



**PATIENT**

Morty Clark

**SPECIES**

Canine

**BREED**

Pomeranian

**SEX**

MI

**AGE**

13 months

**WEIGHT**

2.3 kg

**INTERPRETED BY**

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

**IMAGING PERFORMED BY**

Dr. Belan

**HOSPITAL NAME**

Beddington Trail AH

**REFERRING VET**

Dr. Bahadur

**INVOICE**

15862

**DATE**

1/18/23

**PRESENTING CLINICAL SIGNS**

Non clinical elevated liver enzymes on routine screening

Abnormal PE/Chem/CBC/UA Results: Mild elevation of Liver enzymes and bile acids on pre surgical blood work

**ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN**

**Urinary System**

The urinary bladder, trigone, and cystourethral junction exhibited normal thickness and tone. Anechoic urine was present in the lumen with no uroliths 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 evidence of urinary bladder mineral or calculi was.

The prostate was of the expected size and presentation for a young intact male canine. No pathology was noted.

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. No evidence of renomegaly or renal mineralization / calculi was noted. The left kidney measured 2.6 cm in length. The right kidney measured 2.9 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 0.25 cm width at the caudal pole and 0.25 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 0.30 cm width at the caudal pole and 0.33 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 exhibited potential for borderline to mild subnormal size with subjective adequate vascular volume and normal hepatic parenchyma echogenicity exhibiting mild coarse echotexture. The visualized portal vein appeared to be overtly normal measuring slightly less in diameter compared to the adjacent caudal vena cava. The portal vein measured approximately 0.27 cm in diameter, while the adjacent caudal vena cava measured approximately 0.4 cm in diameter. 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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**Gastrointestinal**

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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.

Canine

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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.

Pomeranian

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

**SEX**

**Pancreas**

MI

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.

**AGE**

13 months

**Free Abdomen**

**WEIGHT**

No overt lymphadenopathy or peritoneal effusion was present.

2.3 kg

**ULTRASONOGRAPHIC FINDINGS**

- Possible borderline subnormal liver size exhibiting subjective adequate hepatic vascular volume - low-grade inflammatory hepatopathy, potential portal hypoplasia / microvascular dysplasia

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**INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS**

No overt evidence of intrahepatic or extrahepatic shunting, which is considered less likely, given the subjective adequate hepatic vascular volume, mild degree of bile acid elevation, lack of clinical signs, or sometimes seen concurrent abnormalities such as renal or cystic calculi. Hepatic FNA could be considered with potential assessment of inflammatory cell type if present. Core or surgical biopsy is likely necessary for further definitive as to whether primary parenchymal disease or portal hypoplasia / microvascular dysplasia is present.

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If clinical signs suggestive of a portosystemic shunt arise, Gold Standard CT with contrast may be considered. Some or all of the following protocol may be considered empirically.

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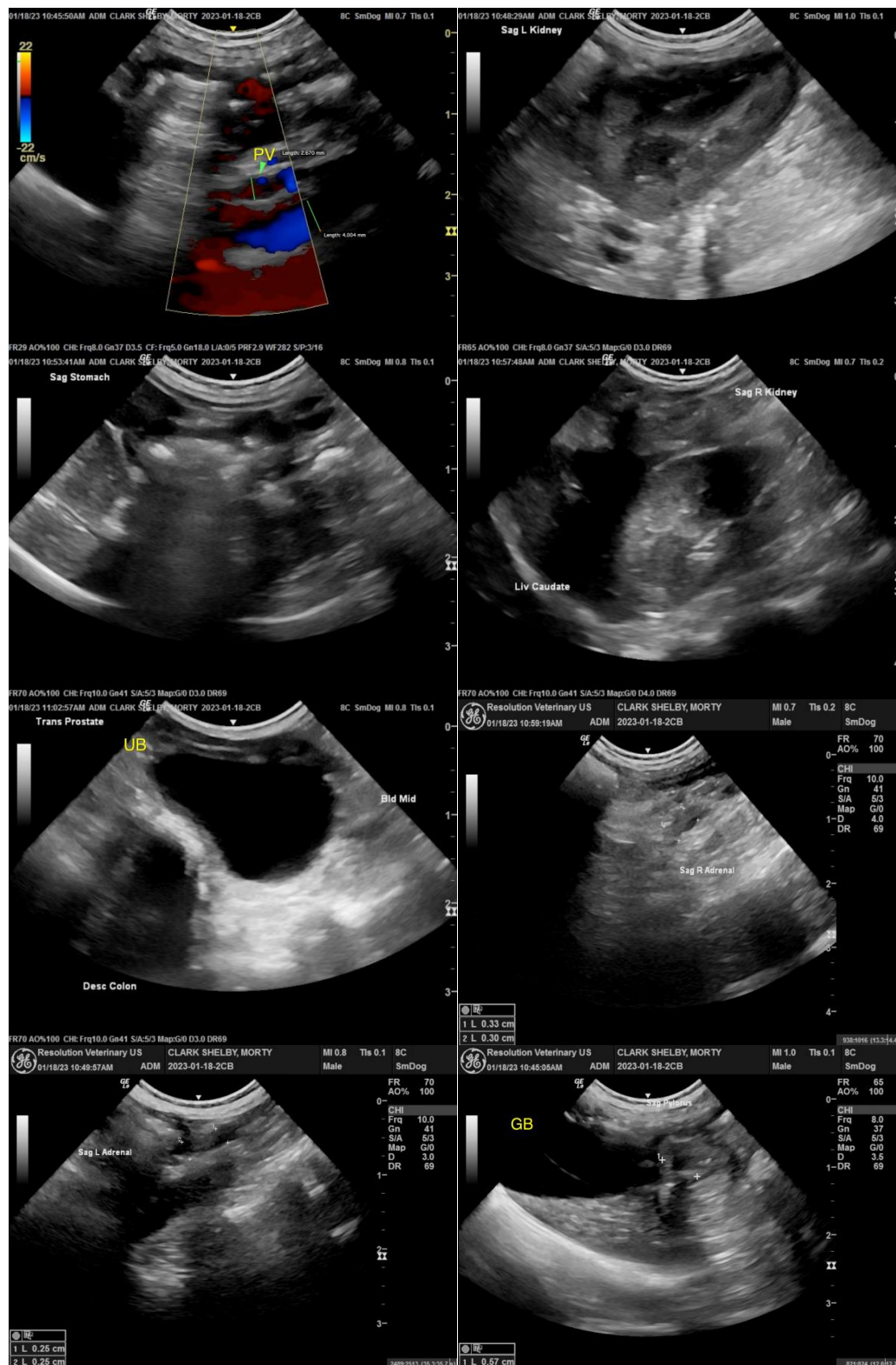
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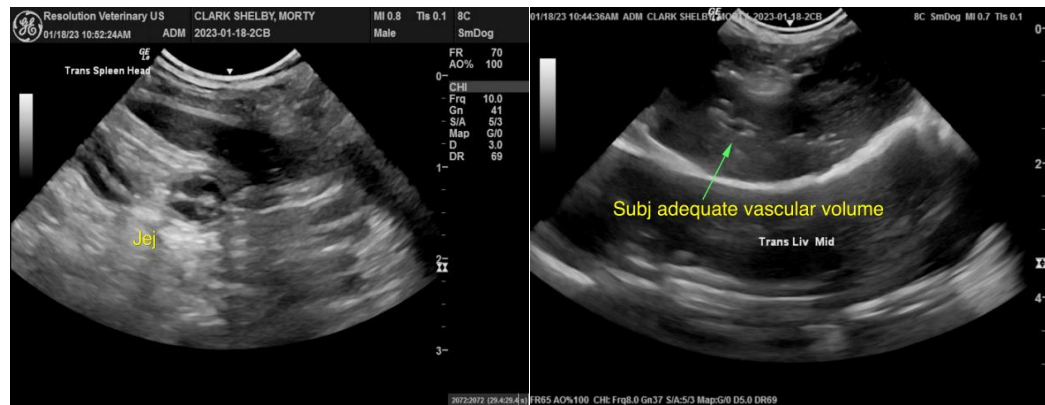
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The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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