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Clinical Sonography & Telecytology
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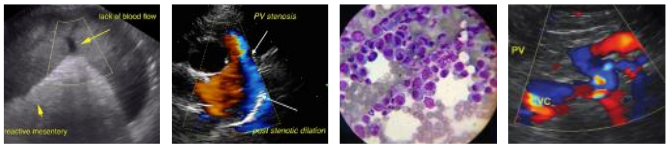

SonoPath.com
1-800-838-4268 info@sonopath.com

PATIENT

Bubbles White

SPECIES

Canine

BREED

Malipoo

SEX

MI

AGE

1 year 1 months

WEIGHT

3.4 kg

INTERPRETED BY

R. McKenzie Daniel, DVM, DABVP (Canine and Feline)

IMAGING PERFORMED BY

Patti Mayfield DVM

HOSPITAL NAME

Banfield Pet Hospital

REFERRING VET

David Johnston DVM

INVOICE

14629

DATE

8/16/22

PRESENTING CLINICAL SIGNS

Bubbles presented to BAESC for referral AUS for an unknown hepatopathy diagnosed in May, 2022 incidentally on pre-anesthetic blood work prior to a scheduled neuter. He has been fasted overnight, no current medications. Discontinued all medications (flea/tick/HW prevention) in May, due to elevated LE's. Denamarin was prescribed. Past Pertinent History: Went in for routine evaluation andpre-anesthetic blood work revealed the following: ALT 555, Bile acids normal pre >108 post HWT: - Pyrantel 50mg/mL 0.7 mL PO Current History: Patient is EDUD normal. No CSVD noted Post-prandial periods/behaviors are normal; patient snacks through the day, but does not have any unusual behaviors following. No re-check blood work has been performed since 5/10/2022
Abnormal PE/Chem/CBC/UA Results: PE: Retained deciduous canine (604) with mobility appreciated at 507. Patient is very lean, BCS: 3/9. No other abnormalities Blood work 5/10/2022: - ALT: 596 U/L (10-100) - Pre-pran BA: 11.8 umol/L (0-14.9) - Post-pran BA: 108.3 umol/L (0-29.9) - Na: 165 mmol/L (144-160) Fecal: NSF HW/anaplasma/Ehrlichia/Lyme: NEG x 4 CBC: NSF

ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN

Urinary System

The urinary bladder, trigone, cystourethral junction, and visible pelvic urethra to a depth of 2.0 cm exhibited normal thickness and tone. Anechoic urine was present in the lumen with no uroliths, sediment, or calculi. The ureteral papillae were normal. The ureters were not visible which is normal. No evidence of inflammatory or neoplastic changes was noted.

The prostate was of expected size and presentation for a young intact male canine without pathology.

The area of the aortic trifurcation was free of pathology.

Normal size and margination were present in the kidneys. A normal 1:3 cortex / medulla ratio and normal corticomedullary definition were maintained. The echogenicity of the cortex was similar to or slightly less than normal liver parenchyma while the medulla echogenicity was hypoechoic to the cortex with no evidence of pelvic dilation. The left kidney measured 3.6 cm in length. The right kidney measured 3.6 cm in length.

Adrenal Glands

The left adrenal gland was uniform in size and contour with a uniformly hypoechoic parenchyma. The left adrenal gland measured 0.37 cm width at the caudal pole and 0.33 cm width at the cranial pole. The right adrenal gland was uniform in size and contour with a uniformly hypoechoic parenchyma. The right adrenal gland measured 0.41 cm width at the caudal pole and 0.38 cm width at the cranial pole.

Spleen

The spleen exhibited a finely textured and homogenous parenchyma which was hyperechoic to the liver and renal cortical parenchyma. The capsule was smooth and regular without apparent expansion. The splenic vasculature at the hilus was normal in volume with no evidence of congestion or thrombosis. Acute to chronic inflammatory, neoplastic, or benign parenchyma changes were not noted.

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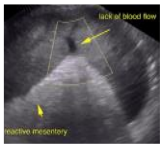

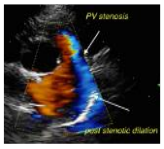

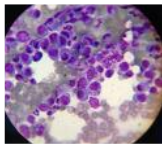
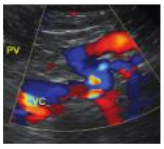

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Liver/ Gallbladder

The liver was normal to borderline subnormal in size. The gallbladder and common bile duct were unremarkable. Intrahepatic vascularity appeared to be of normal structure and volume. The visualized portal vein exhibited subjective normal branching in the area of the porta hepatis, measuring 0.53 cm in diameter. By comparison, the caudal vena cava at the level of the liver and diaphragm measured approximately 0.76 cm in diameter. Subjective normal laminar blood flow was present in the caudal vena cava and portal vein on doppler assessment.

Gastrointestinal

The stomach presented intact wall layering with a normal wall layer ratio. The lumen of the stomach was empty with no signs of ileus, obstruction, or foreign material.

The small intestine presented intact wall layering with 1:3 muscularis/mucosa ratio. The lumen of the small intestine was empty with no signs of ileus, obstruction, or foreign material.

Normal visible colon wall layers were present with apparent formed feces in lumen.

Pancreas

The parenchyma of the left limb, body, and right limb of the pancreas presented isoechoic to the adjacent omental fat. A normal curvilinear capsule contour of the pancreas was present. The visible pancreatic duct was normal. No signs of active inflammation or neoplastic disease were evident.

Free Abdomen

No evidence of omental lymphadenopathy was present. A small pocket of scant free fluid was noted adjacent to the mid abdominal jejunum, which is likely incidental or physiologic, and not of clinical concern.

ULTRASONOGRAPHIC FINDINGS

- Subjective borderline subnormal liver size exhibiting uniform parenchyma and subjective normal vascular volume
- Sonographically unremarkable gallbladder

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

No overt evidence of intrahepatic or extrahepatic shunting was evident. Considerations for the liver may include primary parenchymal disease such as low-grade inflammatory hepatopathy with potential for portal hypoplasia / microvascular dysplasia. Screening hepatic FNA could be considered to assess for potential inflammatory cell type. Core or surgical biopsy may be necessary for further definitive as to whether portal hypoplasia / microvascular dysplasia is present. Portosystemic shunt is considered unlikely given the sonographic presentation of the liver and portal vein and without evidence of clinical signs, as well as concurrent abnormalities such as renal or cystic calculi.

If clinical signs arise which may suggest non-visualized portosystemic shunt, or if further assessment is indicated, Gold Standard CT with Contrast could be considered.

Empirically, a clinical trial of some or all of the following could be considered.

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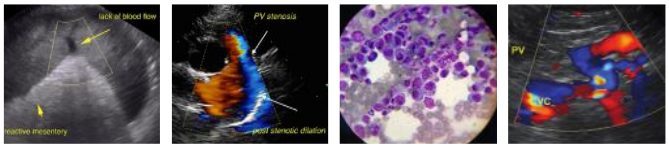

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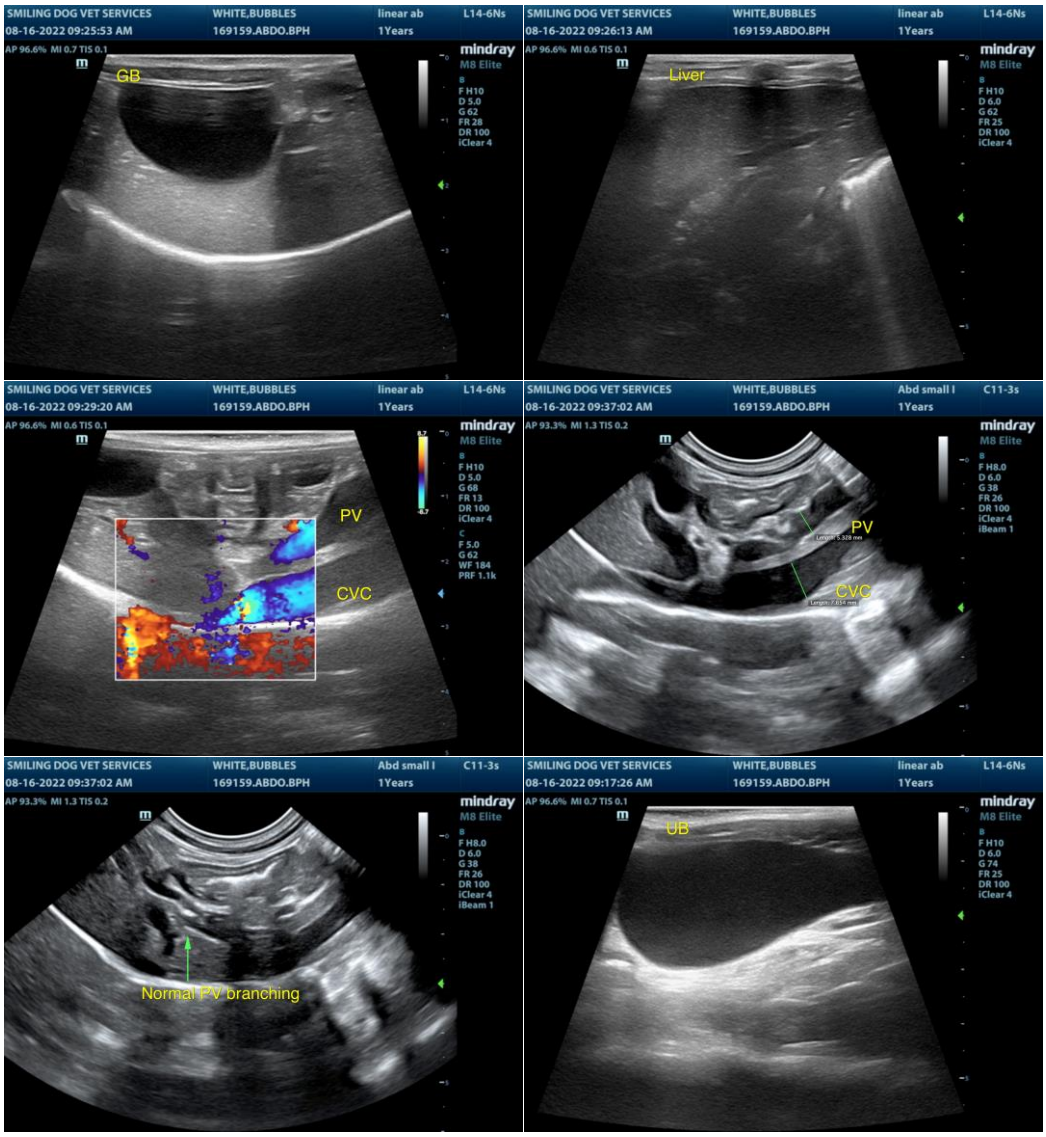
Royal Canin Hepatic Support diet or Hills L/D, **Metronidazole** (7.5 mg/kg PO bid) over the next 14 days, **Lactulose** (Oral: 3.1-3.7 g/5 ml lactulose in a syrup base) long term to target 2-3 soft stools/day, with a **high-quality protein supplement** of minor amount of **yogurt** or **cheddar cheese**. 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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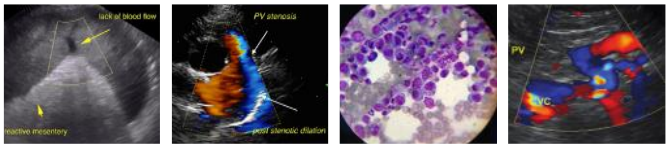

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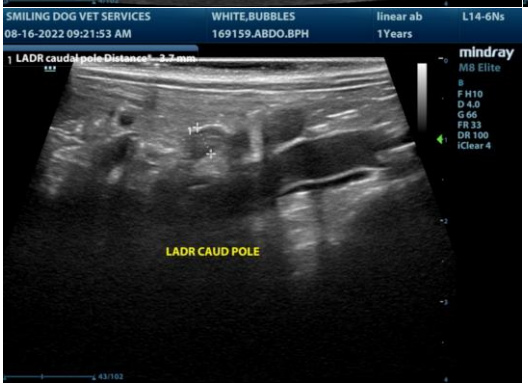

The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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.

R. McKenzie Daniel, DVM, DABVP (Canine / Feline Practice)
info@SonoPath.com