
**PATIENT PRESENTING CLINICAL SIGNS**

**PATIENT** Lily Racz Presented with heavier breathing/ increased effort over last week off and on, urinating in the house over last week. Also noted that patient was seen at an emergency facility over Canadian thanksgiving weekend and had broken pelvis, high liver values noted on BW at that time. Owner declined surgical fixation, needed to be on strict cage rest. BW and Radiographs done at appointment with us 11/24/21. Buprenorphine and Gabapentin.

**SPECIES** Canine Abnormal PE/Chem/CBC/UA Results: ALT 295, ALKP 542, GGT 41, LIPA 3188, RETIC 128.7, PLT 551, PCT 0.60 FINDINGS: The right heart is moderately enlarged. The pulmonary arteries are mildly increased in diameter as compared to the corresponding means. The cranial mediastinum is wide, thought to be the result of abundant fat deposition. There is mild/moderate attenuation of the caudal cervical trachea by broadly based soft tissue opacity coursing along the dorsal tracheal wall. No conclusive changes are identified in the lungs. The liver is moderately to severely enlarged. No abnormalities are identified in the discernible spleen, kidneys, urinary bladder or gastrointestinal tract. The right patella is medially luxated. CONCLUSIONS: 1. A cause of the patient's reported urinary signs is not determined from this exam. Although no abnormalities are identified in the urinary system, this does not rule out the possibility of infectious disease, inflammatory/immune mediated disease, radiolucent urinary calculi or neoplasia. 2. Right-sided cardiomegaly with pulmonary arterial distention. Consider pulmonary hypertension. Heartworm disease cannot be ruled out. 3. The subtle attenuation of the cervical trachea could be a variant of normal. However, given the age and breed of the patient, dynamic tracheal collapse should also be considered. 4. Hepatomegaly. Consideration is given to congestion or a vacuolar hepatopathy. Hepatitis or neoplasia are not ruled out. 5. Right-sided medial patellar luxation. RECOMMENDATIONS: Abdominal ultrasound is recommended for further evaluation of the liver and urinary system. Echocardiography is recommended. Consider fluoroscopic or endoscopic evaluation of the trachea.

**BREED** Chihuahua

**SEX** FS

**AGE** 12 Years

**WEIGHT** 3.9 kg

**ULTRASONOGRAPHIC EXAMINATION OF THE HEART & ABDOMEN**
**INTERPRETED BY**

 R. McKenzie Daniel,  
 DVM, DABVP

**IMAGING PERFORMED BY**

Crystal Hill

**HOSPITAL NAME**

 Beatties PH Stoney  
 Creek

**REFERRING VET**

Baskin

**INVOICE**

48590

**DATE**

11-26-21

CANINE	MR	TR	LA/AO	LA/AO	FS	EF	EPSS
<b>CARDIAC PARAMETERS</b>	<b>VMAX</b> (m/s)	<b>VMAX</b> (m/s)	(Boon method)	(Heart Base; Swe)	(%)	(%)	(cm)
<b>NORMAL PARAMETER</b>	4.5-5.5	<2.7	1.3	<1.6	28-40	40-100	<0.6
<b>PATIENT</b>		1.5	NM	1.25	41.2	75.4	0.1
CANINE	HR	AV	PV	BODY WEIGHT	LA	LVIDd	LVIDs
<b>CARDIAC PARAMETERS</b>	(BPM)	<b>VMAX</b> (m/s)	<b>MAX</b> (m/s)	(kg)	2D short axis Base view (cm)	Avg; 2D and m-mode short axis (cm)	Avg; 2D and m-mode short axis (cm)
<b>NORMAL PARAMETER</b>	50-100	0.7-1.7	0.7-1.6	BELOW	BELOW	BELOW	BELOW
<b>PATIENT</b>	Normal	1.6	1.4		2.0	1.72	



**PATIENT** *Cardiac Presentation*

Lily Racz

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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 normal laminar flow and subjective structural integrity. 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). 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 2.0 cm exhibited normal thickness and tone. Anechoic urine was present in the lumen with no uroliths, calculi, or sediment. The ureteral papillae were normal. The ureters were not visible which is normal. No evidence of inflammatory or neoplastic mural criteria were noted.

No evidence of pathology in the area of the aortic trifurcation.

Normal size and margination was 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 mild loss of corticomedullary symmetry and definition expected for the age of the patient. No evidence of pelvic dilation was present. The left kidney measured 3.7 cm in length. The right kidney measured 4.1 cm in length.

*Adrenal Glands*

The left adrenal gland was normal in size. Mild parenchyma heterogeneity and mild capsule asymmetry was present with no evidence of hyperplasia or neoplastic criteria. The left adrenal gland measured 0.61 cm width in the cranial pole and 0.47 cm width in the caudal pole.

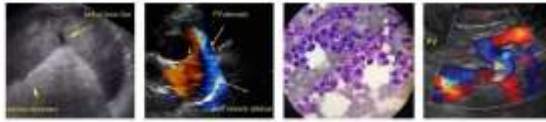
The right adrenal gland was indistinctly visualized yet without overt pathology subjectively measuring 0.57 cm in the cranial pole and 0.35 cm in the caudal pole.

*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*

The liver presented enlarged in size. The parenchyma of the liver was subjectively normal in echogenicity compared to the spleen and renal cortices. The liver parenchyma was uniform with a mildly coarse echotexture. The capsule of the liver was symmetrically rounded to mildly swollen in margination. No evidence of hepatic vasculature congestion was noted. The visualized caudal vena cava exhibited normal size and diameter without evidence of congestion.



**PATIENT**

Lily Racz

The gallbladder was non distended in size with mild nondependent yet nonorganized gallbladder debris. The cystic duct and common bile ducts were normal without evidence of dilation.

***Gastrointestinal***

**SPECIES**

Canine

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.

**BREED**

Chihuahua

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

***Pancreas***

**SEX**

FS

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.

***Free Abdomen***

**AGE**

12 Years

No overt lymphadenopathy or peritoneal effusion was present.

**ULTRASONOGRAPHIC FINDINGS**

**WEIGHT**

3.9 kg

- Overtly normal cardiac structure and function for age/breed.
- Sonographically unremarkable urinary bladder.
- Hepatomegaly - subjectively benign, vacuolar hepatopathy and hepatic cholestasis given the ALP/GGT elevation with potential for primary or concurrent nonspecific inflammatory hepatopathy or hepatobiliary process given the ALT elevation possible. No overt evidence of neoplastic criteria.
- Mild gallbladder debris (nonmucocele).
- Mild age related kidneys.

**INTERPRETED BY**

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**INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS**

The echocardiogram of this patient revealed no evidence of left or right heart chamber enlargement, systolic dysfunction, or obvious clinical pulmonary hypertension based on the lack of right heart or main pulmonary artery enlargement as well as measured tricuspid valve insufficiency velocity. Estimated pulmonary pressure gradient was less than 20mmHg. These findings indicate that the respiratory abnormalities in this patient are most likely noncardiogenic in origin. No overt indication for cardiac medications.

Hepatosupportive medications including denamarin and ursodiol may prove beneficial.

Possibility of underlying adrenal disease considered unlikely given the lack of reported clinical signs.

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Ultrasound guided hepatic FNA for screening cytology may be considered if persistent or increasing hepatic enzyme levels are noted.

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The possibility of low grade to chronic pancreatitis may be present yet ultrasonographically normal if previous clinical signs suggestive of pancreatitis.



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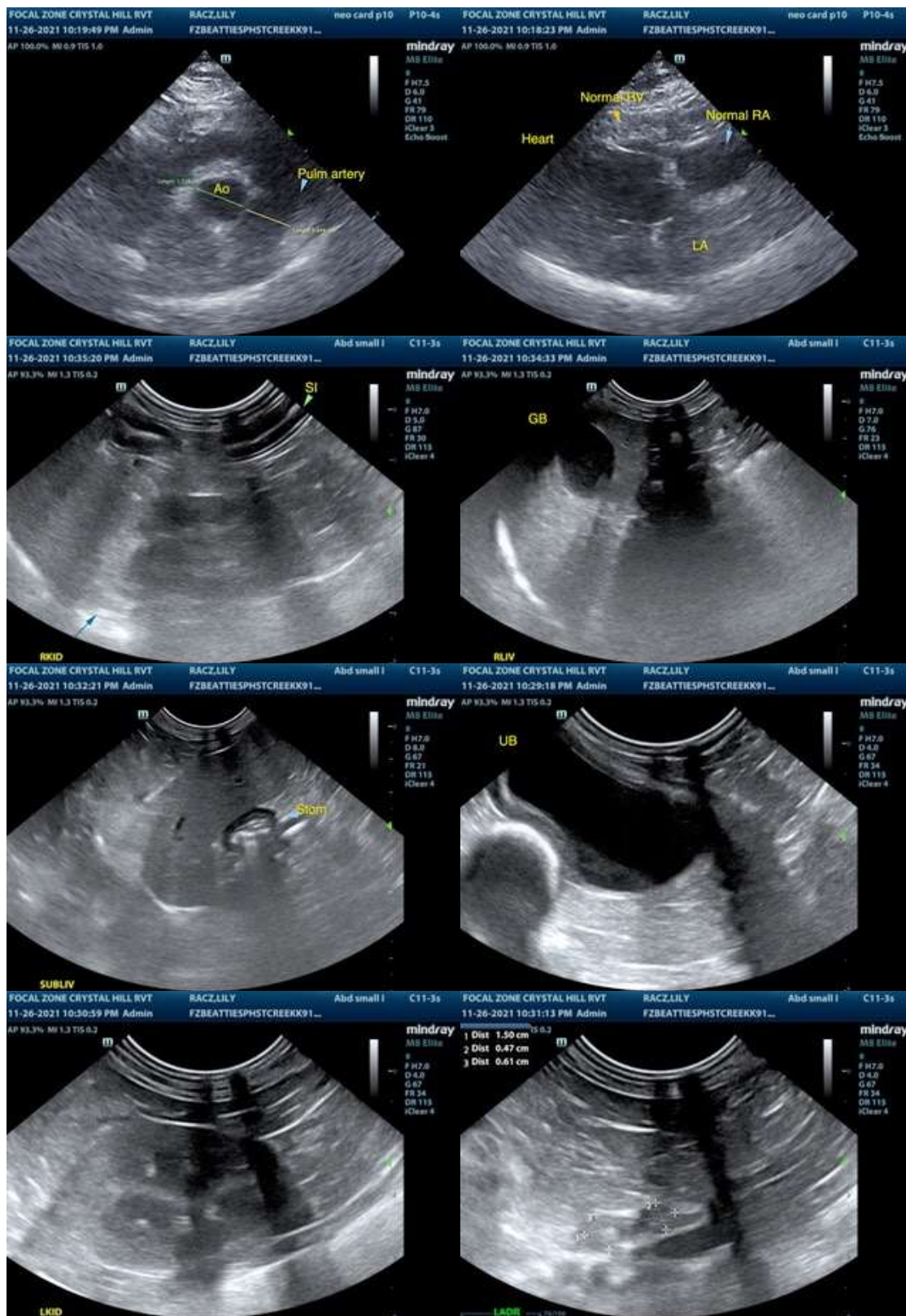
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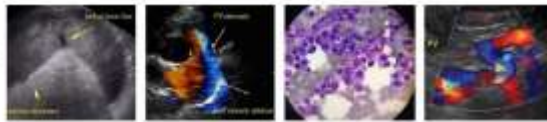
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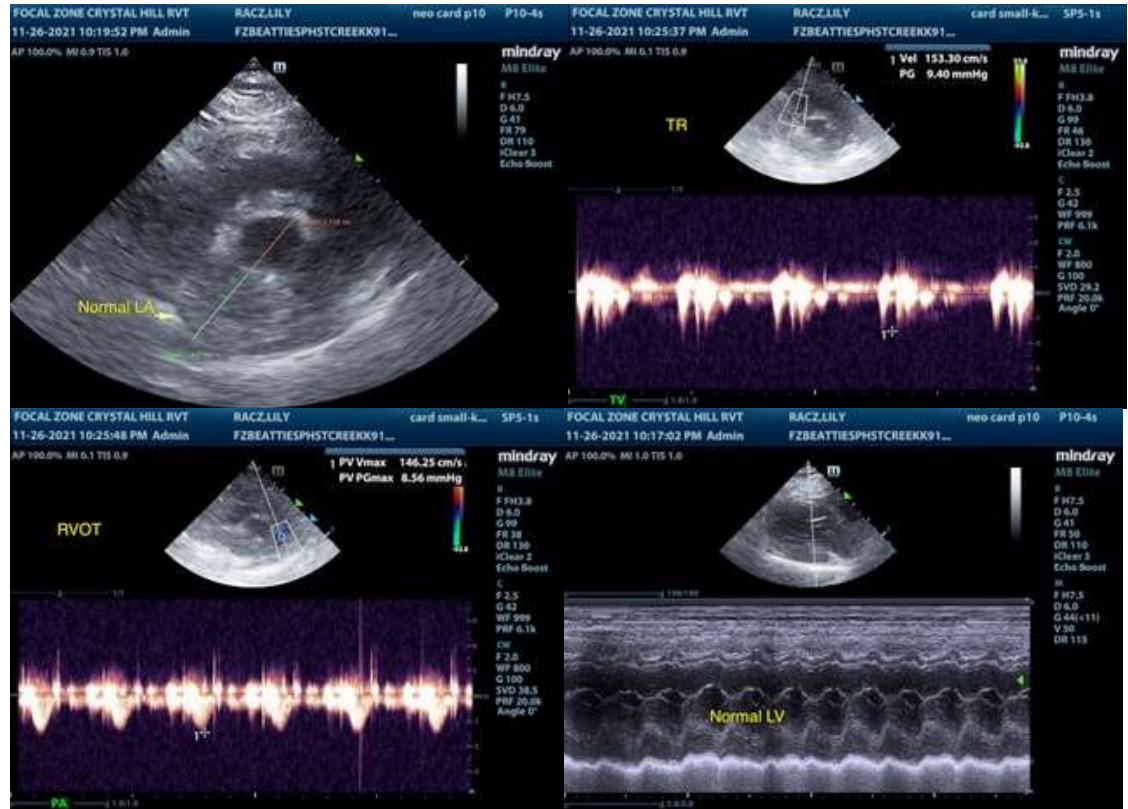
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The information and recommendations provided are based on the images presented by the referring veterinarian. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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)

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