IMAGING PERFORMED BY

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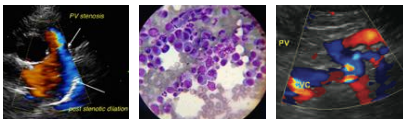

SonoPath
Clinical Sonography & Telecytology
EDUCATIONAL TELECONSULTATION SERVICES™
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DATE
6/20/22

PATIENT
Casper Strom

SPECIES
Feline

BREED
Domestic Shorthair

SEX
Spayed Female

AGE
10/3/11

WEIGHT
10.2 lbs

INTERPRETED BY
Lisa Carioto, DVM, DVSc, Diplomate ACVIM

HOSPITAL NAME
Fork VH

REFERRING VET
Dr. Doherty

INVOICE
31101

PRESENTING CLINICAL SIGNS

The cat has had chronic watery diarrhea for the past 2-4 months. No vomiting and continues to eat and drink on a regular basis. No weight loss but becoming more quiet and subdued. Radiographs show a significant dilation of the entire descending colon with no evidence of formed stool. N/R otherwise was found on the radiographs.
Blood profile is showing a persistently elevated ALT and a slow and steadily increasing WBC count. The differential remains consistent.
Current Medications: Vitamin B 12 inj q 2 weeks, Prednisolone 5.0 mg QD - duration of 3-4 months.
Lab Results: WBC - 5/3/22: 21.7 (3.9-19.0). 6/16/22: 26.8
both samples showing neutrophilia and monocytosis. Chem - WNL except. ALT 5/3/22: 318 (27-158). 6/16/22: 303 (27-158)
Date of Previous IntraPet Ultrasound: 12/17/21. See attached.
Sedation: Not required to complete full diagnostic ultrasound.
Stat Report: Not requested.
Imaging Performed By: Rachel Brilhart, RDMS.

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 moderate amount of free floating and aggregated sediment is present, however, there is no evidence of polyps or a mass. Two hyperechoic structures, one of which measures 2.4 mm and 4.2 mm, are noted along the ventral wall. The second structure casts a very subtle shadow, depending on the angle i.e. a cystolith is present, with another in development.

Kidneys

The **left** kidney measures 3.08 cm (3.80-4.40 cm), decreased in size. The capsule is mildly irregular. The kidney has lost its normal kidney bean shape. The cortex is mildly hyperechoic and a 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, however, pyelectasia is noted (0.38 cm - 0.49 cm, depending on the angle). Well-defined hyperechoic foci, suggestive of infarcts, are also noted. Blood flow is considered adequate, despite the above abnormalities. The surrounding mesentery is not hyperechoic.

The **right** kidney measures 4.60 cm (3.80-4.40 cm). The capsule is mildly irregular. A 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. 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 0.26 cm. 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 0.30 cm. 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 8.2 mm (normal = 10 mm), echotexture, and echogenicity. The capsule is smooth. No abnormalities are observed with its vasculature, i.e. congestion and thrombi are not identified.

Liver
There are no obvious signs of hepatomegaly. The liver's borders are smooth, but mildly rounded. It is mildly hyperechoic, i.e. it is isoechoic to the falciform fat. A diffuse, mildly coarse or granular echotexture is observed, which may be due to a reactive hepatopathy. No obvious abnormalities are noted with the hepatic vessels.

The gallbladder wall is mildly thicker than normal in certain regions (up to 1.7 mm) and is hyperechoic. A small amount of echogenic material is present within the cystic duct. Although there are no signs of dilation or tortuosity of either the cystic and/or common bile ducts, the mesentery surrounding the common bile duct is mildly hyperechoic.

Gastrointestinal
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 submucosa is more prominent than usual. No obvious abnormalities are observed with its peristalsis.

Duodenum: Thickness varies between (0.24 cm) to thicker than normal (0.39 cm). The muscularis also varies between normal to thickened with fogging. Ingesta is present within the lumen.

The small intestinal wall thickness varies between high normal to thicker than normal, i.e., between 0.25 cm to 0.37 cm. Although the definition of the wall layers is preserved, the mucosa and muscularis are more prominent to thickened and show fogging.

Jejunum: A few segments appear corrugated, and the mesentery surrounding them is mildly to moderately hyperechoic. Abnormally dilated loops of bowel are not observed.

Region of the ileo-cecal-colic junction (ICC junction): The colon appears thickened.

Gas is present in the transverse colon.

Pancreas
The **right** limb has a mildly coarse echotexture, and is mildly heterogeneous. It consists of hypoechoic nodules of variable size. Subtle, pinpoint to punctate hyperechoic foci are also scattered throughout the parenchyma. These changes are suggestive of nodular hyperplasia and fibrosis, respectively. Fibrosis may be an age-related change, secondary to previous episodes of pancreatitis, mineralization and/or amyloid deposition. The surrounding mesentery is very mildly hyperechoic, i.e., signs of smoldering pancreatitis cannot be excluded.

Findings of the left limb are similar to the right, however, the hyperechogenicity of the surrounding mesentery is moderate, i.e., signs of active pancreatitis are suspected.

Other
Lymph nodes
Hypoechoic LN in region of left pancreas 0.42 cm in diameter x 0.75 cm in length. The surrounding mesentery is mildly to moderately hyperechoic.

A couple of lymph nodes surrounding the ileocecal colic junction are more prominent than usual, but remain within normal limits in size. The mesentery surrounding the area is mildly hyperechoic.

A few lymph nodes are also prominent in the caudal abdomen. The mesentery surrounding the lymph nodes and segments of jejuni is mildly hyperechoic. One of the enlarged, moderately hypoechoic jejunal LNs measures 0.62 cm in diameter x 0.77 cm in length. Its contours are mildly irregular.

Abdominal effusion is not visualized.

ULTRASONOGRAPHIC FINDINGS

- **Gastrointestinal**: *Very severe inflammatory bowel disease* is suspected (i.e. thickening of the small intestines with preservation of definition of wall layers and other signs of inflammation of mucosa and muscularis). Although less likely, neoplasia, such as lymphoma or other round cell tumour, cannot be excluded without performing intestinal biopsies. Another possibility is that Casper has suffered from IBD and it has or is in the process of mutating into lymphoma.

- **Pancreas**: *Mild pancreatitis* is suspected, in addition to age-related changes, as well as fibrosis, possibly due to previous episodes of pancreatitis, mineralization and/or amyloid deposition.

- **Liver**: Cholestasis and cholangitis/cholangiohepatitis, and hepatic lipidosis are suspected.

- **Gallbladder**: Small amount of gallbladder **sludge**, which is most likely clinically insignificant. However, gastroesophageal reflux disease (GERD), can occur in some patients. Cholecystitis is suspected. *Suppurative cholecystitis* cannot be excluded. Obtaining a history regarding signs of GERD from the client is suggested. Treatment with an anti-acid or proton pump inhibitor may be required.

- **Lymph nodes**: *Mild lymphadenomegaly* is suggestive of reactive hyperplasia, however, one cannot exclude early infiltration of neoplastic cells.

- **Mesentery**: The mildly to moderately *diffusely hyperechoic mesentery* is most likely due to *smoldering inflammation*, whether gastrointestinal e.g., IBD) or pancreatitis.

- Based on the above findings, severe *"triaditis"* cannot be excluded.

- **Urinary bladder**: *The free floating and aggregated 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. A cystolith is present, with another in development (i.e. shadowing not present).

- **Kidneys**: Signs of infarcts and fibrosis are noted. Age related degeneration is likely contributing to the changes observed. Pyelonephritis cannot be excluded, despite the absence of classical sonographic signs.

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

A urinalysis and urine culture and sensitivity are recommended to exclude a urinary tract infection and

pyelonephritis.

Evaluation of CBC smear as basophils are uncommon, i.e., the CBC analyzer may be mistaking these cells as basophils.
Ideally, endoscopy and biopsies of the stomach, and both the small and large intestines, even if no history of vomiting.

Addition of a second immunosuppressive drug, such as chlorambucil, to treat severe IBD or possible underlying lymphoma. This will also help decrease the dose of prednisolone. Note, subcutaneous dexamethasone once a day for 1 – 3 doses may be required for better absorption.
Analgesia (buprenorphine (0.005-0.01 mg/kg, sublingually, every 8-12 hours) with or without gabapentin. Continue for 3-4 weeks, or longer, as needed. Administer even if does not appear painful.
Deworm depending on risk of exposure, including other pets in house that go outdoors

A synbiotic and a clay based paste, containing montmorillonite, are suggested to help treat the diarrhea.

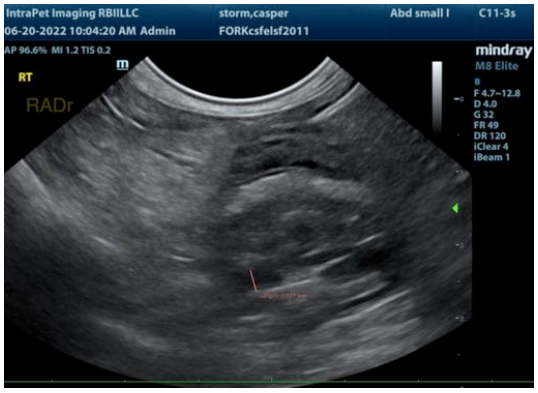
**Addition of soluble fibre (psyllium) to help treat diarrhea. Introduce *slowly* to decrease risk of bloating and cramps.
Obtaining a history regarding signs of GERD from the client is suggested. Treatment with an anti-acid or proton pump inhibitor may be required.

If signs of GERD present, 14-21 day trial with famotidine or omeprazole (0.7-1 mg/kg PO **q12h**). Note, omeprazole can cause nausea, vomiting, cramps and diarrhea in some patients, therefore, use lowest dose.

Due to possible triaditis, cholestasis, cholangitis/cholangiohepatitis and cholecystitis cannot be excluded, including and secondary ascending bacterial infections. Although indiscriminate use of antibiotics is not normally recommended, one could begin treatment with a broad-spectrum antibiotic and assess clinical response. *If a response is observed, continue antibiotics for a total of 4 to 6 weeks.

Lastly, a diet trial (veterinary prescription brand hypoallergenic, i.e., hydrolyzed or novel protein); ensure appetizing to prevent sarcopenia and cachexia.

A consultation with an internist may be considered due to Casper's complicated and chronic medical history.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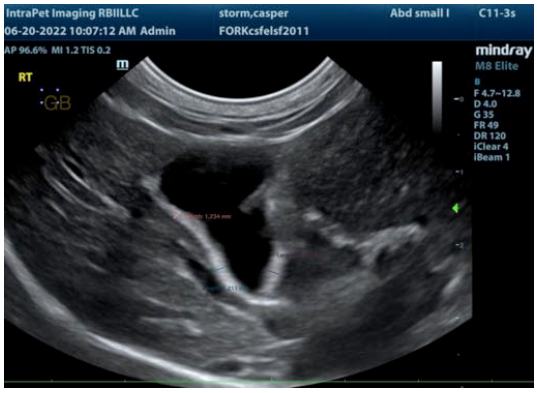
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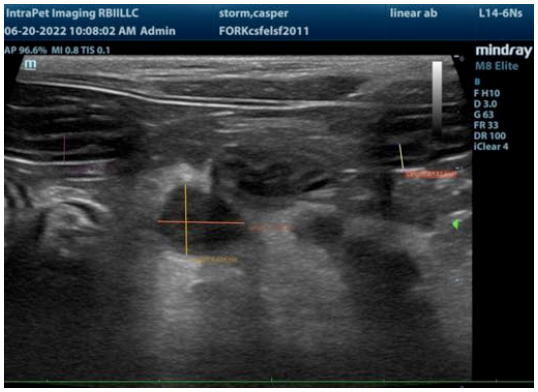
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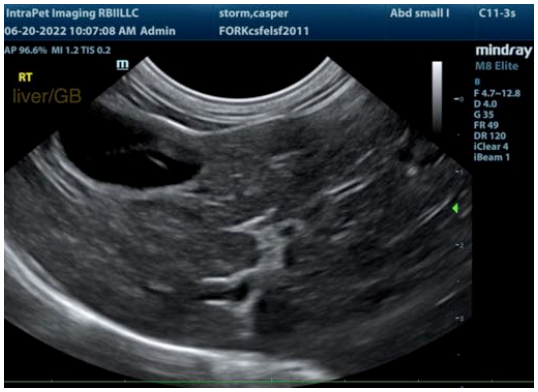
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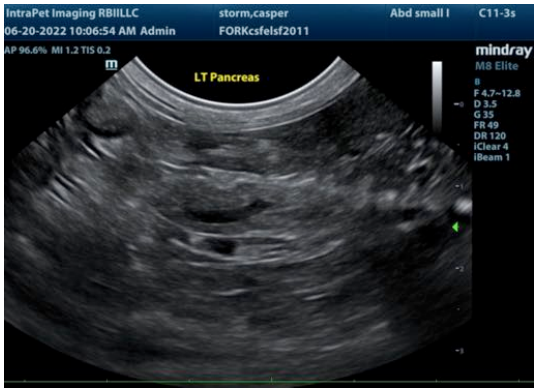
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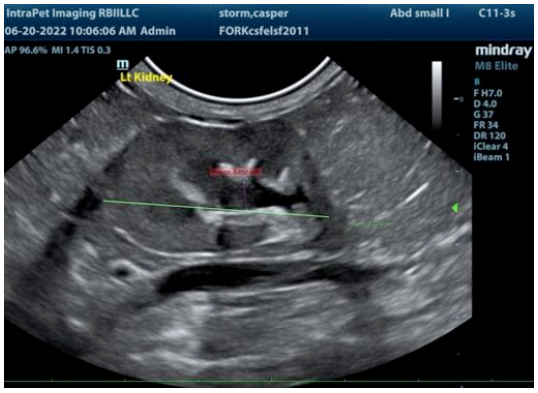
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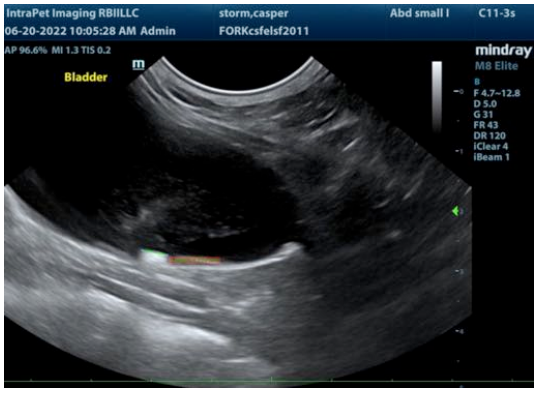
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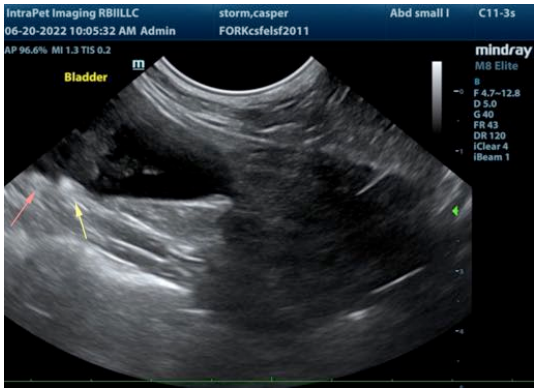
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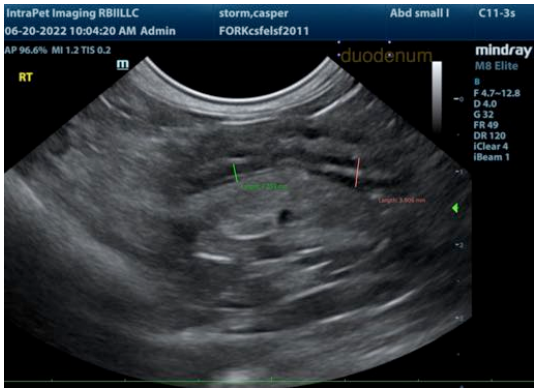
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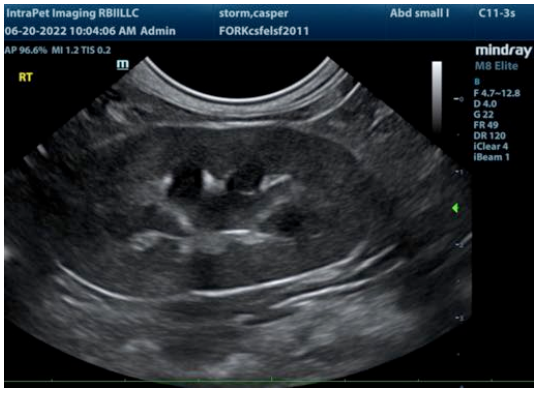
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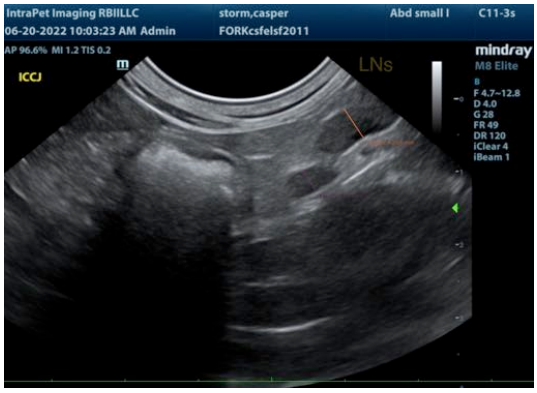
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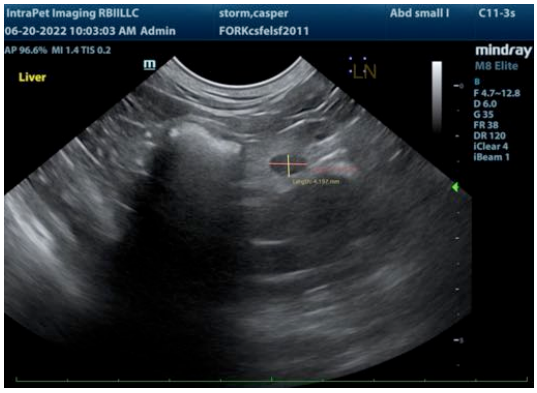

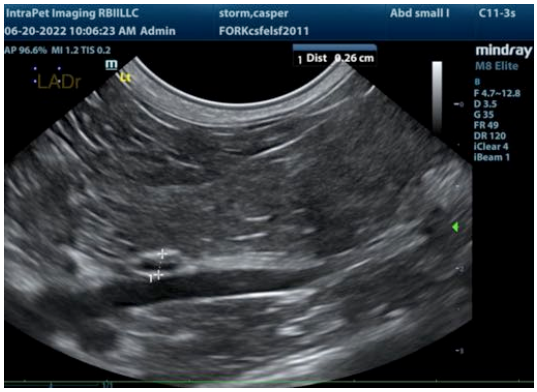

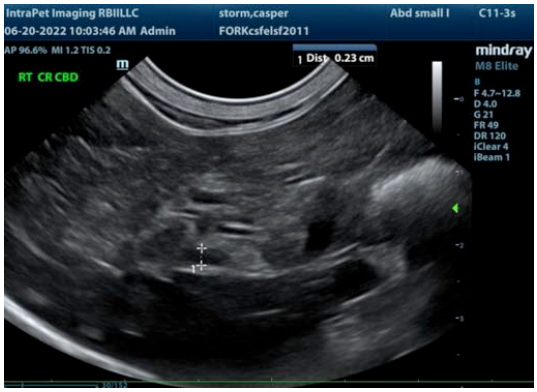

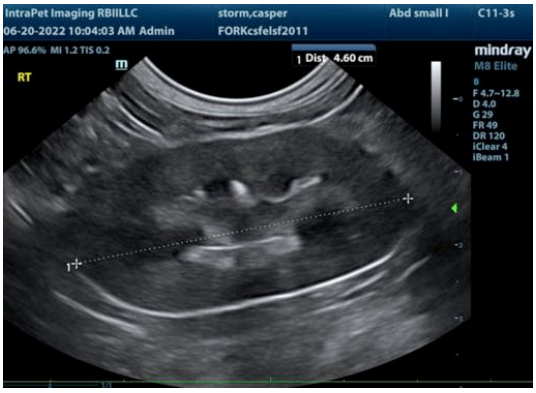

The information and recommendations provided are based on the images presented by the referring veterinarian. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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