



PATIENT

Ellie Nummela

SPECIES

Canine

BREED

Morkie

SEX

Spayed female

AGE

9 years

WEIGHT

9.2 lbs

INTERPRETED BY

Eric Lindquist, DMV
DABVP, Cert. IVUSS

IMAGING PERFORMED BY

Gallick

HOSPITAL NAME

Magnolia Springs VC

REFERRING VET

Dr. Gallick

INVOICE

42212

DATE

12/19/22

PRESENTING CLINICAL SIGNS

History: Overall appears normal and healthy, owners have not noticed anything abnormal until recently noticed there have been small amounts of clear vomit in the morning, but no other time during the day. Bloodwork attached.

ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN

Urinary System

The **urinary bladder**, trigone, and pelvic urethra presented normal thicknesses and normal tone. The ureters were not visible which is normal. No uroliths or sediment were visualized and anechoic urine was present. No evidence of inflammatory or neoplastic changes was noted. Ureteral papillae were normal.

The **kidneys** revealed normal size and structure, corticomedullary definition and ratio for this age. The cortices presented largely uniform texture with normal echogenic relationship to liver and spleen. Medullary structure differed distinctly from the cortex and no evidence of pelvic dilation was present. The capsules were acceptably uniform without significant irregularities. The right kidney measured 3.3 cm and the left kidney measured 3.5 cm.

Adrenal Glands

Both **adrenal glands** were visualized and recognized as having normal shape, size, position and echogenicity for this breed. The phrenic vasculature, glandular echogenicity and detail were unremarkable. Capsule, cortex, and medullary definition were normal for this age patient. The right adrenal gland measured 0.54 cm at the caudal pole and 0.69 cm at the cranial pole. The left adrenal gland measured 0.63 cm at the caudal pole and 0.42 cm at the cranial pole.

Spleen

The **spleen** in this patient was mildly enlarged with uniform parenchyma and was folded upon itself caudally. This is a positional variant and is not pathological. Hyperechoic, lipogranulomatous nodule was noted. There was no evidence of significant disease.

Liver

The **liver** revealed slight coarse architecture with mildly increased portal markings. Vascular and biliary tracts were of normal volume and no evidence of congestion was noted. Minor gallbladder debris was noted, yet not pathological.

Gastrointestinal

The **gastrointestinal tract** revealed diffuse, hyperechoic fogging or overlay throughout the small intestine as well as areas of mucosal striations and speckling. This striation + fogging effect appeared to exclusively affect the mucosal layer with the submucosa, muscularis and serosa left in-tact. Reactive mesentery was present associated with the serosa indicative of active inflammation. This is most



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consistent with protein losing enteropathy/lymphangectasia. Full thickness biopsies or endoscopy guided biopsies would be ideal to confirm. No obstructive disease or obvious suspicion of neoplasia.

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Pancreas

The base and limbs of the **pancreas** were observed to be largely isoechoic to surrounding omental fat. Pancreatic duct and capsular contour were acceptably normal and parenchyma respected normal curvilinear patterns. No overt evidence of active inflammatory or neoplastic disease was noted.

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Free Abdomen

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Some areas of reactive mesentery was noted associated with portions of the small intestine.

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ULTRASONOGRAPHIC FINDINGS

Benign hepatopathy.

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Intestinal mucosal fogging, consistent with lymphangectasia.

Reactive mesentery associated with the small intestines.

Otherwise, benign abdomen.

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INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Given the global presentation lymphangectasia with a currently mild form of protein losing enteropathy is likely in this patient. The albumin levels should be monitored carefully to ensure that they are not dropping further than the current low normal of 2.7. Purina HA or Royal Canin HP diet and probiotics are all recommended along with 7-10 days of Metronidazole is warranted with GI protectants can also be justified. Recheck sonogram is recommended if the clinical signs persist.

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The hepatic clinical sonographic presentation is most consistent with Reactive Hepatopathy which is the most common cause of liver enzyme elevation in dogs and cats. The presumption is that gut and other organ antigen stimuli may be causing a low-grade immune response through portal system with which the liver is reacting to causing low-grade enzyme elevations. US-guided FNA could be performed to assess if low grade lymphoplasmacytic inflammation is present that would support this theory. If FNA is performed, please ask the cytologist to emphasize the primary inflammatory cell type. Empirical treatment measures to address this issue can include diet change to hydrolyzed diet, probiotics, deworming, nutraceuticals (SAME, Actigall...), dental exam and cleaning, and potentially antibiotics such as Clavamox. Metronidazole and Tylosin have traditionally been utilized for this purpose but new studies show that both these antibiotics can disrupt the normal intestinal bacterial flora (intestinal dysbiosis) for weeks and up to 4-6 months. Therefore, Metronidazole and Tylosin should be utilized as a last resort if other efforts have not been effective and sonographic organ appearance remains benign.

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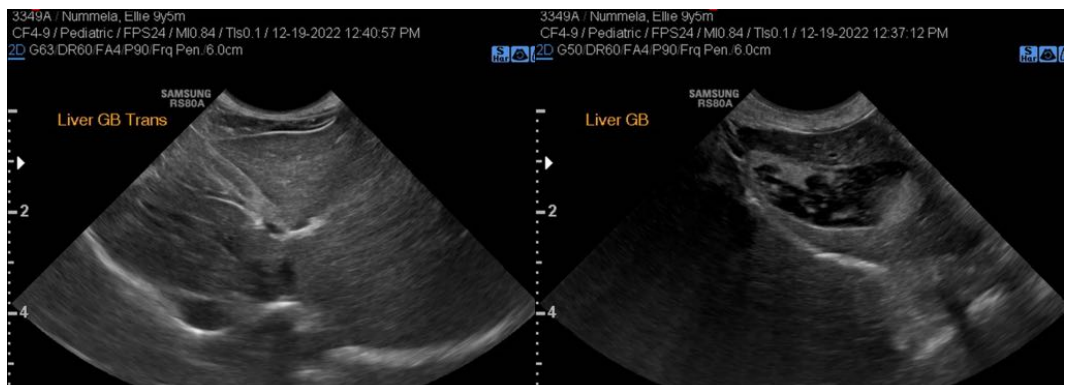
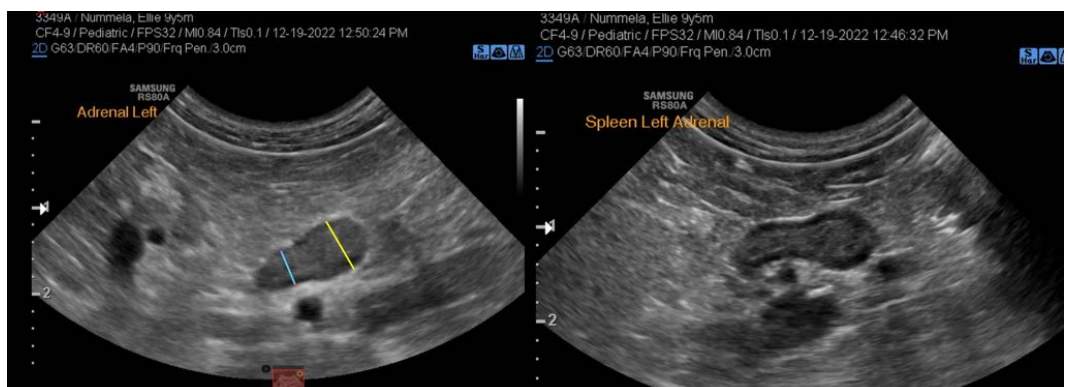
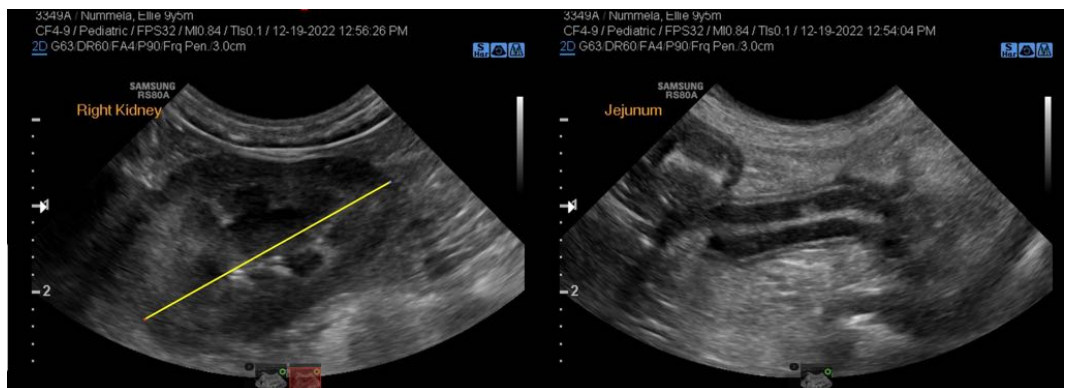
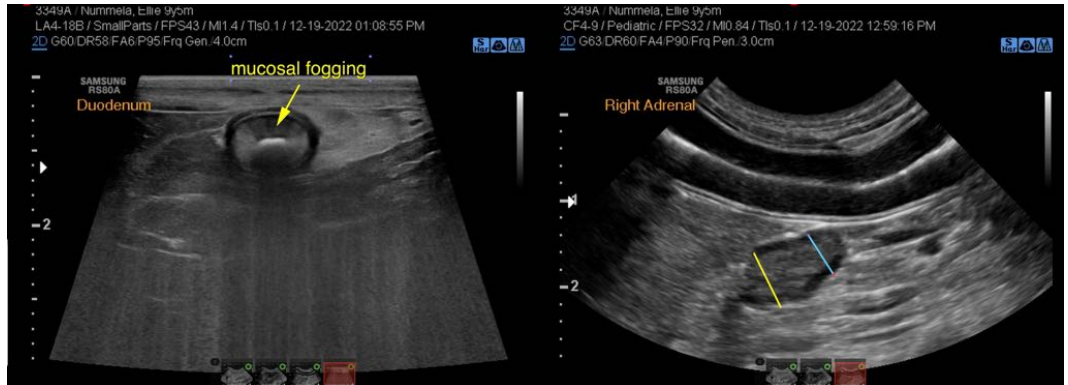
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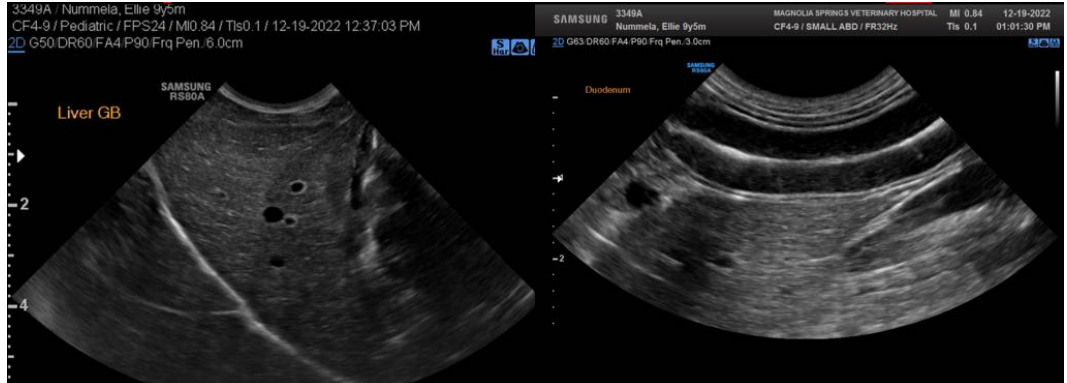
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The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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.

Eric Lindquist, DMV, DABVP, Cert. IVUSS, CEO of SonoPath.com
info@SonoPath.com