



**PATIENT PRESENTING CLINICAL SIGNS**

Lilly Marty

**SPECIES**

Canine

**BREED**

Chihuahua

History: Reason for ultrasound: Follow-up ultrasound to previous abdominal US done 6/3/2022. Concern for continued increase in SAP. Heart murmur detected today on exam. Clinically doing well, please see last Sonopath report for further clinical history Submitted bloodwork to include spec cPL and triglycerides Current medications: Galliprant SID Ursodiol 25 mg 1 cap BID Fish oil 1 cap SID Denamarin Adv Sm/Med size 1/4 tab SID vitamin E 50 to 100U 1/2 cap SID trazadone 25 mg last night and this AM as prophylactic for anxiety today Cerenia 12 mg yesterday PM as prophylactic for sedation nausea today  
Abnormal PE/Chem/CBC/UA Results: SAP 695 Heart murmur 2/6

**ULTRASONOGRAPHIC EXAMINATION OF THE HEART**

**SEX**

Spayed female

**AGE**

13 years

**WEIGHT**

4.85 kg

**INTERPRETED BY**

Eric Lindquist, DMV  
DABVP, Cert. IVUSS

The echocardiogram in this patient demonstrated normal **left atrial** size based on 3 separate methods of LA evaluation. **Mitral** valve insufficiency was noted and is centralized. This appears compensated. Insufficiency measured approximately 5.3 m/sec. 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. Minor **tricuspid** insufficiency was noted at 1.8 m/sec. 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. Occasional arrhythmia was noted in this patient.

**IMAGING PERFORMED BY**

Dr. Stegemoller

**HOSPITAL NAME**

North Idaho AH

**REFERRING VET**

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**INVOICE**

32318

**DATE**

8/11/22

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>	5.3	1.8	1.2	1.3			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)		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>			0.7	4.85 kg	2.1		



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**ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN**

**Urinary System**

The **urinary bladder**, trigone, and pelvic urethra presented normal thicknesses and normal tone. The ureters were not visible which is normal. No uroliths or sediment were visualized and anechoic urine was present. No evidence of inflammatory or neoplastic changes was noted. Ureteral papillae were normal.

The **kidneys** revealed largely normal size and structure, corticomedullary definition and ratio (cortex 1/3 of medulla) were essentially maintained with some age-related loss of curvilinear patterns regarding the capsule and C/M junction. The cortices presented largely uniform texture with some increased echogenicity expected for his age patient. Medullary structure differed distinctly from that of the cortex and no evidence of pelvic dilation was present. Slight pinpoint mineralization was noted in the kidneys. Occasional cortical cyst was noted in the kidneys. Blood flow was mildly subnormal on power doppler assessment. The right kidney measured 3.2 cm and the left kidney measured 3.7 cm.

**Adrenal Glands**

Both **adrenal glands** were visualized and recognized as having normal shape, size, position and echogenicity for this breed. The phrenic vasculature, glandular echogenicity and detail were unremarkable. Capsule, cortex, and medullary definition were normal for this age patient. The left adrenal gland measured 1.68 x 0.52 cm at the cranial pole and 0.6 cm at the caudal pole. The right adrenal gland measured 1.3 x 0.65 cm at the cranial pole and 0.63 cm at the caudal pole.

**Spleen**

The **spleen** presented a smooth homogeneous parenchyma hyperechoic to liver and renal cortical parenchyma. The capsule was smooth without noticeable expansion or deviation from within the spleen or adjacent pathology. The splenic vasculature demonstrated normal volume without signs of congestion or thrombosis. No sonographic evidence of acute or chronic inflammatory, neoplastic, or infarctual changes was noted.

**Liver**

Exam of the cranial abdomen demonstrated excessive **liver** size, swollen contour, with conserved uniform architecture. Parenchymal echogenicity was diffusely isoechoic to the spleen and falciform fat. Occasional hypoechoic hepatic nodule was noted and non-specific. Minor excessive GB debris was noted with the presence gall bladder dilation and precipitate without the overt formation of mucocele but this may be an issue in the future. This type of liver presentation typically is associated with slow and gradual SAP elevations with low-grade ALT rise. USG-FNA sampling is encouraged if more aggressive LE profiles are present such as ALT > 200 or rapid rise in SAP. These presentations are usually reactive hepatopathies owing to other disease processes either endocrine (Diabetes, Hypothyroidism, Cushing's disease), "antigen surveillance" from the gut/pancreas, or idiopathic breed predisposed progressions.



**PATIENT**

**Gastrointestinal**

Lilly Marty

Examination of the **gastrointestinal tract** revealed a stomach and intestine free of stasis, of normal wall thickness, acceptable curvilinear mural detail, and peristaltic activity. Small and large intestine demonstrated normal luminal chyme and stool consistency respectively. No obstructive or overt infiltrative disease was noted. No associated abnormal lymphatic activity was noted.

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**Pancreas**

The base and limbs of the **pancreas** were observed to be largely isoechoic to surrounding omental fat. Pancreatic duct and capsular contour were acceptably normal and parenchyma respected normal curvilinear patterns. No overt evidence of active inflammatory or neoplastic disease was noted.

**SEX**

Spayed female

**ULTRASONOGRAPHIC FINDINGS**

**AGE**

13 years

Stage B1 valvular disease with arrhythmogenic activity, may be a benign arrhythmia.

Mildly progressed chronic renal changes with slight mineralization.

Vacuolar hepatopathy liver pattern. This is similar to the prior sonogram with no significant progression.

Minor gallbladder debris.

**WEIGHT**

4.85 kg

**INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS**

**INTERPRETED BY**

EKG is indicated.

Eric Lindquist, DMV  
DABVP, Cert. IVUS

The heart is stable without clinical disease. No overt contraindication for anesthesia of brief to moderate duration. I suggest Torbutrol premed, Propofol induction, Isoflor maintenance or similar protocol if anesthesia is desired. Blood pressure recommended if not already performed and target white coat negative systolic pressure of < 160 mmHg. If higher than this ACE-inhibitor is suggested to reach this level. Recheck echocardiogram is recommended in 6 months, earlier if murmur grade increases or clinical signs initiate.

**IMAGING PERFORMED BY**

Dr. Stegemoller

The renal parameters should be monitored carefully in this patient in the coming months. Ursodiol therapy can be considered in this patient given the minor excessive gallbladder debris, yet there was no evidence of significant disease.

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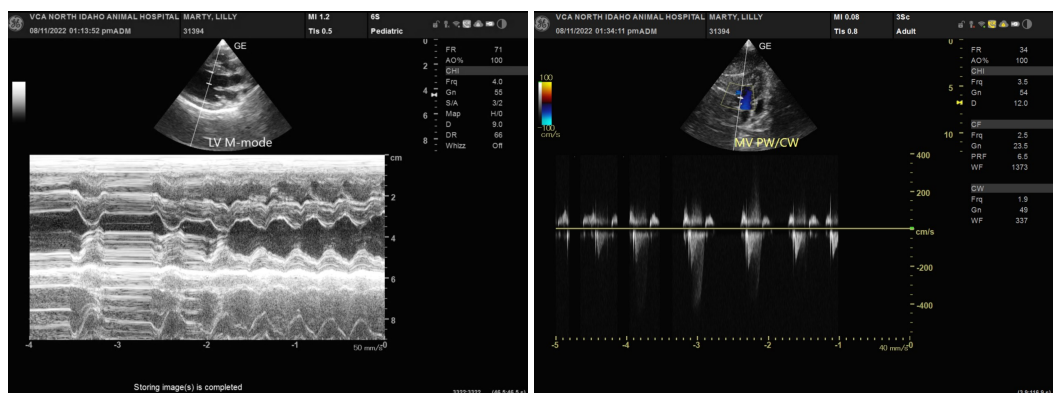
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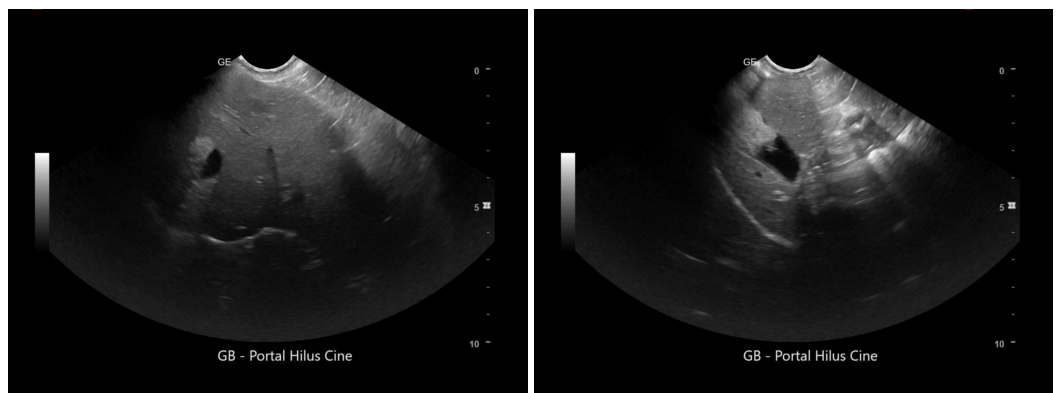
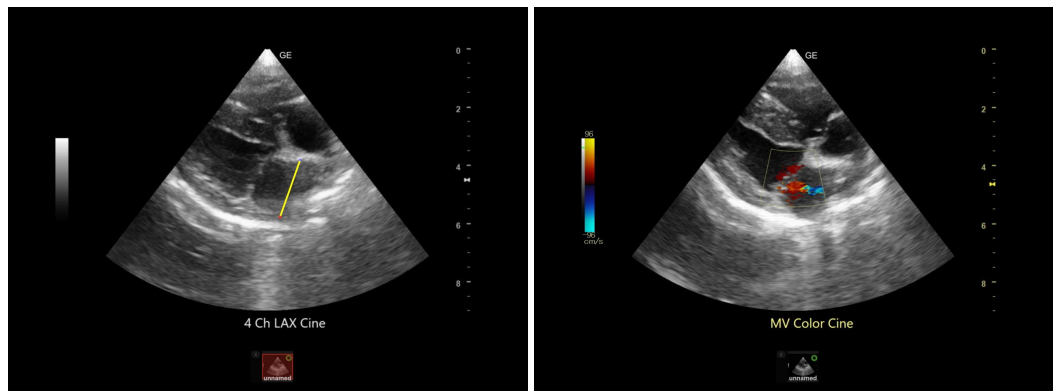
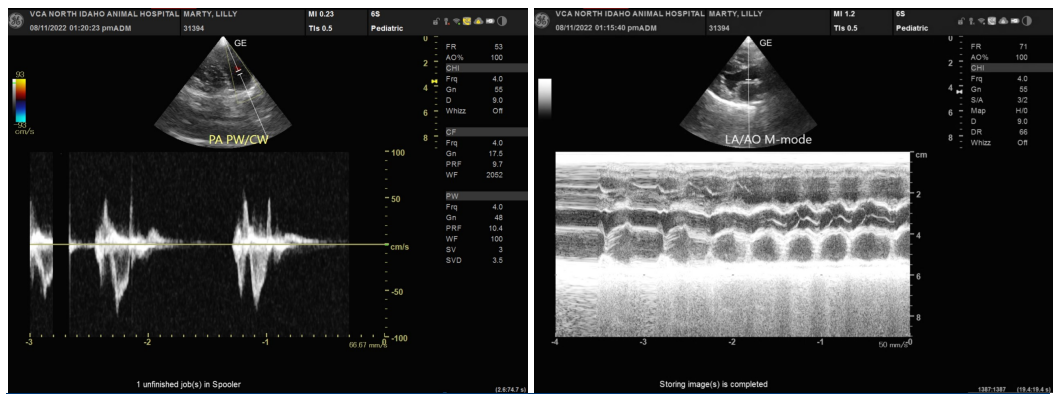
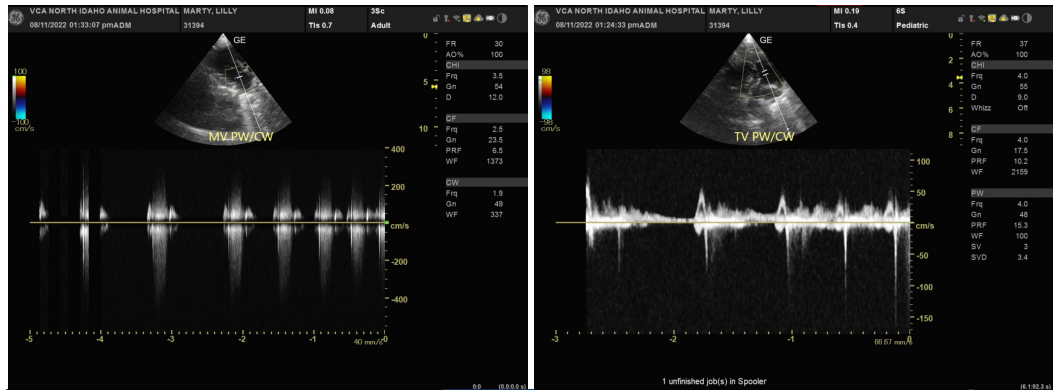
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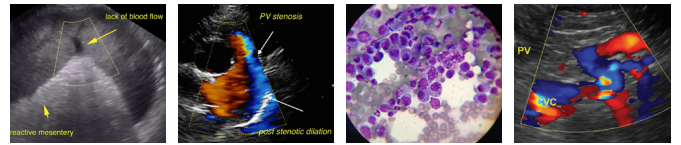
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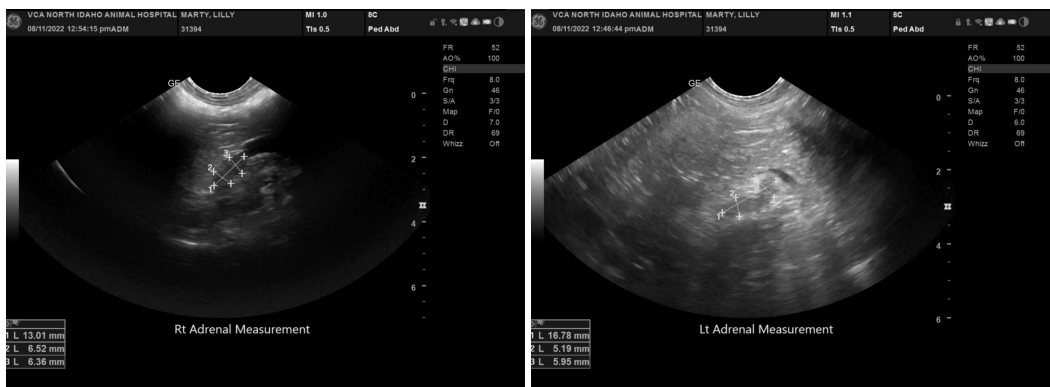
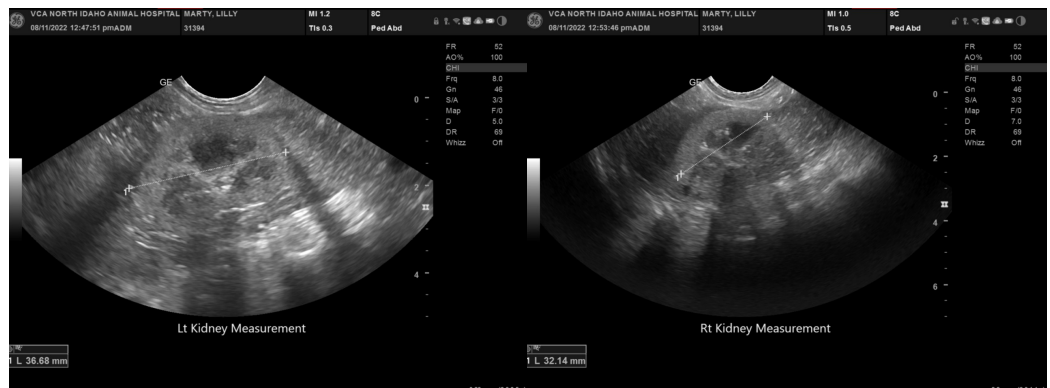
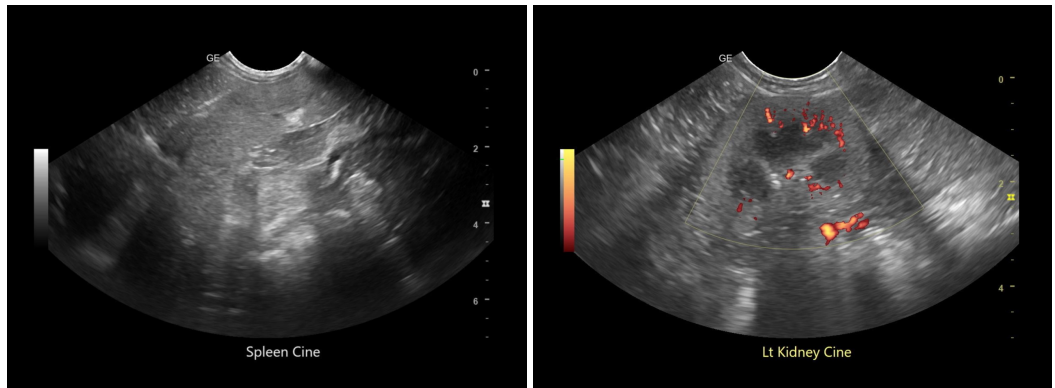
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The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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.

**Eric Lindquist**, DMV, DABVP, Cert. IVUSS, CEO of SonoPath.com  
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