


**PATIENT PRESENTING CLINICAL SIGNS**

Mindy Humphrey

New grade 3/6 heart murmur left sided(discovered elsewhere in Sept 2022) and was diagnosed with kidney disease there as well in August 2022. Has been on Fortekor 2.5mg SID, Nexgard, Benazepril started recently(previously on enalapril). Has been on SO diet for struvites and had a cystotomy in 2009. Now on k/d for kidneys. Owner mentioned a gall bladder surgery as a young dog, but no medical records to explain or confirm.

**SPECIES**

Canine

Abnormal PE/Chem/CBC/UA Results: Creatinine 356, Urea 21.3, mild anemia that has improved since 8/19/22, ALKP persistently low. Urine Sp grav - 1.013, protein 30mg/dl.

**BREED**

Shih Tzu Mix

**ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN AND HEART**
**SEX**

FS

**AGE**

15yr

**WEIGHT**

10lb

**INTERPRETED BY**

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

**IMAGING PERFORMED BY**

Crystal Hill

**HOSPITAL NAME**

 Tilsonburg Veterinary  
 Centre

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**DATE**

12/05/2022

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		2.0	1.1	1.1	39	72	0.1
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	157	1.3	1.1		2.3	2.4	

**Cardiac Presentation**

The echocardiogram in this patient demonstrated normal left atrial size based on 3 different LA measurement methods. Chamber volumes and echogenicity were normal. The cranial and caudal mitral valve leaflets presented mild thickening consistent with mild endocardiosis. 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 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 subjective 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.

**Urinary System**

The urinary bladder, trigone, cystourethral junction, and visible pelvic urethra to a depth of 2 cm exhibited normal thickness and tone. Anechoic urine was present in the lumen with no uroliths or



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

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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. Mild left kidney pyelectasia was present. The left kidney measured 3.0 cm in length. The right kidney measured 3.1 cm in length

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Shih Tzu Mix

The area of the aortic trifurcation was free of pathology.

**Adrenal Glands**

The bilateral adrenal glands were normal in size. Mild parenchyma heterogeneity and mild capsule asymmetry was present without suspicion for overt neoplasia. The left adrenal gland measured 1.2 cm length and 0.33 cm width in the caudal pole. The right adrenal gland measured 1.3 cm length and 0.45 cm width in the caudal pole.

**SEX**

FS

**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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**Liver**

The liver was subjectively normal in size, structure, and contour. The liver parenchyma was uniform and hypoechoic to the spleen with a mild coarse echotexture. 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 with mild non-dependent echogenic debris. No evidence of gallbladder or peripheral gallbladder inflammation was present. The cystic and common bile ducts were normal.

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**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.

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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.

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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 was evident.

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**Free Abdomen**

No omental masses, overt lymphadenopathy or peritoneal effusion was present.

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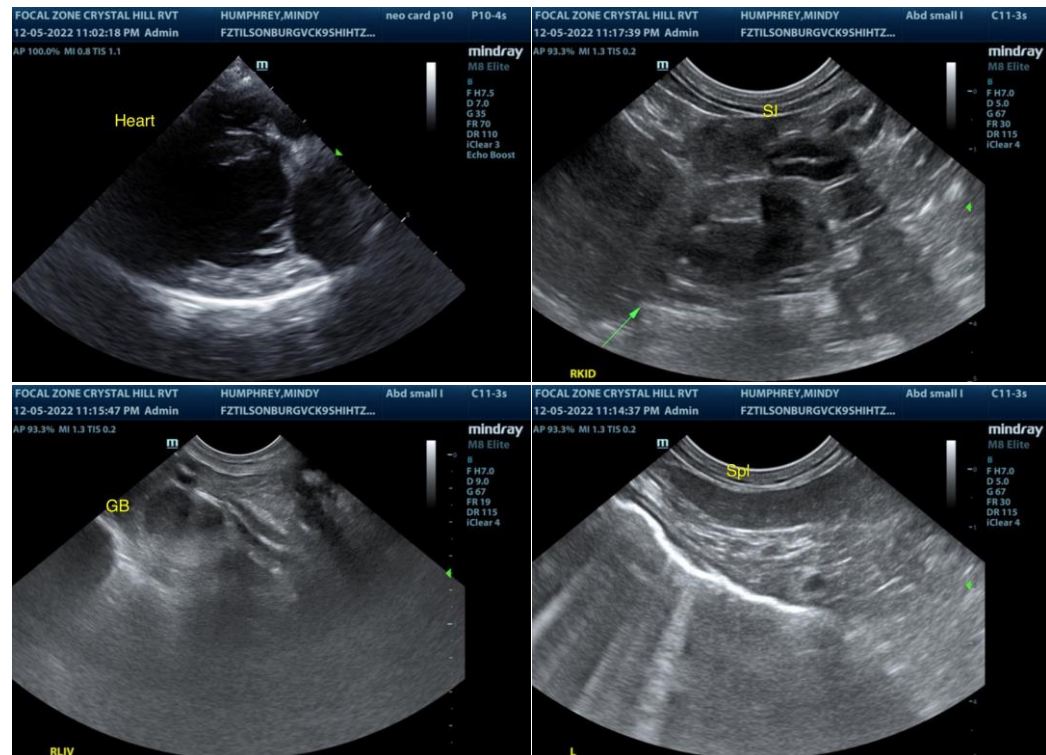
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**ULTRASONOGRAPHIC FINDINGS**

- Overall normal cardiac structure and function for age
- Probable mild compensated MR
- Mild TR-no evidence of clinical pulmonary hypertension
- Bilateral moderate chronic renal changes with mild left kidney pyelectasia
- Sonographically unremarkable urinary bladder
- Mild gallbladder debris, incidental given lack of cholestasis

**INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS**

The lack of left atrial enlargement implies that the risk of complication is relatively low at this time. No other issues such as LV systolic dysfunction or pulmonary hypertension were present. In a non-clinical patient, there is no indication for cardiac medications. ACE inhibitor medication only suggested if systemic BP is >130 or if evidence of proteinuria. Prognosis at this stage is variable and serial sonographic monitoring is recommended with a recheck echocardiogram in 6 months, sooner if clinical signs suggestive of heart disease develop. Further renal staging to include urine C/S and protein:creatinine ratio on sterile urine sample may be considered. CRD therapy with monitoring of systemic BP is recommended.





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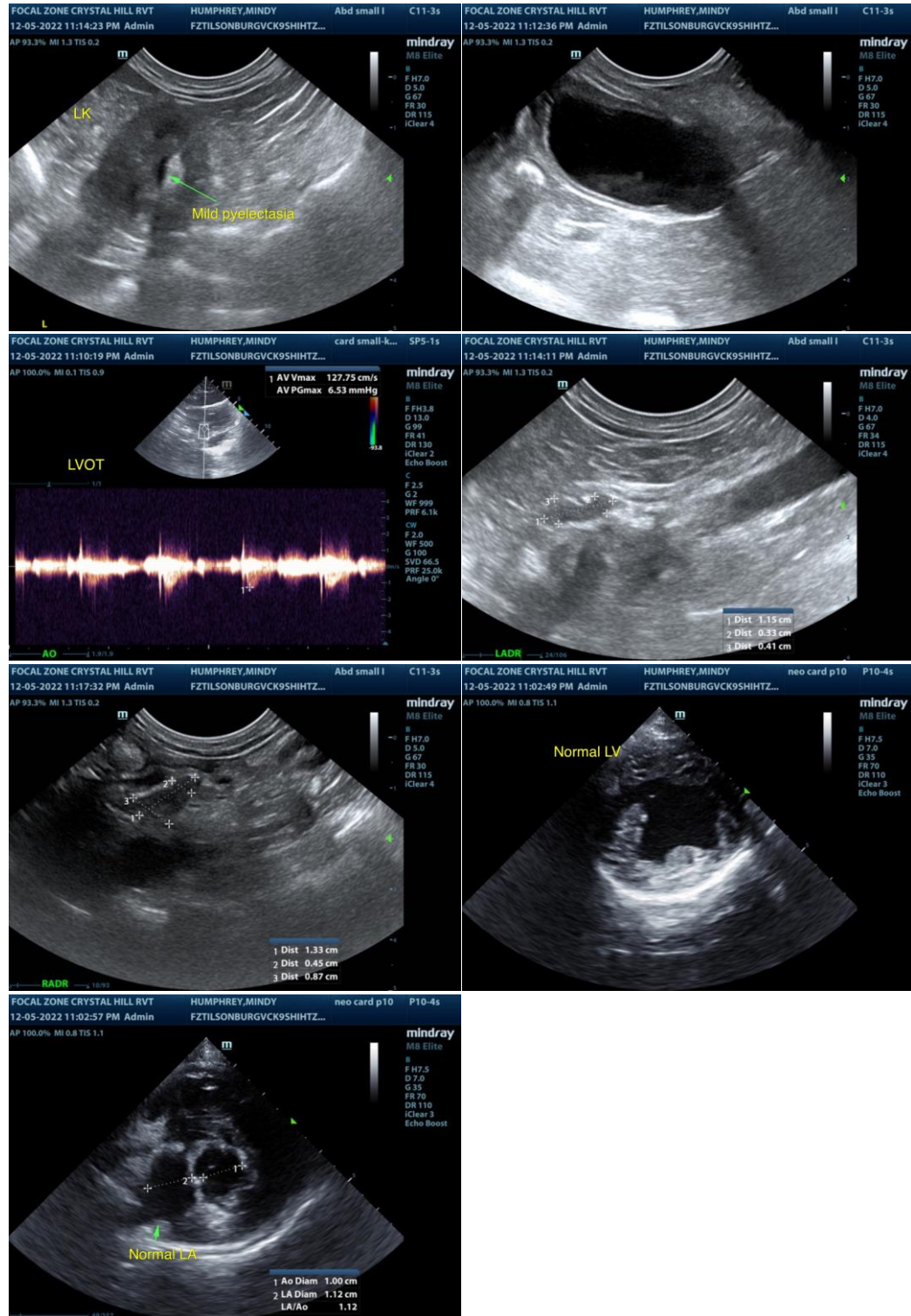
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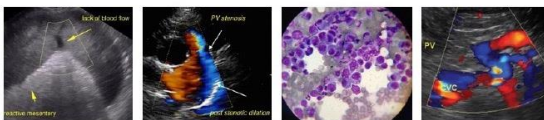
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The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.



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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)

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