



## PATIENT PRESENTING CLINICAL SIGNS

Littles Ludwig

History: Hypertension, arrhythmia (VPC's), tachycardia, vestibular signs. hx of hyperthyroidism, elevated liver enzymes. Current meds: Was on Methimazole 5mg sid, now on bid, Amlodipine, IVF, Torb for u/s.

## SPECIES

Feline

Abnormal PE/Chem/CBC/UA Results: Ca 8.2, TP 5.8, Glu 183, ALT 344 (was 493, ALP 93 (was 123), Pot 3.1, T4 >8

## BREED ULTRASONOGRAPHIC EXAMINATION OF THE HEART & ABDOMEN

DSH

## SEX

Spayed Female

## AGE

12 Years

## WEIGHT

NA

FELINE CARDIAC PARAMETERS	BODY WEIGHT (kg)	HR (BPM)	IVSd (cm)	LVIDd (cm)	LVWd (cm)	FS (%)	EF (%)
<b>NORMAL PARAMETER</b>	-----	150-240	0.3-0.6	1.0-2.1	0.25-0.6	35-67	80-100
<b>PATIENT</b>	--	261	0.59	1.95	0.54	42	76
FELINE CARDIAC PARAMETERS	LA/AO (Boon)	LA/AO HEART BASE (Sisson)	LA 2D 4-chamber long axis AS to FW (Sisson) (cm)	LVOT VEL. (m/s)	RVOT VEL. (m/s)	IVRT (m/)	
<b>NORMAL PARAMETER</b>	<1.5	0.88-1.79	0.7-1.7	<1.6	<1.3	40-60	
<b>PATIENT</b>	2.2	2.2	1.95	1.0	1.0	NM	
Adapted from June Boon, Veterinary Echocardiography, 1998							
Sisson D et al. JVIM 1991; 5: 232, Jacobs et al. Am J Vet Res 1985; 46:1705							

## INTERPRETED BY

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

## IMAGING PERFORMED BY

Shari Reffi, CVT

## HOSPITAL NAME

Newton Vet

## REFERRING VET

Dr. Kim

## INVOICE

13300

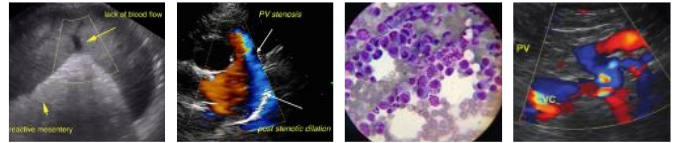
## DATE

9/28/21

## Cardiac Presentation

The echocardiogram in this patient demonstrated moderate **left atrial** enlargement based on 3 separate LA measurements. The cranial and caudal **mitral** valve leaflets presented normal linear structure and overall kinetics on color doppler assessment. The mitral valve revealed minor insufficiency. The **left ventricular** septum and free wall revealed borderline increased thicknesses, adequate contractility and increased left ventricular volume with some echogenic remodeling of the septum and free wall suggestive of age-related myocardial changes without overt evidence of myocardial fibrosis. The **left ventricular outflow** tract demonstrated normal laminar flow and subjective structural integrity. The **right atrium** and auricle revealed increased size and normal content. No evidence of masses was noted or chamber overload. **Tricuspid** valvular assessment demonstrated adequate linear morphology and kinetics. Color doppler assessment of the tricuspid valve revealed trace tricuspid valve insufficiency. The **right ventricle** was enlarged in size with normal chordae structure, myocardial echogenicity and thickness. **Pulmonic** tract assessment revealed normal valve structure, laminar flow, and diameter (approx.1:1 pa/ao ratio). Subjective moderate free pleural fluid along with concurrent minor pericardial free fluid was present without overt evidence of extracardiac or mediastinal masses in the visible window. Tachycardia was present.

## Urinary System



<b>PATIENT</b>	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 were noted. Aortic trifurcation was normal.
Littles Ludwig	
<b>SPECIES</b>	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 mild increased echogenicity and loss of corticomedullary symmetry and definition expected for the age of the patient. No evidence of pelvic dilation was present. The left kidney measured 3.9 cm in length. The right kidney measured 4.0 cm in length.
Feline	
<b>BREED</b>	
DSH	<b>Adrenal Glands</b>
<b>SEX</b>	The left adrenal gland was uniform in size and contour with a uniformly hypoechoic parenchyma. The left adrenal gland measured 0.44 cm.
Spayed Female	The right adrenal gland was mildly prominent in size. The right adrenal gland measured 0.60 cm. This is a non-specific finding and may indicate normal patient variant. No evidence of adrenal tumors.
<b>AGE</b>	<b>Spleen</b>
12 Years	The spleen exhibited primarily finely textured parenchyma which was hyperechoic to the liver and renal cortical parenchyma. Mild generalized parenchyma heterogeneity was present without evidence of nodular changes. 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. The parenchymal heterogeneity is likely consistent with benign changes such as extramedullary hematopoiesis or age-related remodeling with minor potential for inflammatory or neoplastic disease. The spleen measured 0.97 cm width.
<b>WEIGHT</b>	
NA	<b>Liver</b>
<b>INTERPRETED BY</b>	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. The hepatic and portal vasculature were normal in appearance without signs of congestion. The gallbladder was non-distended in size with primarily anechoic luminal content. The cystic and common bile ducts were normal.
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<b>IMAGING PERFORMED BY</b>	
Shari Reffi, CVT	
<b>HOSPITAL NAME</b>	<b>Gastrointestinal</b>
Newton Vet	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.
<b>REFERRING VET</b>	The intestinal walls demonstrated intact wall layers with diffusely thickened walls and altered 1:3 muscularis / mucosa ratio primarily consisting of muscularis hypertrophy. The duodenum wall measured 0.30 cm. The jejunum wall measured 0.3 cm wall width.
Dr. Kim	
<b>INVOICE</b>	Normal visible colon wall layers were present with apparent formed feces in lumen.
13300	<b>Pancreas</b>
<b>DATE</b>	The left limb, right limb, and base of the pancreas presented hypoechoic to heterogeneous echogenicity compared to adjacent omental fat. Mild asymmetrical capsule margination was present with mild variable parenchymal swelling and mild peripancreatic reactivity / inflammation. No overt evidence of neoplasia.
9/28/21	



**PATIENT**

**Free Abdomen**

Littles Ludwig

Focal, mildly prominent to enlarged intermittent mid abdominal mesenteric lymph nodes were present. The lymph nodes were essentially isoechoic to adjacent omentum without evidence of peripheral inflammation and maintaining a normal width: length ratio (<0.5). An example of a mesenteric lymph node measured 2.3 cm length x 0.42 cm width. Small pockets of minor peritoneal free fluid were present primarily in the cranial abdomen around the liver.

**SPECIES**

Feline

**ULTRASONOGRAPHIC FINDINGS**

**BREED**

DSH

**Cardiac Findings**

- Unclassified cardiomyopathy
- Moderate left atrium enlargement
- Tachycardia
- Mild mitral and tricuspid valve insufficiency- no evidence of clinical pulmonary hypertension

**SEX**

Spayed Female

**AGE**

12 Years

**Abdominal Findings**

- Mild chronic renal changes
- Inflammatory enteropathy pattern with associated mesenteric lymphadenopathy- potential IBD with associated reactive lymphadenitis or lymphoid hyperplasia, minor potential for early neoplastic infiltrative enteropathy with round cells such as lymphoma +/- early neoplastic lymphadenopathy considered less likely differential diagnosis
- Possible mild chronic active pancreatitis versus pancreatic edema
- Hepatopathy- congestion, reactive hepatopathy, hepatitis/cholangiohepatitis or less likely occult hepatic neoplasia possible
- Pleural mild pericardial and mild peritoneal effusion

**WEIGHT**

NA

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DVM, DABVP  
(Canine and Feline)

**INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS**

Given the patients history of hyperthyroidism, burn out or end stage hypertrophic cardiomyopathy can also have this appearance. Regardless of classification, the degree of intradilation as well as tachycardia is consistent with congestive heart failure. Discontinuation of IV fluids recommended given the likely volume overload. Injectable Lasix until patient is stabilized along with at home Lasix at 1-2 mg per kg PO BID, Plavix ¼ of 75 mg POSID (given the potential for thrombus formation) +/- off label Pimobendan at 1.25 mg PO BID recommended. Monitoring of systemic blood pressure, renal values and ECG assessment recommended. As needed oxygen supplementation and radiographic monitoring of pleural effusion suggested. Ideally, recheck echocardiogram suggested in 7-10 days. Correlation with pleural effusion analysis or to rule out inflammatory or less likely neoplastic effusion suggested. A GI panel to include PLI/TLI/Cobalamin/Folate is recommended. Guarded prognosis, pending clinical response to cardiac medications, if this patient will remain prone to congestive heart failure and thrombus formation.

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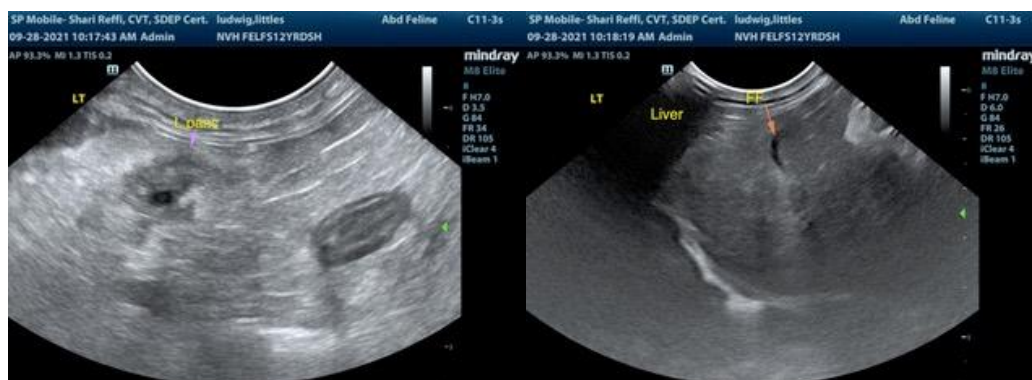
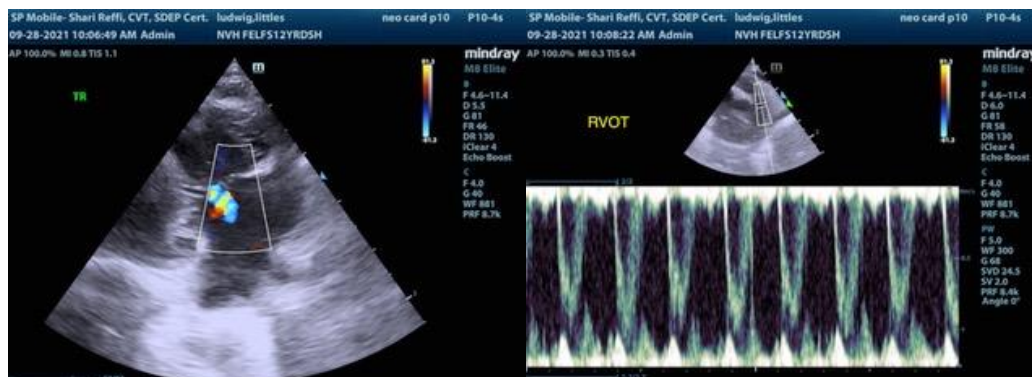
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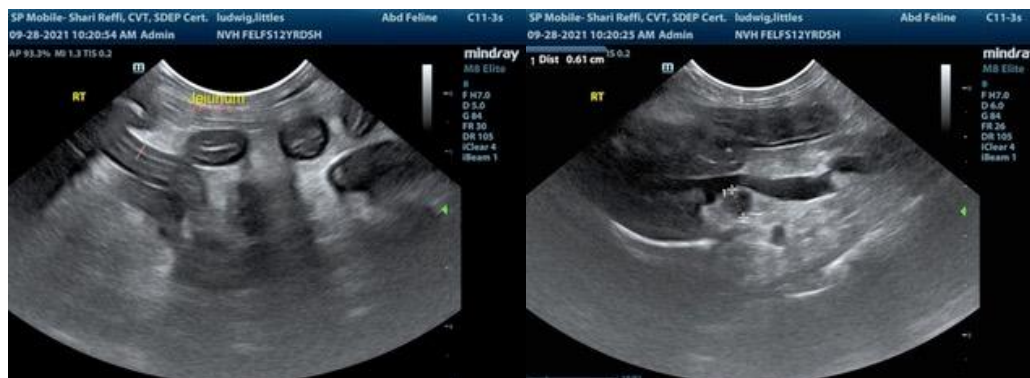
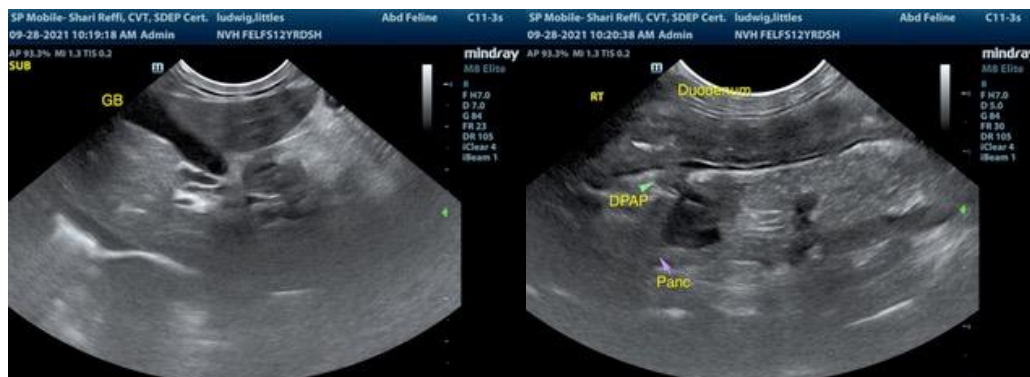
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The information and recommendations provided are based on the images presented by the referring veterinarian. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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.

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