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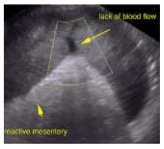

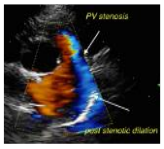

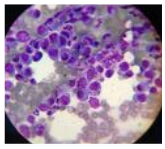
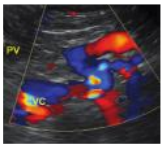

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1-800-838-4268 info@sonopath.com

PATIENT

Danny Smithen

SPECIES

Canine

BREED

Golden Retriever

SEX

FS

AGE

4 years

WEIGHT

59

INTERPRETED BY

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

IMAGING PERFORMED BY

Nicole Gotfredson

HOSPITAL NAME

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PRESENTING CLINICAL SIGNS

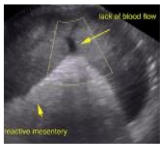
Referral case: Dog presented for possible toxin ingestion in December 2021, elevated ALK Phos, ALT and bile acids. Rechecked enzymes 1 month (Jan 2022) later and returned to normal values. Dog presented 5/25/22 for inappropriate urination, SG=1.010, ran CBC/CHEM as well ALT would not read and ALK Phos > 2000. Dog is otherwise acting normal. Eating and drinking. No vomiting or diarrhea. Dog presented today with grade 2 heart murmur. Once we shaved dog's abdomen skin does appear to have a yellowish tint.

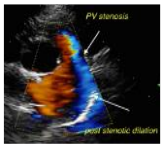
ULTRASONOGRAPHIC EXAMINATION OF THE HEART & ABDOMEN

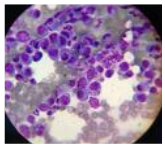
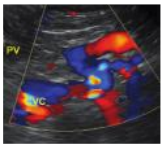
CANINE CARDIAC PARAMETERS	MR VMAX (m/s)	TR VMAX (m/s)	LA/AO (Boon method)	LA/AO (Heart Base; Swe)	FS (%)	EF (%)	EPSS (cm)
NORMAL PARAMETER	4.5-5.5	<2.7	1.3	<1.3	28-40	40-100	<0.6
PATIENT				1.47	50	85	0.2
CANINE CARDIAC PARAMETERS	**HR** (BPM)	**AV VMAX** (m/s)	**PV MAX** (m/s)	**BODY WEIGHT** (kg)	**LA** 2D short axis Base view (cm)	**LVIDd** Avg; 2D and m-mode short axis (cm)	**LVIDs** Avg; 2D and m-mode short axis (cm)
NORMAL PARAMETER	50-100	0.7-1.7	0.7-1.6				
PATIENT	NM	2.9	1.4		4.6	3.8	

Cardiac Presentation

The echocardiogram in this patient demonstrated normal **left atrial** size based on 3 separate methods of LA evaluation. The cranial and caudal **mitral** valve leaflets presented normal linear structure, extension in systole, and union in diastole with normal kinesis. The **left ventricle** presented thicknesses with linear contour and was not dilated nor restricted. The **myocardium** presented normal echogenicity without subjective evidence of significant fibrotic or ischemic disease. **Contractility** of the ventricular walls was adequate and in normal range for this patient evidenced by the fractional shortening measurement and subjective evaluation of the different regions of the myocardium. The **left ventricular outflow** tract demonstrated turbulent to dynamic systolic outflow with subjective abnormal aortic valve. Elevated LVOT velocity with concurrent aortic valve insufficiency was present on doppler. The **right atrium** and auricle revealed normal size, structure and content. No evidence of masses was noted. **Tricuspid** valvular assessment demonstrated adequate linear morphology and kinesis. The **right ventricle** was of normal size (1/3 diameter of LV), chordae structure, myocardial echogenicity and thickness. **Pulmonary outflow** tract assessment revealed normal valve structure, laminar flow, and diameter (approx.1:1 pa/ao ratio). Trace pulmonic





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insufficiency was present on doppler. No visible **pericardial** or free pleura fluid was noted. The cranial **mediastinum and pericardial and extra-cardiac regions** were free of masses in the visible window.

Urinary System

The urinary bladder, trigone, cystourethral junction, and visible pelvic urethra to a depth of 3.0 cm 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.

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 pyelectasia. The left kidney measured 7.4 cm in length. The right kidney measured 8.1 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 0.43 cm width at the caudal pole. The right adrenal gland was not definitively visualized.

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 subjective potential for mildly subnormal overall size. The liver maintained symmetrical capsule contour with normal hepatic parenchyma echogenicity and moderate coarse echotexture. No masses or nodules were noted. The gallbladder was non-distended in size with moderate congealed yet nonorganized and subjectively mobile sludge was present. The gallbladder walls were sonographically normal. No evidence of gallbladder or peripheral gallbladder inflammation was noted. The common bile duct was not definitively visualized yet without evidence of dilation, stasis, or obstructive pattern.

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.

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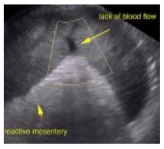

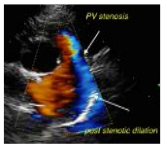

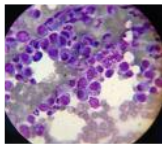
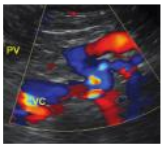

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Pancreas

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

- Mild aortic stenosis
- Tract pulmonic insufficiency
- Hepatopathy with potential borderline to mild subnormal size
- Moderate congealed yet nonorganized and subjectively mobile gallbladder sludge, no evidence of gallbladder or peripheral gallbladder inflammation (non-mucocele)

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

The overall liver was nonspecific with considerations including vacuolar hepatic changes and nonobstructive cholestasis, inflammatory / immune-mediated disease, toxic hepatopathy i.e., copper, infectious disease, or other hepatopathy without evidence of neoplastic criteria. Leptospirosis titers/PCR are recommended if endemic to the area or if potential exposure.

Ultrasound guided FNA of the liver could be considered for screening cytology primarily to assess for or possibly identify inflammatory cell type if present. However, core surgical biopsies are likely required for a definitive diagnosis. No overt evidence of a portosystemic shunt was noted. Hepatosupportive medications including Denamarin and Ursodiol +/- antibiotic therapy if clinically indicated with continued monitoring for evidence of Increasing cholestasis would be reasonable.

The cause of the murmur is consistent with mild aortic stenosis based on measured LVOT velocity and estimated pressure gradient. No overt evidence of secondary LV hypertrophy or dysfunction at this time. No overt indication for medical therapy at this stage. However, exercise restriction is recommended and likely ideal. Serial sonographic monitoring is required for further prognosis. Recheck echocardiogram is suggested in 6 months, sooner if clinical signs consistent with cardiac disease are noted.

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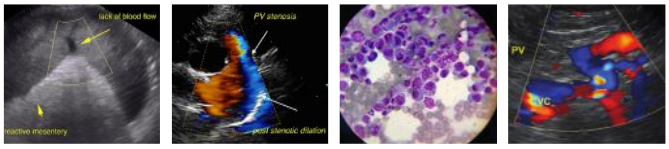

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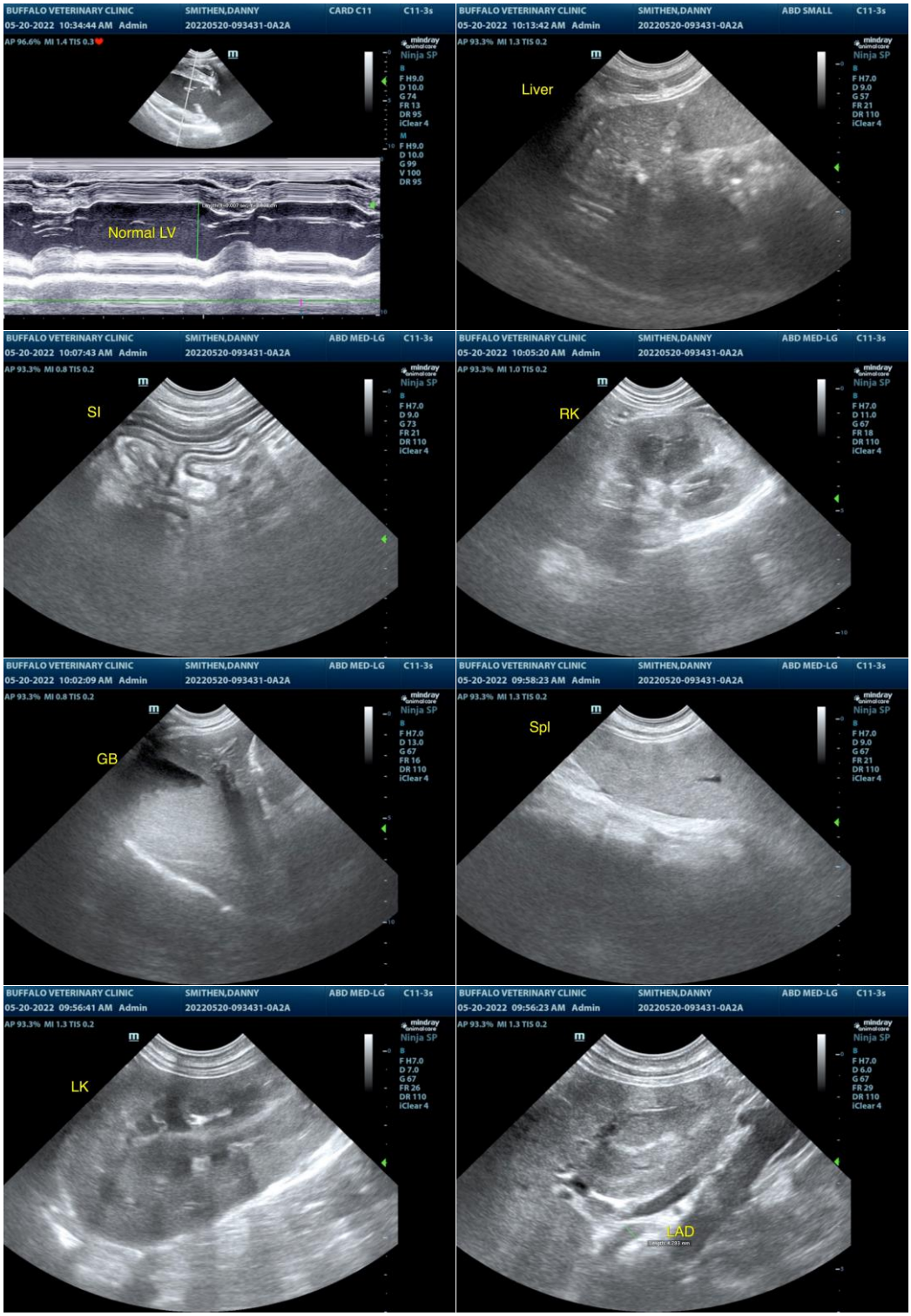

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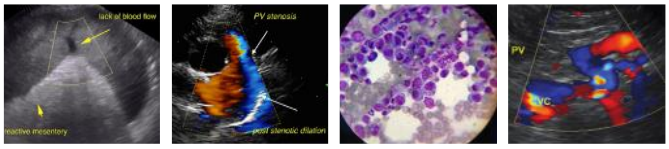

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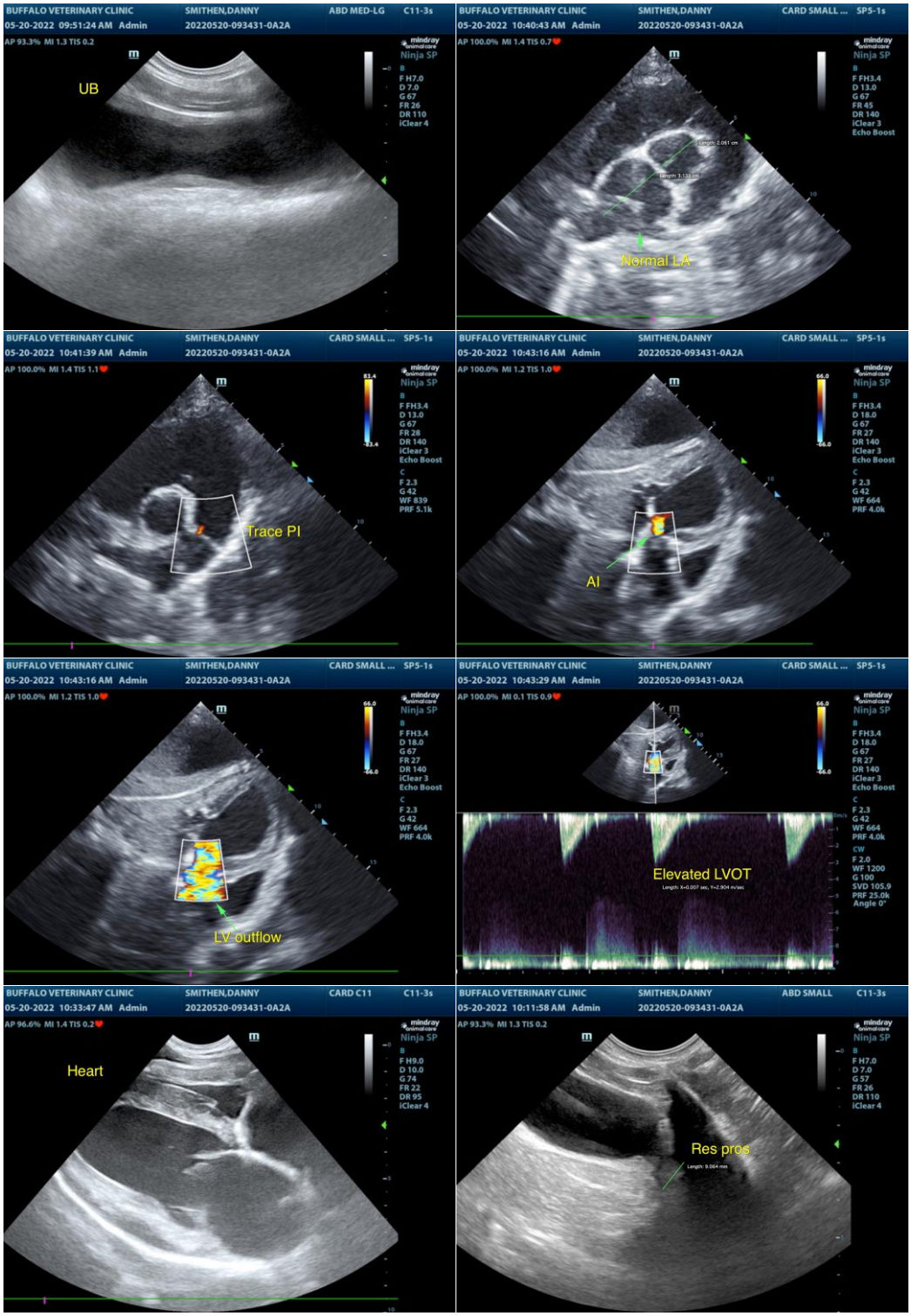

The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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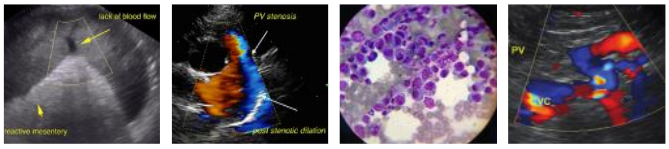

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Thank you for this referral. If the clinical or image interpretation does not parallel your findings or if I can be of any further assistance please contact me.

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