



**PATIENT PRESENTING CLINICAL SIGNS**

Luna Berish  
History: Grade 4/6 heart murmur. Lyme +. BP: 148, 83mmHg.  
-Current medication: Doxycycline, Vetmedin 1.25 BID, Lasix 12.5am, 6.25pm.

**SPECIES RADIOGRAPHIC FINDINGS** \*NOTE: Images submitted for supplemental cardiac information only.  
Canine A single lateral film is included. Mild cardiomegaly. No obvious evidence of CHF.

**BREED ELECTROCARDIOGRAPHIC FINDINGS** \*Note: Single lead ECGs are evaluated as a rhythm strip.  
Morphology/MEA cannot be definitively commented on.

Shih Tzu Mix A single lead ECG is available from an AliveCor monitor; 50mm/s, 20mm/mV. The average heart rate is 110bpm (range 66-176bpm). The rhythm is sinus in origin, with a p for every QRS complex and vice versa. The P and QRS morphologies are positive with normal dimension. No ectopic beats, pauses or other dysrhythmias observed.  
SEX ECG diagnosis: Normal sinus rhythm with profound respiratory variation.  
Female Spayed

**ECHOCARDIOGRAM FINDINGS**

AGE 2D, m-mode, color flow and doppler imaging is available. The mitral valve is diffusely thickened with minimal prolapse into the left atrial lumen. There is severe eccentric mitral regurgitation present. The MR velocity is normal. There is severe left atrial enlargement. There is mild left ventricular dilation. Left ventricular systolic function is hyperdynamic. Mild thickening of the tricuspid valve with moderate TR. Mild right heart enlargement suggesting early pulmonary hypertension. There is normal systolic flow velocity across the aortic valve. The aortic valve appears trileaflet with normal mobility. The main pulmonary artery is normal in diameter. The pulmonic valve is normal in appearance. No pericardial/pleural effusion or cardiac masses are seen.

**INTERPRETED BY**

Maggie Machen Lamy,  
DVM, DACVIM  
(Cardiology)

**CARDIAC CHART**

**IMAGING PERFORMED BY**

Rebekah Jakum, CVT  
ARDMS/RVT

**HOSPITAL NAME**

Pocono Peak  
Veterinary Clinic

**REFERRING VET**

Dr. Coyle

**INVOICE**

28559

**DATE**

1/25/23

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	<1.6	28-40	40-100	<0.6
PATIENT	6.2	NM	NM	2.1	50	82	0.19
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	BELOW	BELOW	BELOW	BELOW
PATIENT	90	1.7	1.5	6.0	2.5	3.2	1.6
*Normal chamber parameters expressed as a mean value (SD)				3	1.27 (5.3)	2.46 (2.46)	1.36 (5.5)
<b>BODY WEIGHT DEPENDENT PARAMETERS</b>				5	1.40 (4.5)	2.74 (5.2)	1.60 (4.7)
*Note: All measurements based upon multi-modal images and methods. An average value is reported.				10	1.50 (3.8)	3.27 (3.5)	2.06 (3.1)
				15	1.83 (2.0)	3.71 (2.4)	2.43 (2.1)
				20	2.02 (1.9)	4.14 (2.2)	2.80 (2.0)
				25	2.18 (2.4)	4.48 (2.9)	3.10 (2.5)
				30	2.33 (3.3)	4.83 (3.9)	3.39 (3.4)
				35	2.48 (4.3)	5.17 (5.0)	3.69 (4.5)
				40	2.62 (5.2)	5.48 (6.1)	3.96 (5.4)
				50	2.88 (7.1)	6.07 (8.3)	4.46 (7.4)
Adapted from June Boon, Veterinary Echocardiography, 1998 Rishniw M and Hollis NE, J Vet Intern Med 2000; 14:429-435 Hansson et al, Vet Rad and Ultrasound 2002 Bonagura et al. Echocardiography: principles of interpretation, Vet Clin North Am 15:1177, 1995							



**PATIENT** **INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS**

Luna Berish

Chronic degenerative valve disease causing severe mitral and moderate tricuspid regurgitation. The LA is significantly dilated indicating a high risk for clinical signs going forward. Mild pulmonary hypertension is suspected, which is likely secondary to chronic LA pressure elevation. No additional concurrent issues such as systolic dysfunction are documented. The ECG is most consistent with a profound respiratory sinus arrhythmia, which is typically due to high vagal tone. No dysrhythmias are observed.

**SPECIES**

Canine

**BREED**

Shih Tzu Mix

No clinical signs are mentioned in the history; however, CHF was noted to be suspected on the films. Highly recommend orthogonal views, as this is extremely difficult to diagnosis on a single lateral image. That being said, if the patient was symptomatic and responded to Lasix therapy, diuretics should be continued going forward.

**SEX**

Female Spayed

Assessment of progression in the future will help predict long term outcome, however prognosis is guarded at this stage (late B2/C). Unfortunately, the patient will always be at risk for recurrent CHF, development of arrhythmias/LA tear, syncope and/or sudden death in the future.

**AGE**

11 years

Close monitoring for development of associated clinical signs (development of a cough, labored breathing, exercise intolerance or worsening collapse episodes) is recommended. Monitoring of sleeping breathing rates is recommended as the best way to screen for CHF at home.

**WEIGHT**

13.3lbs

The reported blood pressures are too variable to interpret. Ideally obtain serial measurements in a controlled, low stress environment and continue until the readings plateau within 5mmHg of variability for 3+ readings.

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(Cardiology)

Elective anesthesia is not advised, as there is high risk for complication. If necessary, cardiac protective drug choices (opioid/benzodiazepine premedication, propofol or alfaxalone induction, iso or sevoflurane gas) are recommended. Pre-oxygenate for 5-10 minutes prior to induction and recover in O2 cage. Monitor for arrhythmias, hypotension, and hypoxia both intra and post-operatively and intervene as necessary. Moderate IV fluid restriction is recommended to avoid fluid overload. Avoid heart rate stimulating drugs such as atropine unless clinically indicated.

**IMAGING PERFORMED BY**

Rebekah Jakum, CVT  
ARDMS/RVT

Omega fatty acid supplementation and mild salt restriction may also be of some long term benefit.

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Veterinary Clinic

**PLAN**

Reassess BP as discussed. Consider full-view thoracic radiographs with a Radiologist review. If CHF is suspected and patient is symptomatic, continue Lasix 1-2mg/kg PO q12h. Regardless, continue Pimobendan 0.3mg/kg PO q12h. Institute spironolactone 1-2mg/kg PO q12h. Pending BP assessment, institute ACE-I (benazepril or enalapril) 0.5mg/kg PO q12h.

**REFERRING VET**

Dr. Coyle

Monitor renal values in 1-2 weeks, then every 3-4 months lifelong to ensure tolerance of medications.

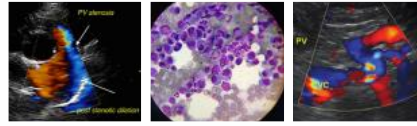
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A recheck echocardiogram is recommended in 6 months to screen for progression, sooner if clinical signs arise.

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**SEX**

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**AGE**

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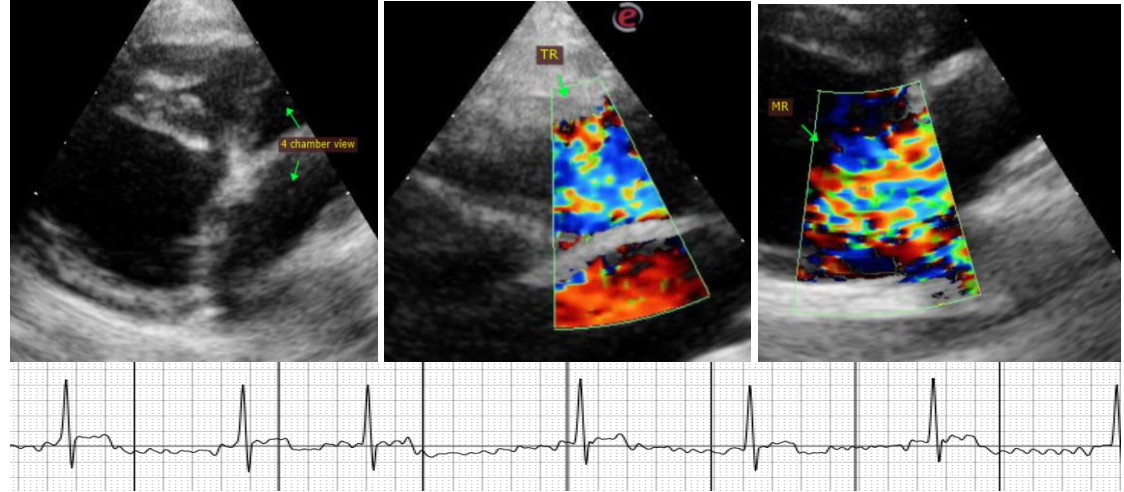
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**IMAGES**



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. This report was generated using transcription software, and minor dictation errors may be present. 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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