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Clinical Sonography & Telecytology
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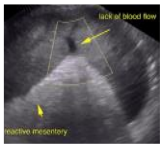
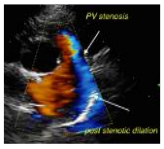
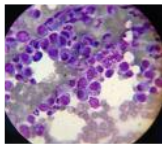
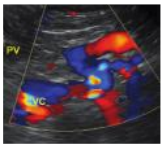

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1-800-838-4268 info@sonopath.com

**PATIENT**

Jovie Johnston

**SPECIES**

Canine

**BREED**

Maltese X

**SEX**

Female

**AGE**

8 months

**WEIGHT**

3.6 kg

**INTERPRETED BY**

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

**IMAGING PERFORMED BY**

Dr. Sarah Barthelemy

**HOSPITAL NAME**

Alpine 24 hour Pet Hospital

**REFERRING VET**

Dr. Kyono

**INVOICE**

14941

**DATE**

9-21-22

## PRESENTING CLINICAL SIGNS

Pre-anesthetic labs showed elevated ALT marked post prandial BA elevation. No clinical signs. Abnormal PE/Chem/CBC/UA Results: Mild ALT elevation @207 on pre-spay BW. Post prandial bile acids elevated at 110.

## 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 calculi or sediment. The ureteral papillae were normal. The ureters were not visible which is normal. No evidence of inflammatory or neoplastic changes was noted.

No overt pathology was noted in the area of the uterus or bilateral ovaries.

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 was maintained. Mildly indistinct corticomedullary border demarcation was present with multiple areas of pinpoint medullary mineralization. No evidence of pyelectasia was noted. The left kidney measured 3.3 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 0.28 cm width at the caudal pole and 0.27 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 0.25 cm width at the caudal pole and 0.27 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.

### *Liver/ Gallbladder*

The liver appeared to exhibit normal size and subjective normal hepatic volume with uniform normoechoic hepatic parenchyma compared to the adjacent falciform fat and the spleen. Subjective normal portal vein/aortic ratio (>0.8) with subjective normal portal vein branching was noted. Color doppler assessment of the caudal vena cava revealed subjective laminar flow without overt evidence of caudal vena cava turbulence. The gallbladder was non-distended in size with thin walls and primarily anechoic luminal content. The cystic and common bile ducts were normal.

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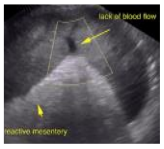

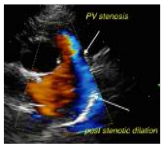

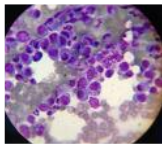
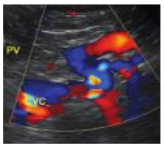


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### *Gastrointestinal*

The stomach presented intact wall layering with a normal wall layer ratio. The lumen of the stomach contained mild to moderate, nonshadowing ingesta/chyme without evidence of mechanical pyloric outflow obstruction.

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 overt lymphadenopathy or peritoneal effusion was present.

## ULTRASONOGRAPHIC FINDINGS

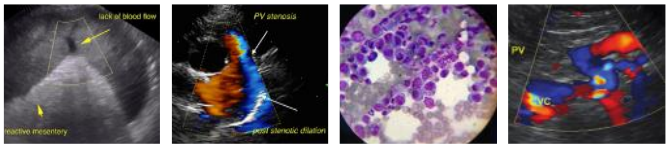
- Hepatopathy - primary parenchymal disease i.e., low-grade inflammatory hepatopathy with potential portal hypoplasia / microvascular dysplasia suspected
- Bilateral multifocal pinpoint renal medullary mineral
- No evidence of urinary bladder sediment / calculi

## INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Overt evidence of an intrahepatic or extrahepatic shunt was not definitively visualized in this study. Subjective normal portal vein branching and adequate to normal hepatic volume were noted. Technically, the possibility of a small non-visualized shunt, given the post prandial bile acid elevation (>100), which can at times be difficult to visualize using ultrasound alone, cannot be definitively excluded.

Additional assessment may include Gold Standard CT with contrast if strong clinical suspicion for a non-visualized shunt, i.e., clinical signs suggestive of extrahepatic shunting, as well as ultrasound-guided FNA cytology primarily to assess for or possibly identify inflammatory cell type if present. A core surgical hepatic biopsy may be necessary for further definition as to whether portal hypoplasia / microvascular dysplasia is present.

A clinical trial of the following may be considered.
**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.

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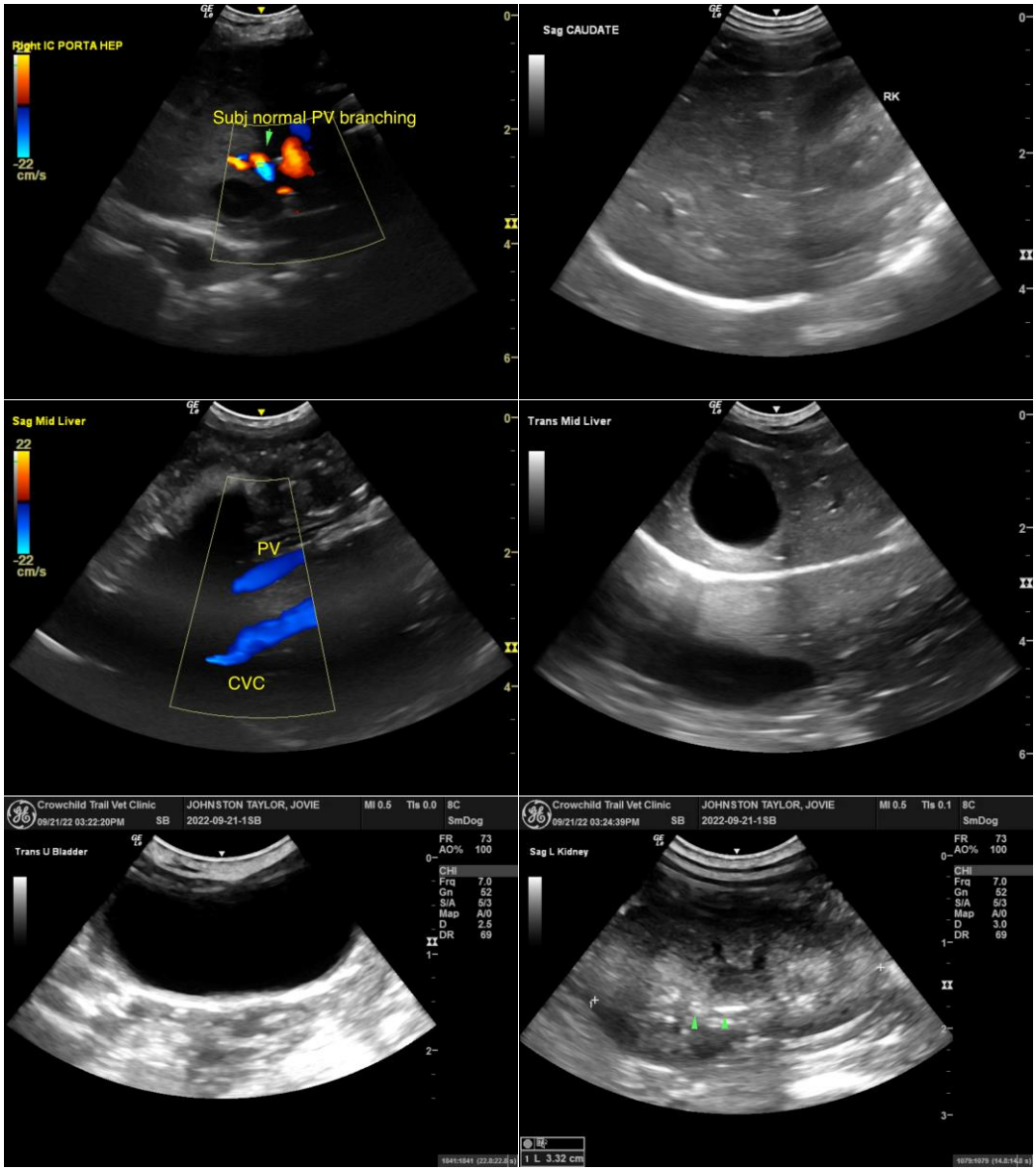
**Zinc** serum level keep between 200—500 ug/dl. If deficient then Tx zinc acetate 1-3 mg/kg/day. Gastrointestinal protectants are recommended if the patient is anorexic.



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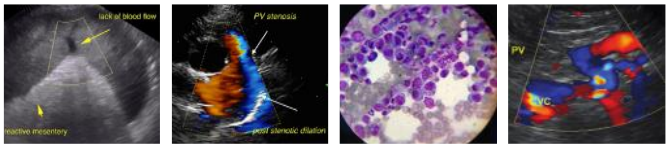


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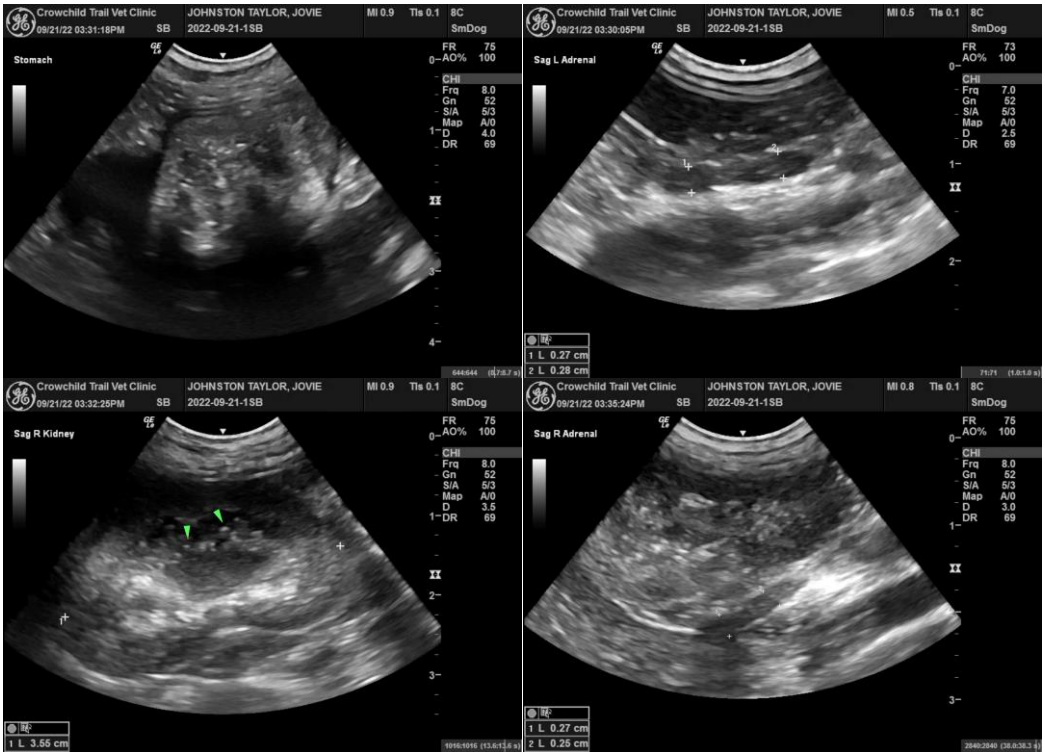


**The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.**

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**