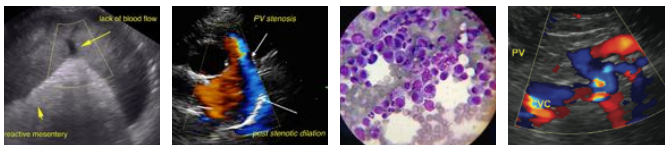

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1-800-838-4268 info@sonopath.com

PATIENT

Dixie Murrell

SPECIES

Canine

BREED

Pit Mix

SEX

Female

AGE

1 year

WEIGHT

53 lbs

INTERPRETED BY

Eric Lindquist, DMV DABVP, Cert. IVUSS

IMAGING PERFORMED BY

Rachel Runnell, RVT

HOSPITAL NAME

SVS Imaging Kansas City

REFERRING VET

Dr. Servos

INVOICE

42159

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10/26/22

PRESENTING CLINICAL SIGNS

History: Has had previous history the entire time O has had P from a puppy of on/off vomiting and regurgitation episodes, lower energy, and difficulty keeping weight on. P presented on 10/25 laterally recumbent but responsive, negative PLRs, negative menace response, no deep pain to right front limb, tachycardic, non-febrile. O stated P had had vomiting and diarrhea earlier that morning, had been let outside and was found attached to the lead laterally recumbent. O's daughter stated that they saw P shaking (potential seizure). Patient was on fluids at 2x rate for ~4 hours on 10/25. Went home with lactulose to start assuming there is a shunt. P did perk up a little bit before going home but was still laterally recumbent.
P presented on 10/25 laterally recumbent but responsive, negative PLRs, negative menace response, no deep pain to right front limb, tachycardic, non-febrile. Elevated RBCs, WBCs, neutrophils, monocytes, reticulocytes, RDW, phosphorus, sodium, chloride, and ALT. SVS Microcytosis, lymphopenia, decreased eosinophils, glucose (72), and amylase. Have not performed a bile acids test.

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. A large amount of suspended and dependent debris was noted along with sand. No evidence of inflammatory or neoplastic changes was noted. Ureteral papillae were normal.

The **kidneys** were both swollen. The cortices presented largely uniform texture with normal echogenic relationship to liver and spleen. Medullary structure differed distinctly from the cortex. The capsules were acceptably uniform without significant irregularities. The kidneys were hypervascular on power Doppler assessment. The left kidney measured 8.9 cm. The right kidney revealed mild pyelectasia. The right kidney measured 9.0 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 0.89 cm at the cranial pole and 0.72 cm at the caudal pole. The left adrenal gland measured 0.48 cm at the cranial pole and 0.58 cm at the caudal pole.

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.

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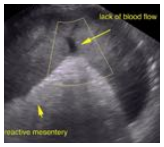

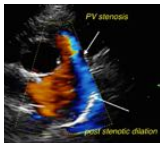

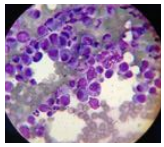
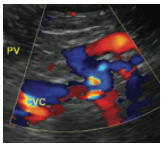

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Liver

The **liver** was subnormal in size. Vascular and biliary tracts were of normal volume with no evidence of congestion. The portal vein to vena cava ratio was 1;1 at the portal hilus. There was no evident extrahepatic shunting present. There was no obvious left divisional or central divisional intrahepatic shunting noted. However, I cannot rule out the possibility of a right divisional intrahepatic shunt based on the image set. 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 demonstrated normal luminal chyme and stool consistency respectively. 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.

ULTRASONOGRAPHIC FINDINGS

Swollen kidneys, bladder debris.

Microhepatica.

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

I suspect portosystemic shunting, yet not evident. Bile acid profile +/- CT with contrast evaluation is recommended for shunt assessment. Severe, portal hypoplasia is also a potential and would necessitate liver biopsy. However, I suggest CT first to assess if shunt may be visualized. I suspect that the bile acids are elevated and if confirmed then the following protocol would be recommended. The swollen kidneys, renal calculi, bladder debris, sand and microhepatica strongly suggest the presence of portosystemic shunting, but is not visible and is a necessity for CT with contrast.

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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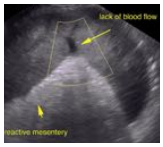
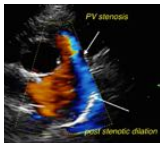
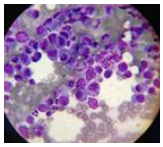
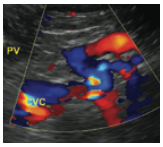

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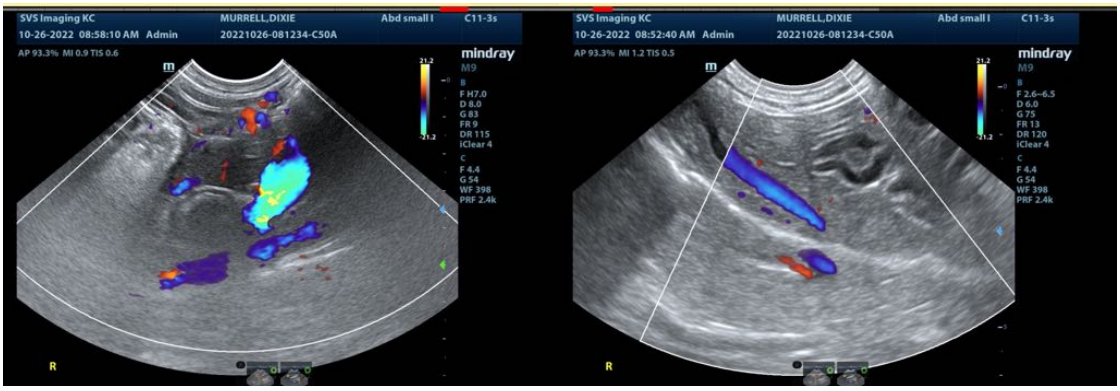

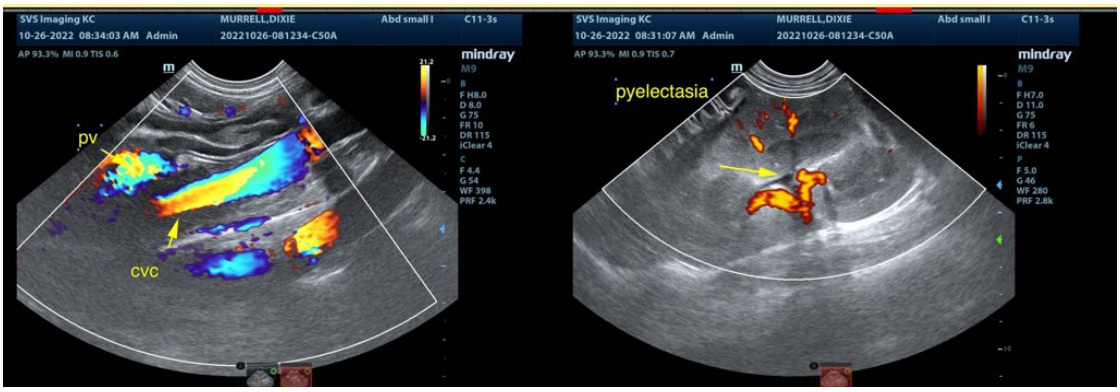

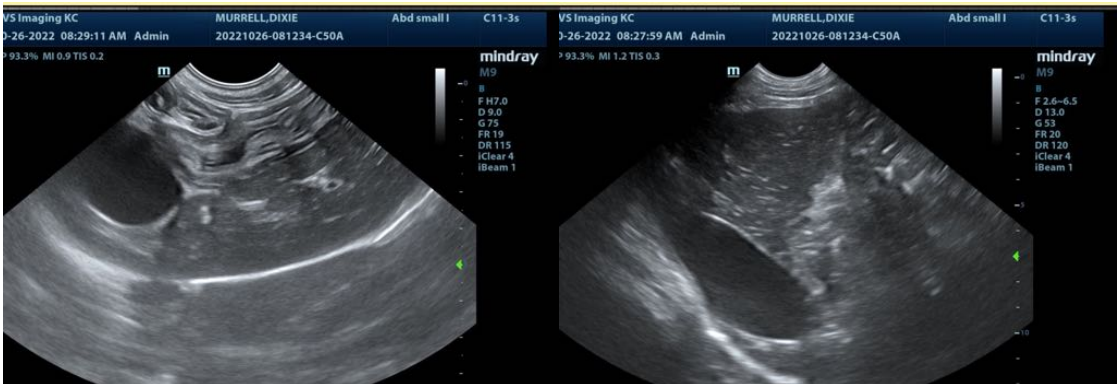

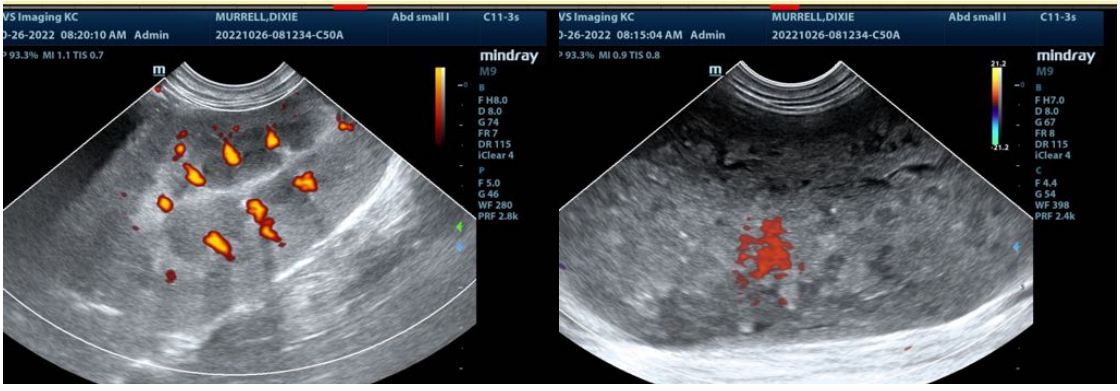

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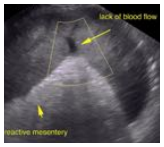
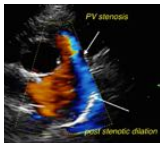
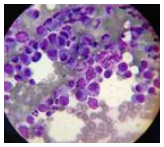
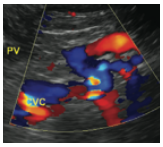

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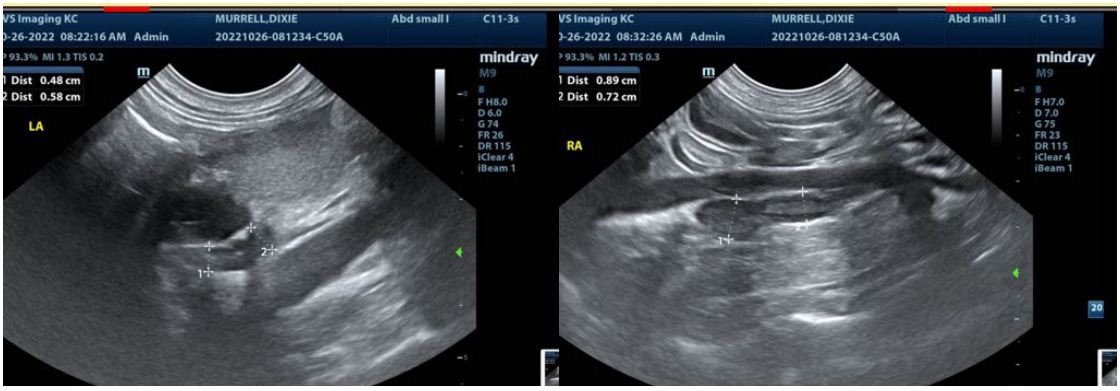

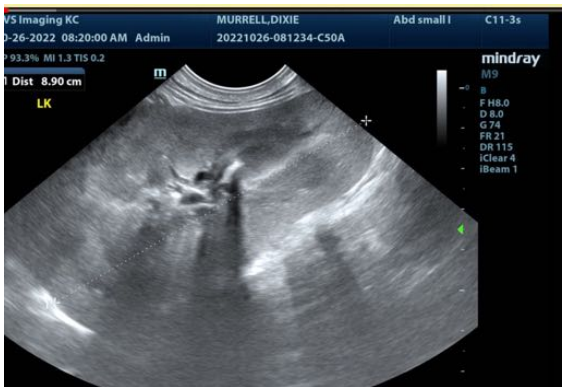

The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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