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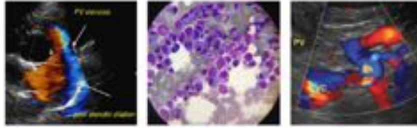

SonoPath
Clinical Sonography & Telecytology
EDUCATIONAL TELECONSULTATION SERVICES™
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PATIENT
Frigga Kirby

SPECIES
Feline

BREED
Domestic Longhair

SEX
Spayed female

AGE
1 year

WEIGHT
4.87 lbs

INTERPRETED BY
Lisa Carioto, DVM, DVSc, Diplomate ACVIM

IMAGING PERFORMED BY
Amy Mayhew LVT

HOSPITAL NAME
SVS Imaging Michigan

REFERRING VET
Family Pet Practice

INVOICE
31848

DATE
7/20/22

PRESENTING CLINICAL SIGNS

History: Current Medications: Maropitant 0.22mL SQ Mirtazapine transdermal SID for up to 14d for appetite stimulant Clindamycin 25mg/ml 1mL PO BID x 10d #20 Fortiflora feline 1/2 packet on food BID for appetite stimulant Recovery canned Patient History: No visible nasal discharge, O has noted sneezing at home 3. Elevated nictitans OU, mildly hyperemic conjunctiva 6/7. Normal thoracic auscultation 8. Dull coat 9/10. Subjectively mild thickening of intestinal loops 5. Pink MM, mildly tacky 12/13 Thin BCS, generalized muscle atrophy
Abnormal PE/Chem/CBC/UA Results: CBC- Thrombocytopenia - clot present in sample Chemistry- Creat 0.4 L, TP >11, albumin WNL, unable to get glob reading- likely high, Phos 6.2, Cal 8.2, Tg 117, Amylase >2500, Tbili 0.7 - monitor for hepatic lipidosis given decreased appetite, rule-out intestinal inflammation, Pancreatitis, fb, parasitism, infectious disease- see notes below on discussion regarding toxo,fip, Felv Felv/fiv- Felv positive, recommend confirmatory testing Per O both cats in home do not go outside, no exposure to other cats through screened doors. Discussed possible transmission from queen Radiographs- moderate distension of stomach with numerous small mineralized pieces- rule-out fb vs bone from canned food? no overt intestinal obstruction. Bladder medium sized, no visible uroliths. Caudal lung fields appear normal Felv IFA submitted to ANT Toxo titers pending Fecal- requested O to drop off sample Reviewed concerns for possible FIP given suspect elevation in globulins (unable to get numerical value with IH readings today but TP >11 <20- plan to submit panel to ANT for confirmation. Reviewed FIP is considered a fatal condition causing poor growth, weight loss, decreased appetite, reviewed wet vs dry forms of FIP- handout provided as well. Discussed no FDA approved treatments for FIP in US. Other countries do have treatments that O could look into but cannot be prescribed here. Discussed other differentials including Toxoplasmosis, FELV virus and immunosuppression, reviewed risk for shorter life span, more severe infections, neoplasia secondar to FEIV- handouts provided for felv and toxo Reviewed supportive outpatient care for initial tx- INI may need 24 hour critical care for feeding tube placement, IVF Tx: Plasmalyte 100mL SQ

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 trivial amount of free floating sediment is present. There is no evidence of cystoliths, polyps or a mass.

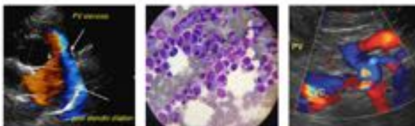
Kidneys

The **left** kidney measures 3.95 cm (3.80-4.40 cm). The capsule is smooth. Its overall architecture, including the definition of the cortico-medullary junction, is preserved, however, the cortex is hyperechoic, (i.e., it is isoechoic to the spleen). There are no signs of nephroliths or pyelectasia. The surrounding mesentery is severely hyperechoic.

The **right** kidney measures 3.87 cm (3.80-4.40 cm). The capsule is smooth. Its overall architecture, including the definition of the cortico-medullary junction, is preserved. The cortex is hyperechoic, (i.e., it is isoechoic to the liver, which is also hyperechoic). There are no signs of nephroliths or pyelectasia. The surrounding mesentery is moderately hyperechoic.

Aortic bifurcation/trifurcation No abnormalities observed.

Adrenal Glands



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The **left** adrenal gland measures 0.40 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 0.32 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 7.8 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 and its borders are smooth and sharp. The liver's echotexture is homogeneous, but diffusely hyperechoic. Focal lesions are not observed and no abnormalities are noted with the hepatic vessels.

The gallbladder (GB) is moderately distended with a large amount of free floating and gravity dependent echogenic material (sludge). The GB wall is within normal limits in thickness (0.84 mm), however, is subjectively increased in echogenicity. Sludge is present within the cystic duct. The latter is not dilated or tortuous. The common bile duct is not dilated or tortuous, i.e. there are no signs of an obstruction.

Gastrointestinal

A small amount of gas and fluid are present within the lumen of the stomach. The gastric wall is within normal limits in thickness and the wall layers are well defined. No obvious abnormalities are observed with its peristalsis.

Duodenum: The wall thickness is within normal limits and the definition of the wall layers is preserved, however, mild fogging of the mucosa is noted.

Jejunum: The wall thickness is within normal limits and the definition of the wall layers is preserved, however, several segments show mild stippling of the mucosa and a mildly prominent submucosa. A few segments of jejunum cranial to the urinary bladder show signs of possible adhesions.

No abnormalities are noted with the ileo-cecal-colic junction. Abnormally dilated loops of bowel are not observed.

Transverse colon: Ingesta is present; no abnormalities

The colonic wall is not thickened (0.15 cm) and mural detail is considered normal, however the submucosa appears prominent. A large amount of gas is present within the colon, in addition to formed feces.

Pancreas

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The **left limb** is moderately enlarged 1.9 cm and mildly to moderately hypoechoic. Its contours are smooth. The surrounding mesenteric fat is moderately to severely hyperechoic. Signs are suggestive of active pancreatitis. A possible thrombus is present in the pancreatic vein.

The **right limb** is mildly enlarged and moderately hypoechoic. Its contours are mildly irregular. The surrounding mesenteric fat is moderately to severely hyperechoic.

Other

Lymph nodes

Hepatic lymph node - mildly enlarged and prominent 0.46 cm, with smooth borders. The surrounding mesentery is severely hyperechoic.

Mesenteric lymph nodes – multiple mesenteric lymph nodes are mildly to moderately enlarged in diameter (0.85 cm) and length (1.5 cm), while others are more "plump". They all have smooth borders and are hypoechoic.

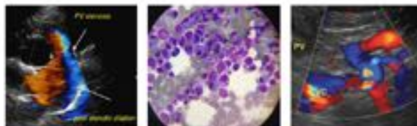
Jejunal lymph node: 0.95 cm in diameter x 2.06 cm in length. It is enlarged, and "plump", with smooth borders. The surrounding mesentery is severely hyperechoic.

Sublumbar lymph nodes are visible. They are elongated, prominent, but smooth. They measure 0.33 cm and 0.30 cm. The surrounding mesentery is moderately hyperechoic.

Abdominal effusion is not visualized.

ULTRASONOGRAPHIC FINDINGS

- **Pancreas:** Active pancreatitis is suspected. A possible thrombus is present in the pancreatic vein.
- **Liver:** Cholangitis/cholangiohepatitis and cholestasis are likely. Although an immune mediated cause is possible, an infectious etiology, such as toxoplasmosis, must also be considered. A secondary bacterial infection from the GI tract may be another complication. Hepatic lipidosis may also be contributing to the hyperechogenicity.
- **Gallbladder (GB):** Gallbladder sludge with concurrent signs of cholecystitis. A suppurative component, due to an ascending bacterial infection from the GI tract, cannot be excluded. Obtaining a history regarding signs of gastroesophageal reflux disease (GERD), from the client is suggested.
- **Gastrointestinal (GI) tract**: although the changes are not severe and are somewhat subjective signs of inflammation are suspected. A chronic enteropathy must be considered, e.g., due to underlying inflammatory bowel disease, food intolerance, dysbiosis, etc. Obvious signs of neoplasia are not appreciated, however possible adhesions are observed which may be due to underlying granulomas i.e. feline infectious peritonitis (FIP) cannot be excluded.
- **Lymph nodes:** Mild to moderate lymphadenomegaly, which may be due to reactive hyperplasia. Immune mediated lymphadenitis is also possible.



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- **Mesentery**: The mesentery is diffusely hyperechoic, which is suggestive of saponification secondary to generalized abdominal inflammation. The latter may be due to triaditis, as well as immune mediated lymphadenitis or FIP.
- *Underlying "triaditis" with an acute flare up must be considered as one of the possible causes and/or contributing factors to Frigga's clinical signs.*
- **Kidneys**: Differential diagnoses include pyelonephritis, glomerulonephritis or interstitial nephritis.
- **Urinary bladder**: Although the free floating sediment is trivial and most likely clinically insignificant, it should not be disregarded due to the renal changes noted.

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Intravenous fluids for 24-72 hours, depending on response to therapy.

Perform a PCV/TS or repeat a CBC once rehydrated, as anemia is suspected

Evaluate for uveitis to help exclude signs of infectious disease (FIP)

Fundic exam, looking for granulomatous lesions, which may be present with FIP

Urinalysis and urine culture and sensitivity to exclude pyelonephritis. Antibiotics have already been started, therefore, a culture may not be possible. If this is the case, enrofloxacin is suggested as it will treat pyelonephritis and cholangitis/cholangiohepatitis and cholecystitis.

Urine protein creatinine ratio, if the culture is negative.

+/- spec fPL, cobalamin, and folate

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.

+/- gabapentin

Supportive care (maropitant, mirtazapine, SQ fluids, etc.), as previously mentioned in Frigga's history

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

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

Depending on the results of the pending laboratory tests and Frigga's response to the above treatment suggestions, fine needle aspirates of the lymph nodes, and liver, and culture of both the liver and bile may be performed (pending coagulation profile). However, histopathology is ideal if FIP is high on the list of differential diagnoses.

+/- PCR for infectious diseases, including *Mycoplasma*, depending the results of the *Toxoplasma gondii* titres.

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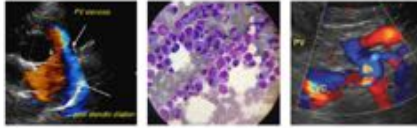

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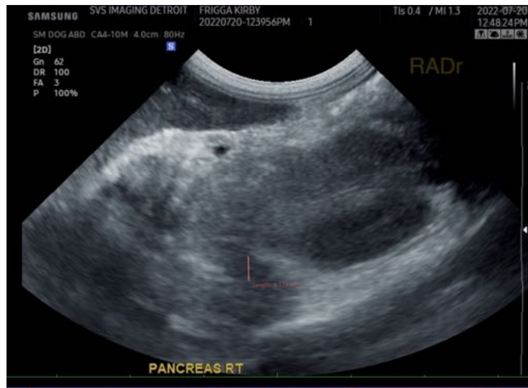

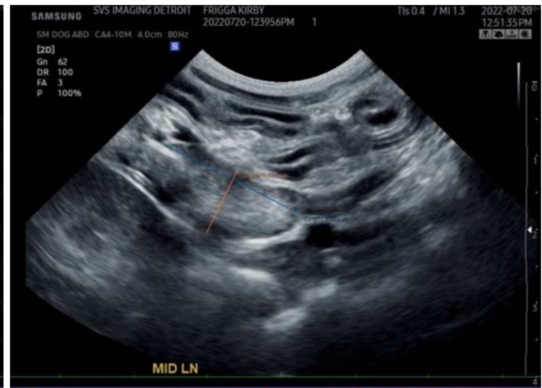

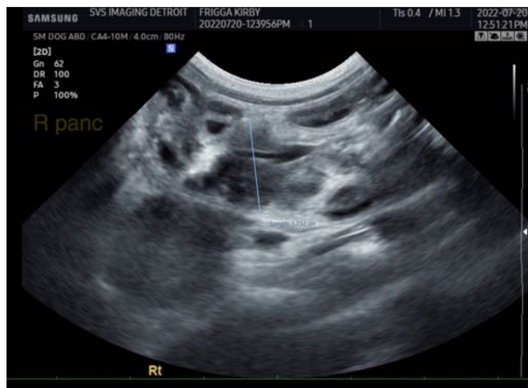

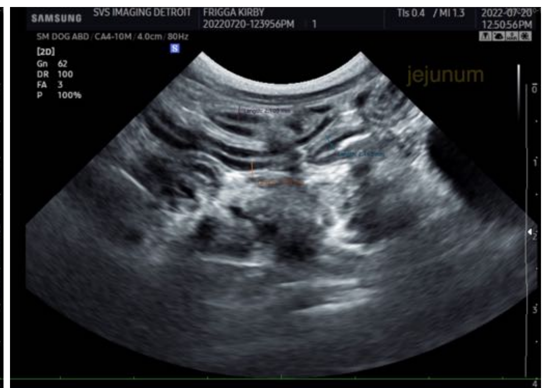

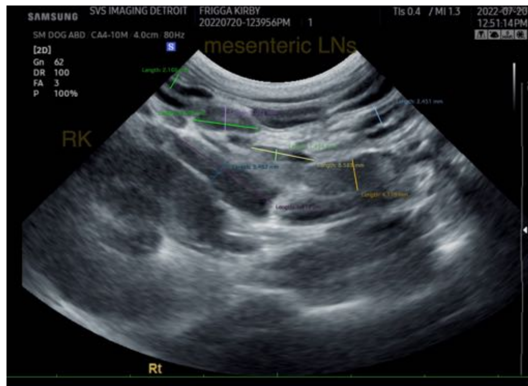

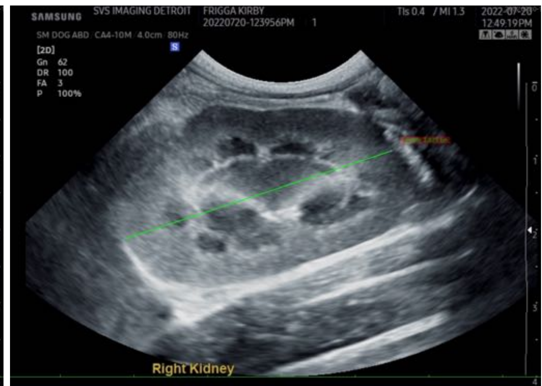

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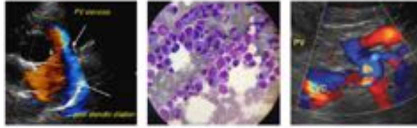

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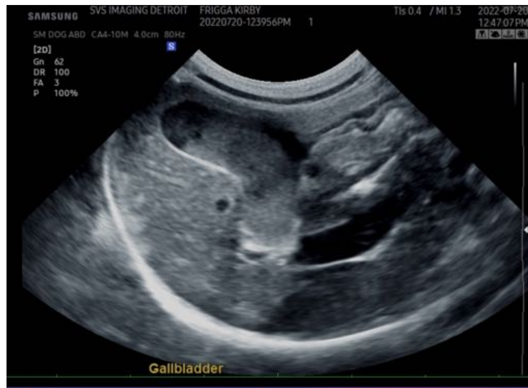

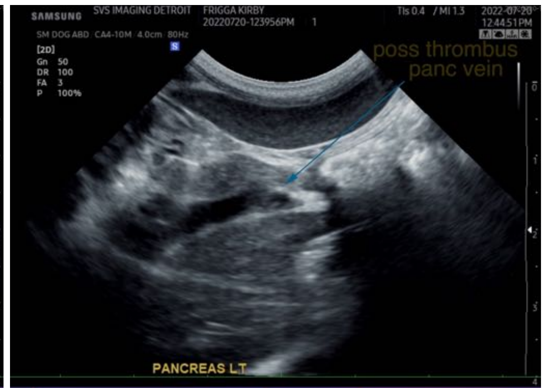

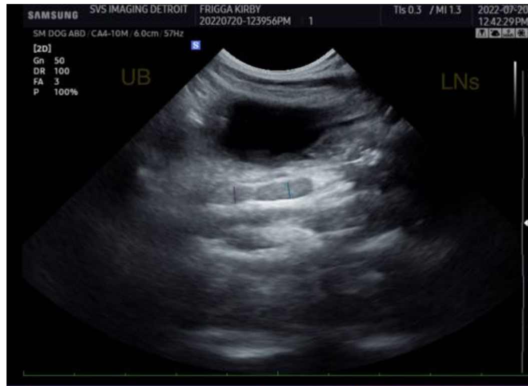

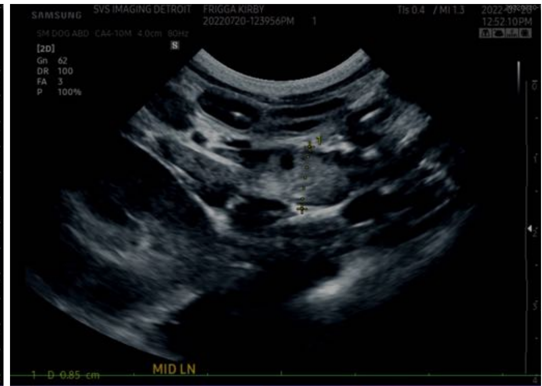

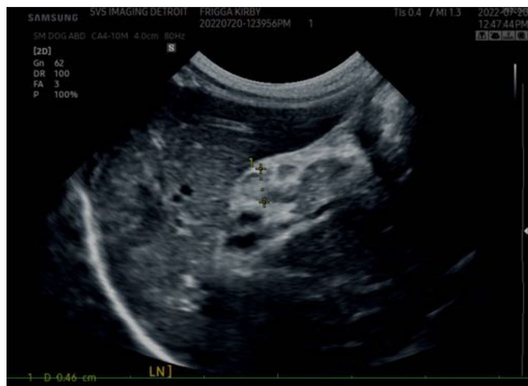

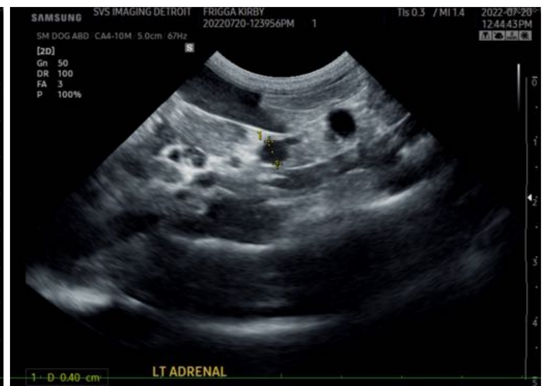

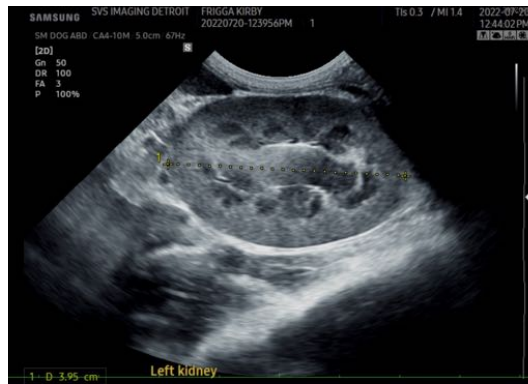

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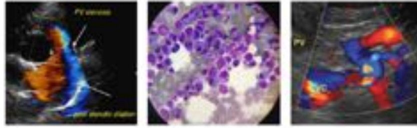

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The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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.

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