0-1200); Chemistry profile - Superchem: wnl except - total protein 4 (5-7.4) - albumin 2.3 (2.7-4.4) - precision PSL 204 (24-140) - corrected calcium - wnl -SDMA wnl 11.1 (<14); ACTH stimulation test - Pre -cortisol 4.6 (1-5) post cortisol 11.7 (8-17) Rechecking CBC/Diff today
Current Medications Gastrofate 6mls sid

ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN

Urinary System

The urinary bladder is adequately distended with anechoic contents. The wall is smooth and regular., but mildly thickened dorsally. No abnormalities are noted with the trigone or proximal urethra, and there is no evidence of sediment, cystoliths, polyps or a mass.

Prostate

The prostate is homogenous and measures 1.11 cm, which is within normal limits for a neutered male. A focal hyperechoic region a few millimeters in diameter is noted dorsally. The latter is likely due to mineralization, fat and/or fibrosis. It is not considered clinically significant.

Kidneys

The **left** kidney measures 4.48 cm. The capsule is smooth. The cortex is mildly hyperechoic and a very mild 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. An accumulation of intrapelvic fat is noted. Blood flow is within normal limits. It is difficult to assess the echogenicity of the mesentery surrounding the kidney due to the large amount of gas and ingesta in the transverse colon.

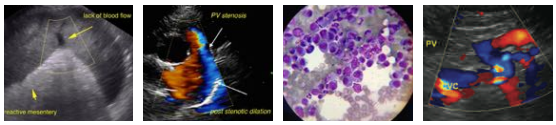
The **right** kidney measures 4.60 cm. Findings are similar to the left kidney.

Aortic bifurcation/trifurcation

No abnormalities observed.

Adrenal Glands

The **left** adrenal gland measures 0.64 cm at the cranial pole, 0.87 cm at the caudal pole and 2.34 cm in length. The caudal pole is enlarged and cranial pole is “plump” and very mildly enlarged for a dog of Blazer’s stature. The margins of the gland are mildly irregular. The echotexture is homogeneous. An



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obvious mass is not observed. The phrenico-abdominal vein and surrounding vasculature and mesentery are unremarkable.

The **right** adrenal gland measures 1.17 cm at the cranial pole, 0.59 cm at the caudal pole and 1.78 cm in length. The cranial pole has irregular margins and is homogeneous in echotexture and echogenicity. A mass cannot be excluded based on the loss of the integrity of the borders. A well-defined slightly hypoechoic nodule is observed at the caudal border. The phrenico-abdominal vein and surrounding vasculature are unremarkable. The mesentery surrounding the gland is hyperechoic.

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. The mesentery surrounding the spleen is moderately to markedly hyperechoic.

Liver

There are no obvious signs of hepatomegaly and its borders are smooth and sharp. It is diffusely hyperechoic, and a diffuse, mildly coarse/granular echotexture is observed. The walls of the portal veins are mildly hyperechoic and more prominent than usual.

The gallbladder (GB) is moderately distended with a large amount of both free floating and inspissated echogenic material. The inspissated bile has formed nodules, some of which are adhered to the intraluminal wall. One nodule measures 3.7 mm in diameter x 6.1 mm in length. The GB wall is within normal limits in thickness and echogenicity. The cystic duct is filled with sludge and is moderately dilated (5.11 cm), but not tortuous. A proper evaluation of the common bile duct is not possible due to gas in the surrounding area, however an obvious obstruction is not visualized.

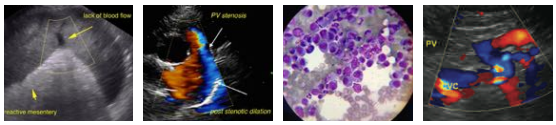
Gastrointestinal

The lumen of the stomach is filled with a very large amount of ingesta and gas. The gastric wall is within normal limits in thickness and the wall layers are well defined. Peristalsis appears increased, yet ineffective, i.e. a “to and fro” motion is observed.

The small intestinal wall thickness, including the duodenum, is within normal limits and the definition of the wall layers is preserved. Fogging of the mucosa is observed. A large amount of gas, fluid and echogenic granular ingesta are present in the loops of jejunum. Dilated loops of bowel with ineffective peristalsis (ileus) are present throughout. No architecture of the ileo-cecal-colic junction is within normal limits. The mesentery surrounding the small intestines throughout the abdomen is hyperechoic.

A very large amount of ingesta and gas are present within the transverse colon. The mesentery surrounding the transverse colon and jejunum in the left cranial quadrant is moderately to markedly hyperechoic.

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



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Pancreas

No overt abnormalities are observed with the echogenicity or echotexture of the left limb, however, the mesentery in the left cranial quadrant is severely hyperechoic. An in-depth evaluation of the right limb and body is not possible due to the large amount of gas and ingesta in the surrounding gastrointestinal tract and the hyperechoic mesentery.

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. A mass is not observed on evaluation of the right atrium or auricle. However, a mass may be overlooked in the absence of pericardial effusion.

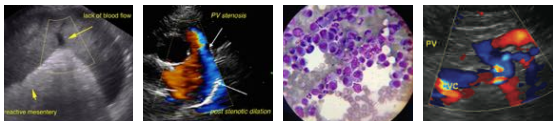
ULTRASONOGRAPHIC FINDINGS

- **Gastrointestinal tract**: Findings are suggestive of GI inflammation of the small intestines with an ileus of the small and large intestines. Differential diagnoses include a protein losing enteropathy due to inflammation secondary to inflammatory bowel disease (IBD), food intolerance, and malabsorptive disease (see pancreas). Although overt signs of neoplasia are not identified, lymphoma, or other round cell neoplasia, cannot be excluded.

- **Diffusely hyperechoic mesentery**: Consistent with smoldering inflammation, due to IBD, or other ongoing diffuse inflammatory process. Neoplasia cannot be excluded.

- **Adrenal glands**: The **left** adrenal is enlarged, which may occur secondary to adrenal hyperplasia, which may occur due to stress and chronic illness, as well as hyperadrenocorticism (HAC). The **nodule at the caudal pole** of the **right** adrenal may be due to a benign adenoma or myelolipoma. It does not show obvious signs of malignancy. However, the **cranial pole** of the **right** adrenal is suggestive of a mass. Although a benign mass remains possible, it shows some criteria of malignancy, therefore differential diagnoses include a pheochromocytoma or adenocarcinoma. If malignant, a pheochromocytoma is the more likely as Blazer has been experiencing syncope, (effects on systemic blood pressure). Bilateral adrenomegaly due to hyperplasia of pituitary dependent HAC is highly unlikely based on the results of the ACTH stimulation test.

- **Gallbladder** and **Liver**: Vacuolar and reactive hepatopathies are suspected, respectively. A suppurative form of cholecystitis is strongly suspected. The latter may be causing a secondary



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cholangitis/cholangiohepatitis, and cholestasis. A primary secondary or immune-mediate hepatitis cannot be excluded. Further evaluation of Blazer's travel history, exposure to ticks or other infectious diseases, including leptospirosis, is suggested. Note, choleliths that are not calcified (and therefore not causing acoustic shadowing) may be present and causing intermittent obstructions. An obvious obstruction is not observed on today's exam.

- **Kidneys**: Mild degenerative changes of both kidneys are suggestive of age related degeneration. However, glomerulonephritis cannot be excluded due to hypoalbuminemia.
- **Pancreas**: Overt enlargement and hypoechogenicity of the pancreas is not observed, however, the surrounding mesentery is markedly hyperechoic, which is highly suggestive of inflammation, i.e. active pancreatitis cannot be excluded.
- The **heart murmur** may be due to myxomatous mitral valve disease, often seen in small breed dogs, however, hypertrophy of the cardiac muscles secondary to hypertension may also be playing a role in his syncopal episodes.

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

The following are suggested/recommended

Arterial blood pressure, with the client present.

Urine culture and sensitivity to exclude subclinical bacteriuria

If negative, a urine protein: creatinine ratio to exclude glomerulonephritis.

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. If ursodeoxycholic acid (Ursodiol) is pursued, a total dose of 10-15 mg/kg divided twice daily is suggested. However, the dose should be gradually uptitrated (over a few weeks) until the maximum dose is achieved to avoid gastrointestinal side effects. Administer with a meal to decrease risks of GI side effects. A sonographic re-evaluation of the gallbladder is strongly suggested 2-4 months following the initiation of ursodeoxycholic acid to ensure it is effective.

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

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

Another more proactive option is to perform a fine needle aspirate of the liver and bile and culture both. Note, a tissue biopsy of the liver is preferable. Vitamin K (0.5 mg/kg SQ q8-12h for 1-3 doses), even if PT/PTT within normal limits.

Evaluation of fasting triglycerides to exclude hyperlipidemia as cause of gallbladder sludge

Analgesia to exclude visceral pain (buprenorphine, methadone, gabapentin)

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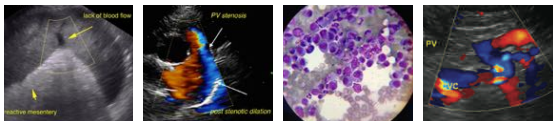

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Deworm, (e.g., fenbendazole), even if receiving monthly heartworm prevention.

Small, frequent meals

Supplementation with psyllium (soluble fibre) may be required, particularly if hydrolyzed hypoallergenic diet is fed

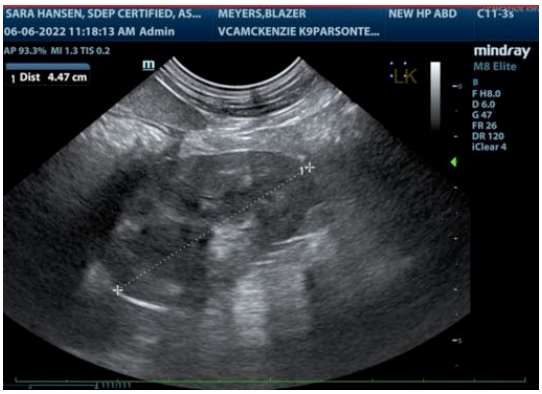
Diet trial (veterinary prescription *low fat*, hypoallergenic, hydrolyzed or novel protein), for example, Purina HA. Royal Canin Hypo HP possible, but is higher in fat. Low fat, hypoallergenic diets also available through Rayne. If necessary, prioritize low fat diet rather than hypoallergenic. Ensure appetizing to prevent sarcopenia and cachexia.

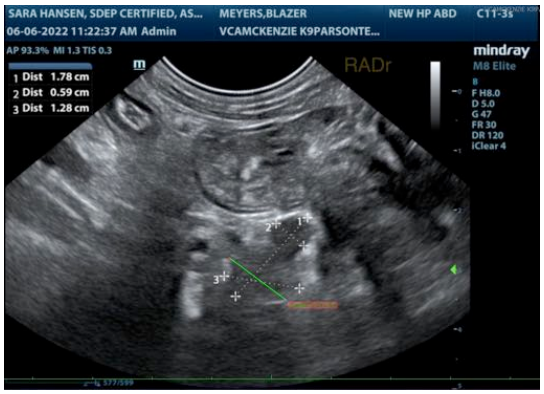
Serum cobalamin, folate, TLI to exclude underlying EPI.

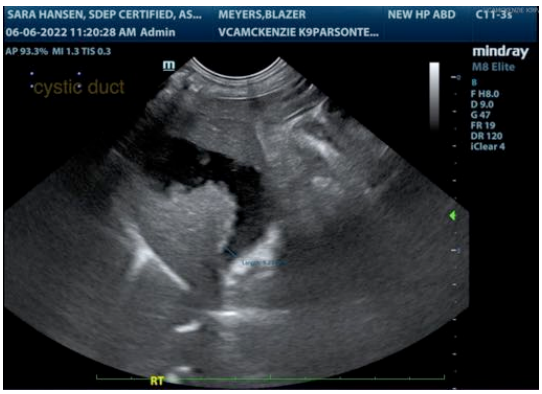
A clay based paste, containing montmorillonite and a synbiotic, may be administered during episodes of acute diarrhea.

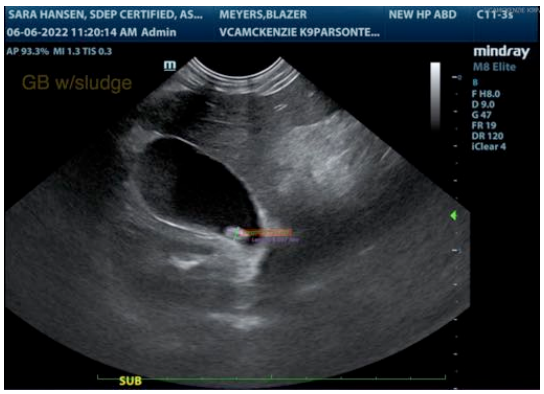
Endoscopy and biopsies of the upper and lower GI tract may be eventually be required, if no response to deworming, diet trials and other suggestions, above

An electrocardiogram and echocardiogram are recommended, particularly prior to performing general anesthesia.









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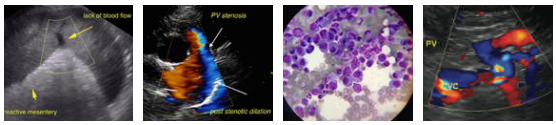

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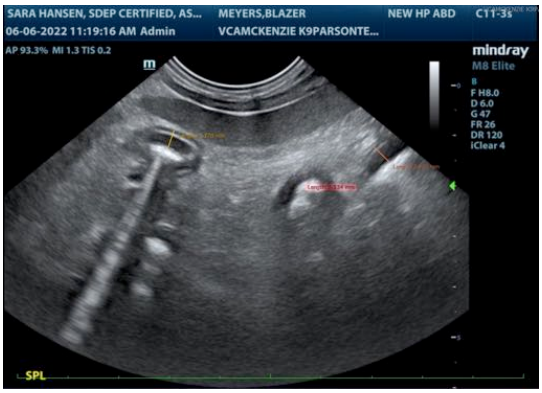

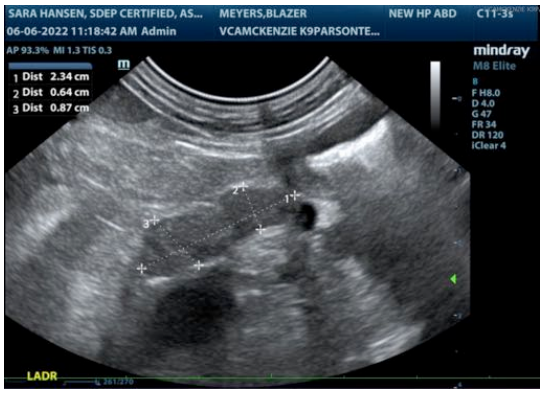

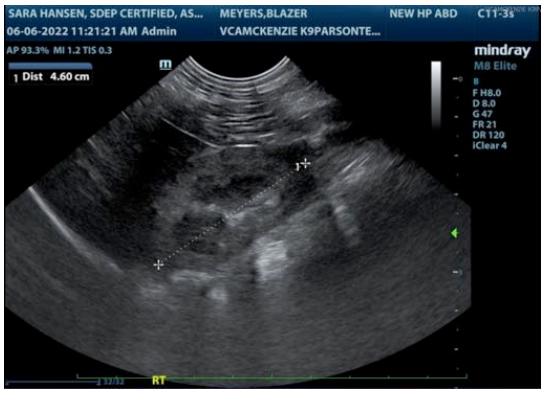

The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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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