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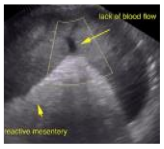
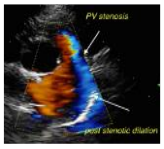
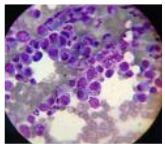
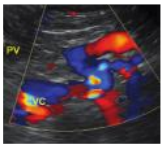

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1-800-838-4268 info@sonopath.com

PATIENT

Laycee Dunhao

SPECIES

Canine

BREED

Shih Tzu

SEX

FS

AGE

14y

WEIGHT

11.4 lbs

INTERPRETED BY

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

IMAGING PERFORMED BY

Val Shumskaya

HOSPITAL NAME

All Creatures Great and Small Denville

REFERRING VET

Dr. Mitovic

INVOICE

16757

DATE

5/4/23

PRESENTING CLINICAL SIGNS

heart murmur 3, coughing sometimes, Polydipsia, polyuria, lethargy, anorexia Current meds: Was on enalapril changed to pimobendan 1.25mg 1/2 SID

Abnormal PE/Chem/CBC/UA Results: Urea 67, Crea 1.8, BUN/Crea ratio 37

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				1.75	53	86	0.15
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	1.4	0.9		3.1	2.6	

Cardiac Presentation

The echocardiogram in this patient demonstrated mildly enlarged **left atrial** size based on 2 different LA measurement methods. Chamber volumes and echogenicity were deviation of the interatrial septum towards the right atrium, suggestive of mild increased left atrial pressure, was present.The cranial and caudal **mitral** valve leaflets presented moderate thickening (Anterior >Posterior) consistent with endocardiosis. Mild valvular prolapse into the left atrial lumen was present. Doppler indicated moderate primarily eccentric insufficiency. The **left ventricle** presented thicknesses with linear contour with mild static increased left ventricle volume. 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 normal laminar flow and subjective structural integrity. The **right atrium** and auricle revealed normal size, structure and content. No evidence of masses was noted or chamber overload. **Tricuspid** valvular assessment demonstrated mild thickening with mild TR on Doppler. The **right ventricle** was of normal size (1/3 diameter of LV), chordae structure, myocardial echogenicity and thickness. **Pulmonic** tract assessment revealed normal valve structure, laminar flow, and diameter (approx.1:1 pa/ao ratio). No visible **pericardial** or free pleura fluid was noted. No echographically detectable evidence of infiltrative disease was visible. The cranial **mediastinum and pericardial regions** were free of masses in the visible window.

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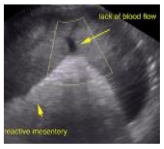

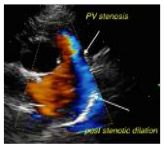

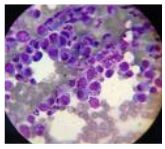
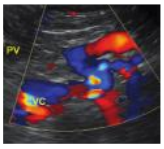

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Urinary System

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 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 pathology in the area of the aortic trifurcation.

Normal size and margination were present in the kidneys. A normal 1:3 cortex / medulla ratio was maintained. The medulla and cortices were uniform in texture with some increased echogenicity and moderate loss of corticomedullary symmetry and definition expected for the age of the patient. No evidence of pelvic dilation was present. The left kidney measured 3.4 cm in length. The right kidney measured 3.8 cm in length.

Adrenal Glands

Symmetrical, primarily uniform, mildly hyperechoic nodule was present in the cranial left adrenal gland with mild associated symmetrical capsule expansion. The nodule did not exhibit signs of mineralization or vascular invasion. The nodule measured 1.6 cm x 0.57. The overall left adrenal gland measured 1.6 cm length x 0.57 cm width at the caudal pole.

The right adrenal gland was overtly normal in size, position, and shape. The right adrenal gland measured 1.8 cm length x 0.45 cm width at the caudal 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 was subjectively normal in size, structure, and contour. The liver parenchyma was mildly nonuniform and hypoechoic to the spleen with a moderate coarse echotexture and subjective mild to benign parenchymal remodeling. The hepatic and portal vasculature were normal in appearance without signs of congestion. The gallbladder was non-distended in size with thin walls and primarily anechoic luminal content. The cystic and common bile ducts were normal.

Gastrointestinal

The stomach presented intact wall layering with a normal wall layer ratio. The lumen of the stomach contained mild nonshadowing ingesta sonographically consistent with food without signs of 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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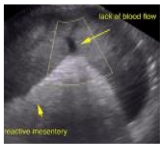
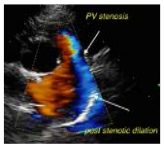
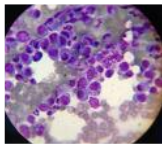
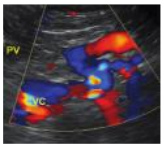

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Pancreas

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

- Chronic mitral valve disease (ACVIM B2) with mild mitral valve prolapse
- MIld TR - no evidence of clinical pulmonary hypertension
- Moderate chronic renal changes
- Left adrenal nodule - suspect adenoma
- Minor hepatic parenchymal remodeling

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Mildly progressive increased left atrial size compared to the previous study indicates that the risk of current and future complication secondary to MR is mildly elevated. Current Pimobendan 0.3 mg/kg PO BID is warranted at this stage. No other indication for additional cardiac medications without additional clinical issues such as pulmonary hypertension or LV systolic dysfunction. Prognosis remains highly variable and serial sonographic monitoring is recommended. Recheck echocardiogram is suggested in 6 months, sooner if clinical signs arise.

Further renal staging to include urine C/S and protein: creatinine ratio on sterile urine sample may be considered.

The possibility of emerging left adrenal nodular neoplasia i.e., pheochromocytoma cannot be definitively excluded. Screening blood pressure to assess for evidence of hypertension, which may allude to emerging left pheochromocytoma is suggested. Functional left adrenal adenoma is considered less likely given the lack of concurrent hepatic enzyme elevations yet a full adrenal workup could be considered if strong clinical signs which may suggest Cushing's Syndrome are noted. Sonographic monitoring of the left adrenal nodule for evidence of progression with an initial recheck in 4-6 weeks would be ideal.

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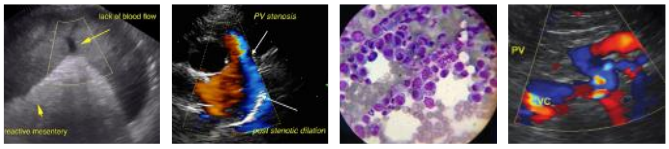

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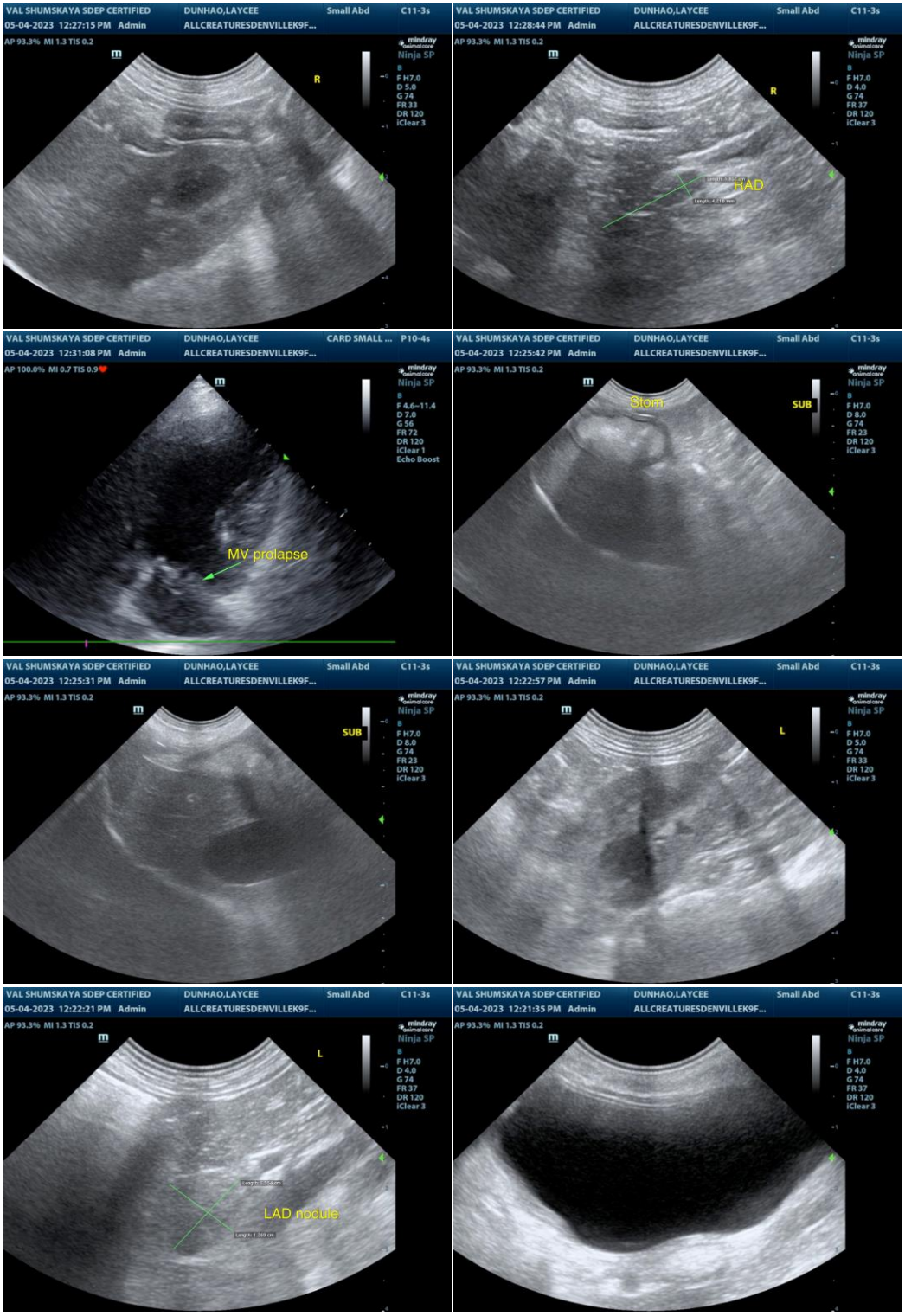

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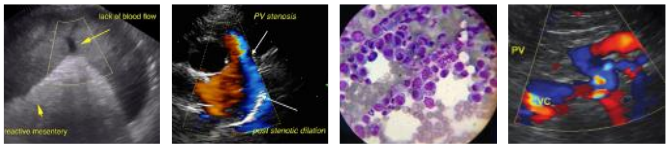

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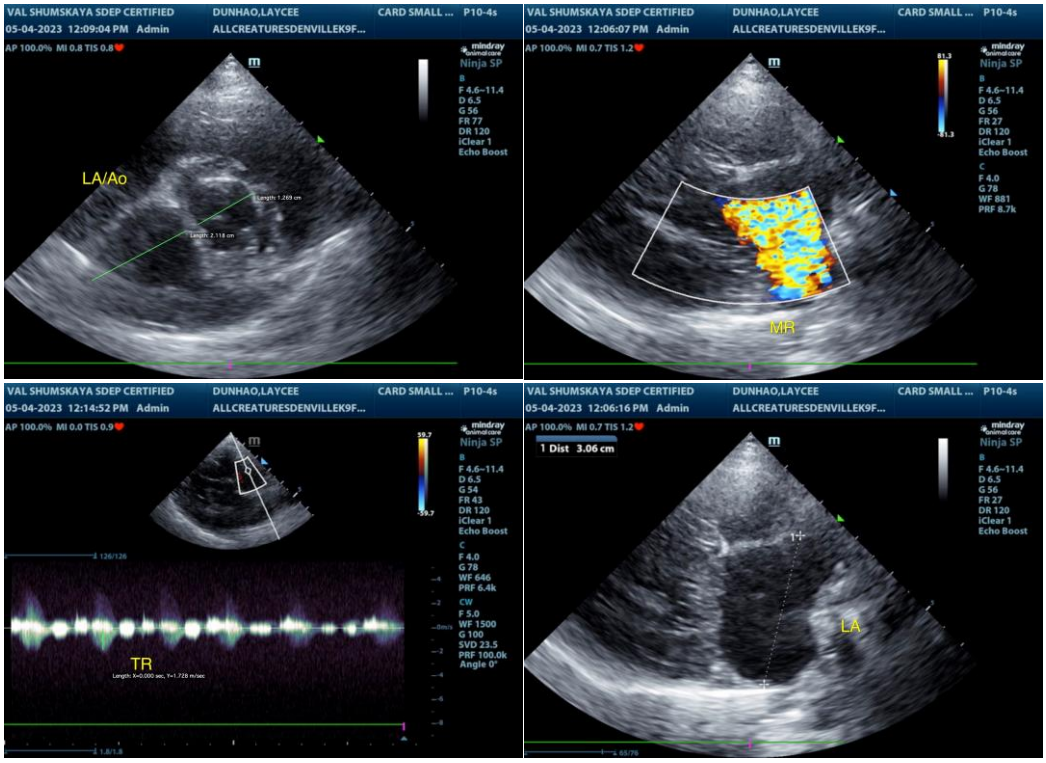

The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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.

R. McKenzie Daniel, DVM, DABVP (Canine/Feline Practice)
mac.daniel@sonopath.com