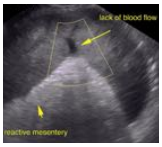

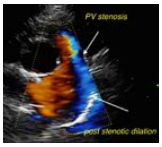

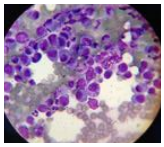
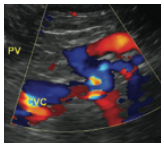

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PATIENT

Lily Beth Pagano

SPECIES

Canine

BREED

Shih Tzu

SEX

Female

AGE

5 months

WEIGHT

3.7 lbs

INTERPRETED BY

Eric Lindquist, DMV DABVP, Cert. IVUSS

IMAGING PERFORMED BY

Valeryia Shumskaya

HOSPITAL NAME

Ramapo Valley AH

REFERRING VET

Dr. Shumskaya

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PRESENTING CLINICAL SIGNS

History: Severely distended abd, severe ascites on x-ray, diarrhea, slow puppy growth, Current meds: Flagyl 25mg BID, Panacur x 5 days. Has improved very well with metro
Abnormal PE/Chem/CBC/UA Results: Total protein 4.7, albumin 2.3, ALKphos 292, WBC 18,800, HCT 29, hemoglobin 8.9, platelets 15,710

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 3.56 cm. The left kidney measured 3.18 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.

Spleen

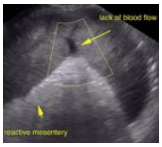
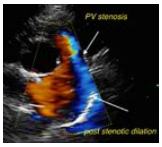
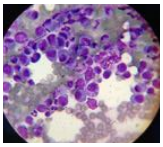
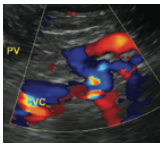
The **spleen** presented a smooth homogeneous parenchyma hyperechoic to liver and renal cortical parenchyma. The capsule was smooth without noticeable expansion or deviation from within the spleen or adjacent pathology. The splenic vasculature demonstrated normal volume without signs of congestion or thrombosis. No sonographic evidence of acute or chronic inflammatory, neoplastic, or infarctual changes was noted.

Liver

The **liver** was mildly subnormal in size. The hepatic veins were of normal volume. Portal vein branching was normal and measured 0.52 cm. Vena cava to aortic ratio was 1:1. Portal vein measured 0.6 cm just prior to branching. The vena cava measured 0.6 cm at the level of the portal vein branching. This is indicative of a 1:1 ratio. The gallbladder and common bile duct were unremarkable.

Gastrointestinal

Examination of the **gastrointestinal tract** revealed a stomach and intestine free of stasis, of normal wall thickness, acceptable curvilinear mural detail, and peristaltic activity. Small and large intestine

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demonstrated normal luminal chyme and stool consistency respectively. Soft stool was noted in the colon. No obstructive or overt infiltrative disease was noted. No associated abnormal lymphatic activity was noted.

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.

Free Abdomen

Slight free fluid was noted, likely physiological given the age of the patient.

ULTRASONOGRAPHIC FINDINGS

Microhepatica without macroscopic shunting. Microscopic shunting/portal hypoplasia/microvascular dysplasia is suspected.

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Portal vein to vena cava ratio was 1:1. However, given the microhepatica, if bile acids are elevated then portal hypoplasia/microvascular dysplasia is necessary, which would necessitate biopsy. Ideally bile laparoscopy or surgical biopsies given the amount of available for liver is minimal from a sonographic approach and carries some risk. If the bile acids are elevate the following protocol would be recommended. If the patient is scheduled for ovariohysterectomy then liver biopsy can be performed at that time. Screening for Addison's is warranted as congenital Addison's is warranted as well given the low albumin levels. CBC path review is indicated. If sedation is to be utilized then Propofol and Isoflurane is indicated to minimize hepatic metabolic necessity.

Hepatic Support for Bile Acid Elevation +/- Hepatic Encephalopathy

Royal Canin Hepatic Support diet or Hills L/D, **Metronidazole** (7.5 mg/kg PO bid) over the next 14 days, **Lactulose** (Oral: 3.1-3.7 g/5 ml lactulose in a syrup base) long term to target 2-3 soft stools/day, with a **high-quality protein supplement** of minor amount of **yogurt** or **cheddar cheese**. Monitor bile acids, with attention paid to dropping albumin, BUN or cholesterol. SAMe and nutraceuticals as needed. **Ursodiol (**10-15 mg/kg p.o. q24h) can be considered as hepatoprotectant and to enhance bile flow. **Zinc** serum level keep between 200—500 ug/dl. If deficient then Tx zinc acetate 1-3 mg/kg/day. Gastrointestinal protectants are recommended if the patient is anorexic.

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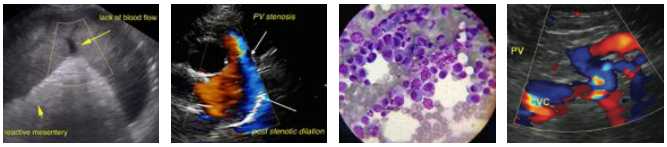

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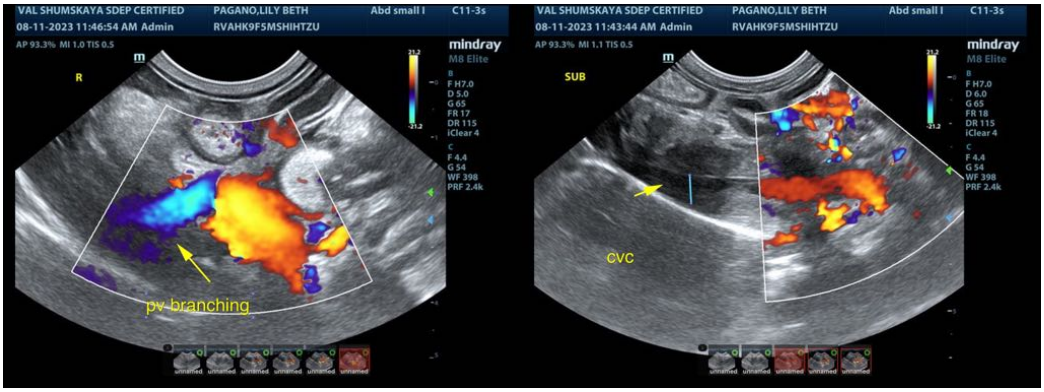

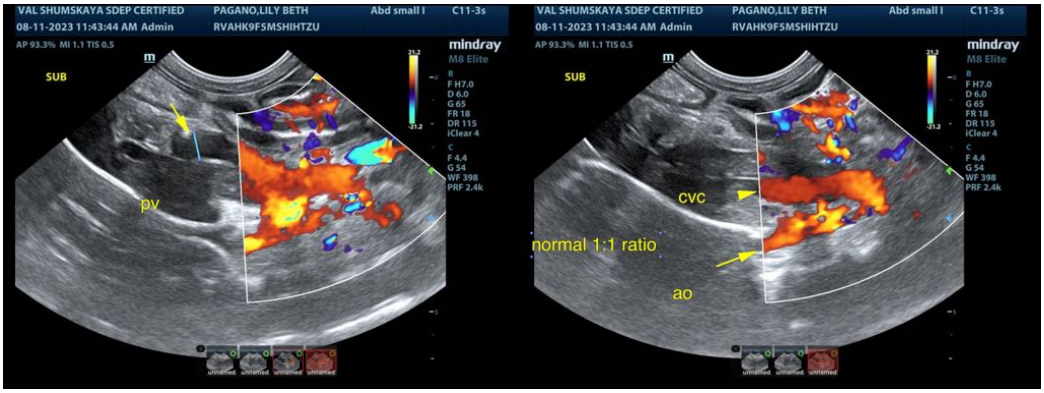

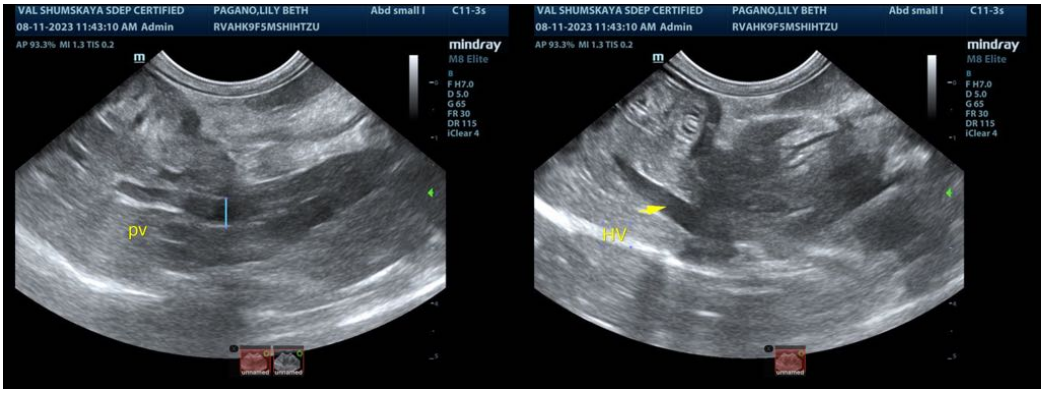

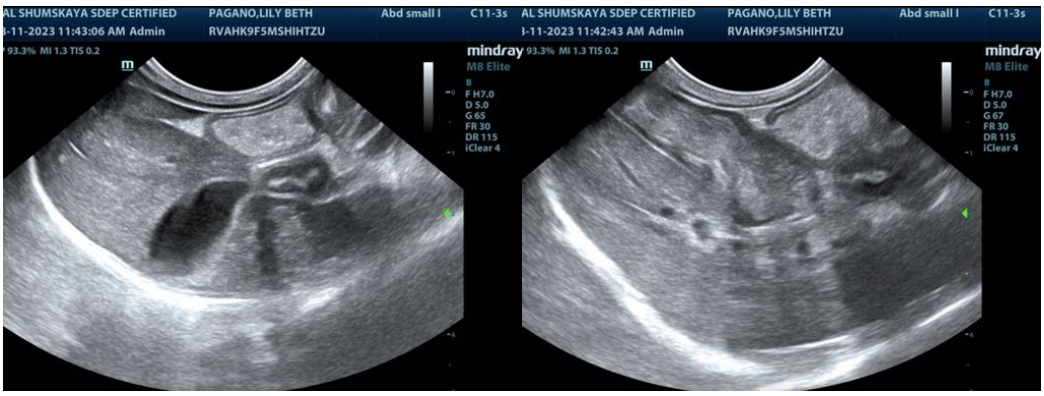

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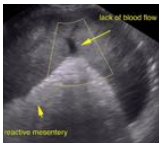
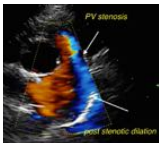
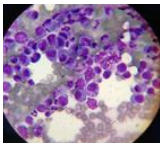
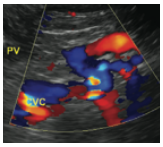

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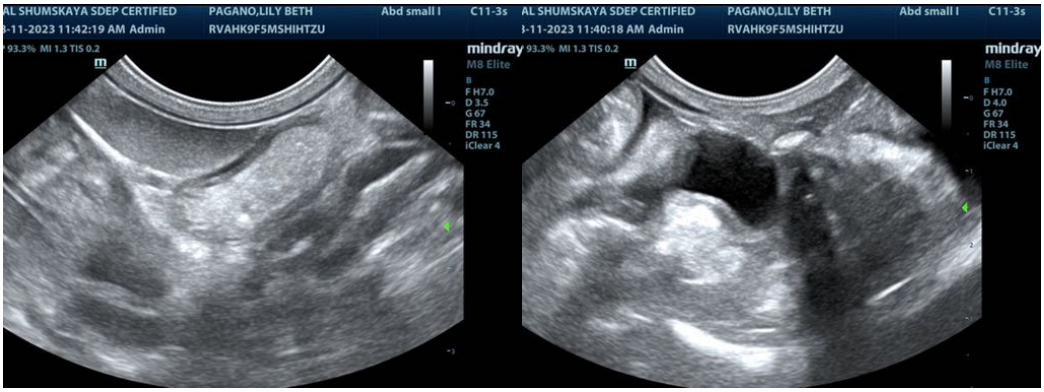

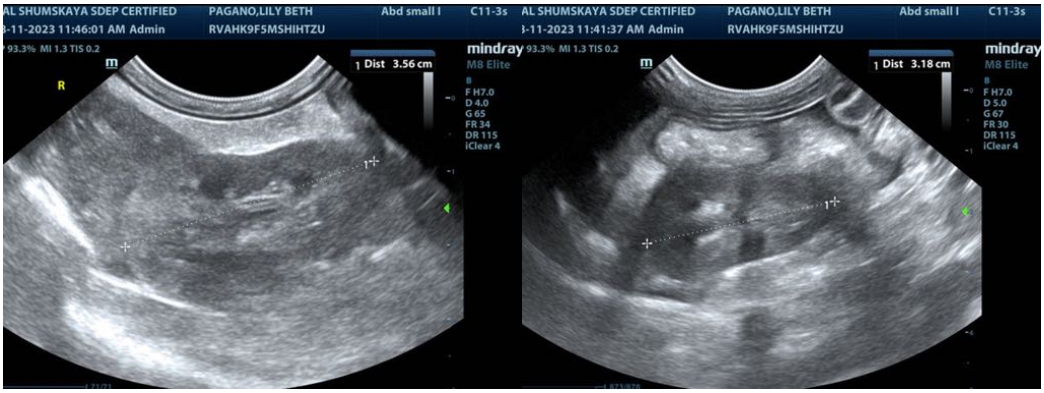

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The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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.

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