**PATIENT**

Apollo Meyers

SPECIES

Feline

BREED

Domestic Longhair

SEX

Neutered Male

AGE

12 years

WEIGHT

6.9 lbs

INTERPRETED BYLisa Carioto, DVM,
DVSc, Diplomate
ACVIM**IMAGING
PERFORMED BY**

Rachel Runnells, CVT

HOSPITAL NAMESVS Imaging Kansas
City**REFERRING VET**

Dr. Servos

INVOICE

31724

DATE

7/15/22

PRESENTING CLINICAL SIGNS

Losing weight, but acts like he is starving. Gets canned food 4x/day and constant access to dry. Normal eating/drinking. Indoor only.

Abnormal PE/Chem/CBC/UA Results: Losing weight despite healthy appetite. Soft, smelly stool. Firm mass suspected to be the right kidney along midline ventral to the spine and dorsal to the colon. Mild anemia, mild hyperglycemia. Kidney and liver values WNL, T4 WNL. At time of scan - unkempt coat and matting, fleas and flea dirt.

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 to large amount of free floating sediment is present, however, there is no evidence of cystoliths, polyps or a mass.

Kidneys

The **left kidney** measures 4.62 cm (3.80-4.40 cm), mild renomegaly. The capsule is smooth. The cortex is hyperechoic, i.e. it is isoechoic to mildly hyperechoic to the spleen. Its overall architecture, including the definition of the cortico-medullary junction, is preserved. Small mineralizations of the diverticulae and pelvis are present, without evidence of nephroliths. Pyelectasia is noted at 0.44 cm (transverse view). An accumulation of intrapelvic fat is noted. Blood flow is within normal limits. The surrounding mesentery is mildly to moderately hyperechoic.

The **right kidney** measures 4.30 cm (3.80-4.40 cm). The capsule is smooth. The cortex is hyperechoic, i.e., it is isoechoic to the liver, which is also hyperechoic compared to normal. Its overall architecture, including the definition of the cortico-medullary junction, is preserved. Small 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. The surrounding mesentery is mildly to moderately hyperechoic.

Aortic bifurcation/trifurcation No abnormalities observed.

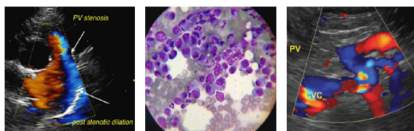
Adrenal Glands

The **left adrenal gland** measures 0.31 cm at the cranial pole, 0.26 cm at the caudal pole. 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 0.24 cm at the cranial pole, 0.23 cm at the caudal pole. 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 6.3 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.

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Liver

Hepatomegaly is suspected, however, this is better characterized at the time of the ultrasound or radiographically. The liver's borders are smooth and vary between sharp to mildly rounded. The liver is moderately hyperechoic with a homogeneous echotexture. Focal lesions are not observed and no abnormalities are observed with the hepatic vessels.

The **gallbladder** (GB) is filled with a small amount of inspissated echogenic material (sludge), which appears to be concentrated at the junction of GB neck and cystic duct. 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.

Gastrointestinal

A very large amount of ingesta and gas are present within the lumen of the stomach, thereby affecting the ability to evaluate the contents. The gastric wall is within normal limits in thickness and the wall layers are well defined, however, fogging of the mucosa is noted. Peristalsis appears decreased.

Duodenum: A large amount of ingesta and fluid are present within the lumen. Peristalsis appears "inefficient", i.e. a "to and fro" motion is observed.

Jejunum: wall thickness varies between within normal limits, high end of normal (0.28 cm) and mildly thickened (0.31 cm). Although the definition of the wall layers is preserved, fogging of the mucosa and muscularis is observed, and both are more thickened and more prominent than usual, respectively. Echogenic and granular ingesta and gas are noted in the lumen of jejunum however, abnormally dilated loops of bowel are not observed. No abnormalities are noted with the ileo-cecal-colic junction.

A significant amount of ingesta and gas are present in the transverse colon. Although it is not thickened overall, the submucosa appears more prominent than usual.

The colonic wall is not thickened and mural detail is considered normal.

Pancreas

The **left limb** is moderately enlarged and hypoechoic, but relatively homogeneous. Its contours are severely irregular. The surrounding mesentery is moderately to severely hyperechoic.

The **right limb** and **body** are mildly to moderately hypoechoic and enlarged. They are homogeneous with more regular contours compared to the left limb. The surrounding mesentery is moderately to severely hyperechoic. Overt signs of neoplasia are not noted.

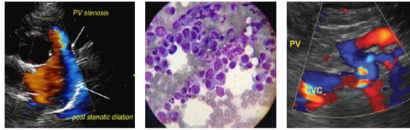
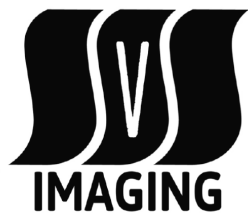
Other**Lymph nodes**

Two hypoechoic, curvilinear, pancreatic lymph nodes are noted in the left cranial abdomen

- 0.36 cm in diameter x 0.80 cm in length
- 0.34 cm in diameter x 0.71 cm in length

A jejunal lymph node is not enlarged (0.2 cm in diameter), however, it is more prominent than usual.

Abdominal effusion

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A scant amount of anechoic effusion is visualized amongst a few loops of bowel in the right mid-abdomen, as well as between the right kidney and caudate lobe of the liver.

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ULTRASONOGRAPHIC FINDINGS

- **Gastrointestinal (GI) tract:** A delay in gastric emptying is suspected if Apollo was fasted prior to the ultrasound. If a diagnosis is not obtained from the additional tests (see below), an ultrasound of the stomach may be repeated after a longer fasting period of approximately 14-20 hours. Signs of diffuse gastrointestinal inflammation are observed. Differential diagnoses include a chronic enteropathy, e.g., inflammatory bowel disease, food intolerance, dysbiosis, etc. Although the definition of the wall layers is preserved, one cannot exclude infiltrative disease, such as lymphoma or other round cell tumour, definitively without performing tissue biopsies and possibly immunohistochemistry and PARR.
- **Pancreas:** Active pancreatitis is suspected. Obvious signs of neoplasia are not appreciated. Exocrine pancreatic insufficiency cannot be excluded based on the sonographic findings.
- **Kidneys:** Mild renomegaly (left) with the right at the high end of the normal reference range. Although a component of the changes may be age-related, glomerulonephritis or interstitial nephritis must be considered. Pyelonephritis cannot be excluded based on the pyelectasia (left) and acoustic enhancement surrounding both kidneys.
- **Liver:** The diffuse hyperechogenicity may be due to cholangitis/cholangiohepatitis, cholestasis and ascending inflammation secondary to pancreatitis. An infection due to ascending bacteria from the GI tract is also possible.
- **Gallbladder:** Gallbladder sludge without evidence of an obstruction. Cholecystitis, including a suppurative component, cannot be excluded despite the absence of classical sonographic signs. Obtaining a history regarding signs of gastroesophageal reflux disease (GERD), from the client is suggested.
- **Urinary bladder:** Sediment in the lumen of the urinary bladder is most likely clinically insignificant, however, subclinical bacteriuria or pyelonephritis cannot be excluded based on the renal abnormalities observed.
- **Lymph nodes:** The very subtle changes noted are most likely due to reactive hyperplasia. There are no obvious signs of neoplasia.
- **Ascites:** Extravasation due to increased vascular permeability may be the cause, however, a vasculitis in its early stages cannot be excluded.

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS**INVOICE**

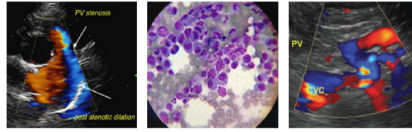
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Urinalysis and culture and sensitivity to exclude pyelonephritis

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TLI, serum cobalamin, and folate, +/- Spec fPL, to assess for underlying maldigestion and malabsorption disease, dysbiosis and pancreatitis, respectively. Note, a TLI may be falsely elevated in the face of pancreatitis. Pancreatic enzyme supplementation may be tried depending on response to treatments suggested (below).



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Hyperthyroidism may still be present, i.e. a fT4 (EQD) may be necessary to obtain a diagnosis.

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Analgesia for visceral pain, such as buprenorphine (0.005-0.01 mg/kg sublingually every 8-12 hours) for a minimum of 7-10 days. Continue for 3-4 weeks if an improvement is noted; the dose and frequency may be weaned to the minimum effective dose during that time.

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+/- gabapentin

Obtaining a history regarding signs of gastroesophageal reflux disease (GERD), from the client is suggested.

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

Cholangitis/cholangiohepatitis and cholecystitis cannot be excluded, including a secondary ascending bacterial infection. Although indiscriminate use of antibiotics is not normally recommended, one could start treatment with a broad-spectrum antibiotic *if an improvement is not observed with the above therapies.*

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+/- fibre supplementation of current diet (psyllium)

Dietary trial (veterinary prescription brand hypoallergenic, i.e., hydrolyzed or novel protein); ensure appetizing to prevent hepatic lipodosis, sarcopenia and cachexia.

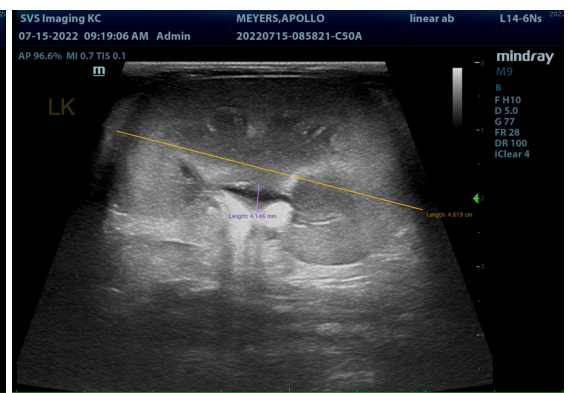
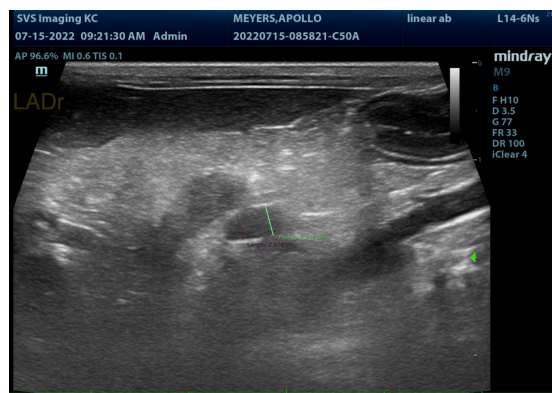
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Note, if no improvement with the above, fine needle aspirates of the liver and culture of the liver and bile, pending coagulation profile results. Vitamin K (0.5 mg/kg SQ) is suggested 30-45 minutes prior to the procedure, even if PT/PTT within normal limits. Note, the FNA may be performed earlier in the diagnostic work up depending on Apollo's clinical status.

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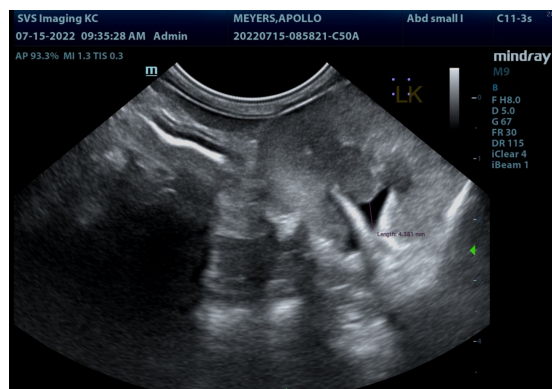
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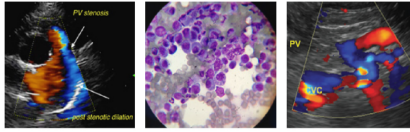
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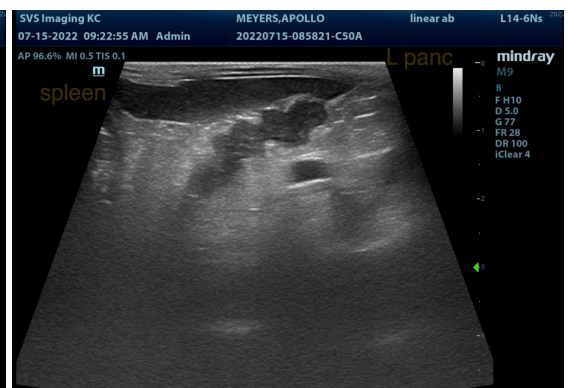
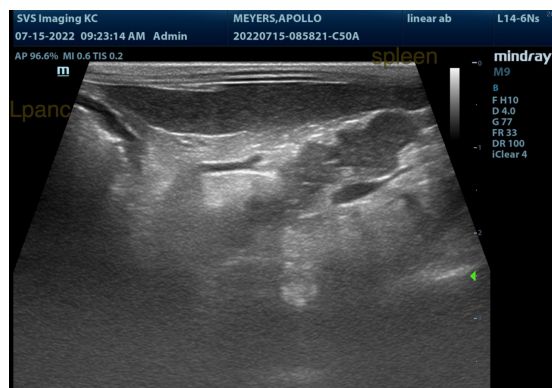
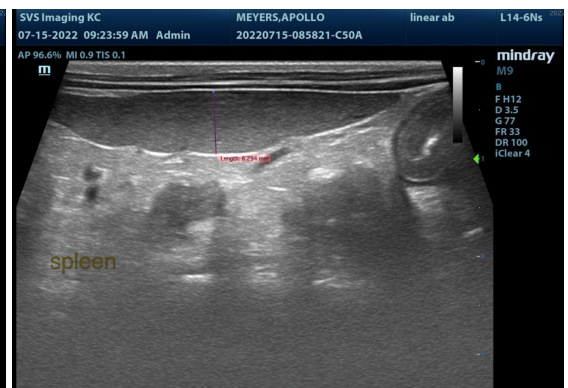
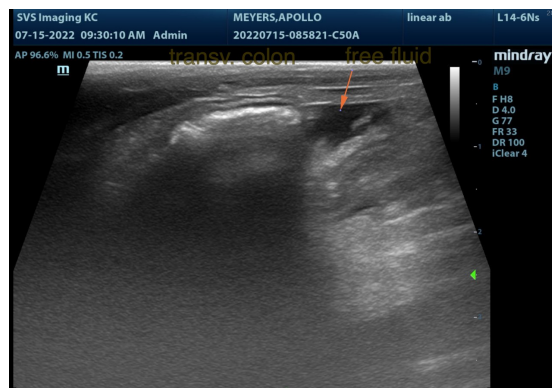
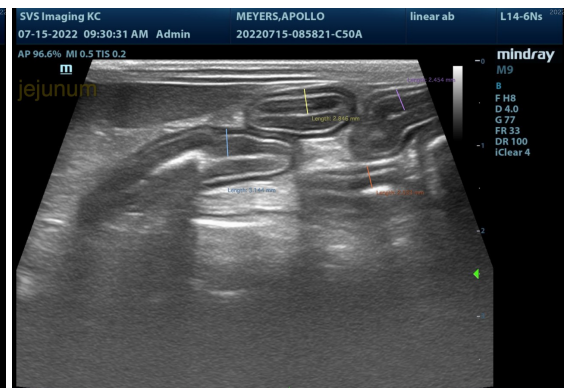
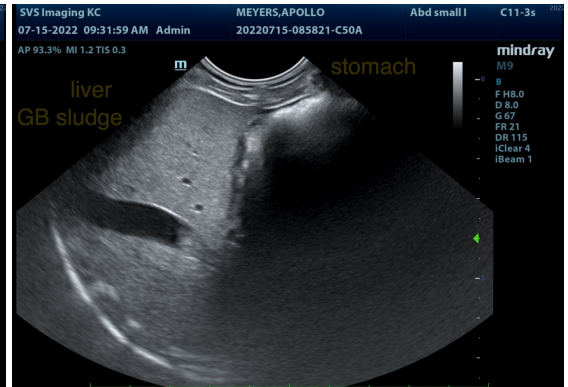
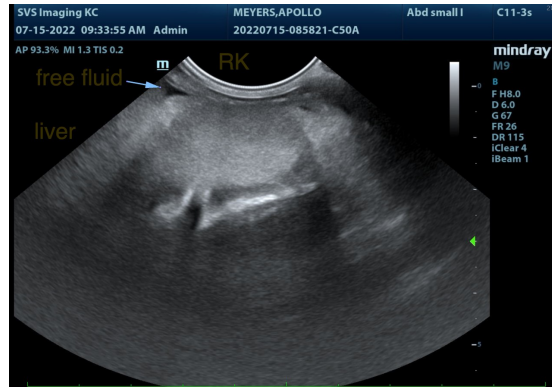
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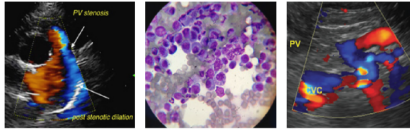
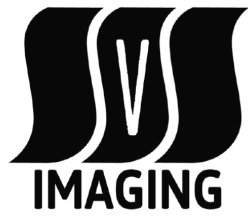
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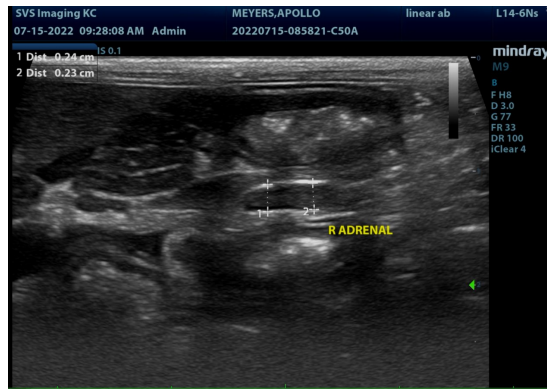
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The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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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