



**DATE PRESENTING CLINICAL SIGNS**

History: 11/2024: No murmur. 5/2025: grade 3-4/6 left and right systolic murmur. 11/2025: grade 4/6 murmur PMI left systolic, no arrhythmia, PSS. Eupneic, lungs auscult clear. Chronic Elevation of ALP.

**PATIENT**

Lucy Mueller

-Pertinent abnormal PE/Chem/CBC/UA Results: ALP: 666 (5/2025); 387 (11/2024); 532 (4/2024). ALT: WNL  
-Current medications: Welactin.

-Sedation used: Not required to complete full diagnostic ultrasound.

-Pertinent previous ultrasound results: No previous.

-STAT: Not requested.

**SPECIES**

Canine

-Imaging performed by: Stephanie Warga RDCS, RVT.

**BREED**

Miniature Schnauzer

**ECHOCARDIOGRAM FINDINGS**

2D, m-mode, color flow and doppler imaging is available. Severe left ventricular dilation in both systole and diastole (LVIDdN: 2.71, LVIDsN: 1.96) with depressed myocardial function and increased sphericity. Severe left atrial enlargement. The mitral valve appears normal in form and function, with no obvious prolapse into the left atrial lumen. Moderate eccentric mitral regurgitation. Normal MR velocity. The tricuspid valve appears normal in form and function. Mild right atrial and ventricular dilation. Mild tricuspid regurgitation. Velocity consistent with early pulmonary hypertension. The aortic valve is normal in morphology and mobility. No subvalvular ridge present; normal LVOT velocity. No aortic insufficiency. Normal pulmonic valve with no pulmonic insufficiency seen. No pericardial or pleural effusion noted. No obvious cardiac tumors.

**SEX**

Female Spayed

**AGE**

11 years

**WEIGHT**

16.6lbs

**INTERPRETED BY**

Maggie Machen Lamy, DVM, DACVIM (Cardiology)

**HOSPITAL NAME**

Banfield Columbia

**REFERRING VET**

Dr. Landon

**INVOICE**

46753

**CARDIAC CHART**

CANINE CARDIAC PARAMETERS	MR VMAX (m/s)	TR VMAX (m/s)	LA/AO (Boon method)	LA/AO (Heart Base; Swe)	FS (%)	EF (%)	EPSS (cm)
<b>NORMAL PARAMETER</b>	4.5-5.5	<2.7	1.3	<1.6	28-40	40-100	<0.6
<b>PATIENT</b>	5.4	3.2	NM	2.8	24	47	NM
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)
<b>NORMAL PARAMETER</b>	50-100	0.7-1.7	0.7-1.6	BELOW	BELOW	BELOW	BELOW
<b>PATIENT</b>	150	1.8	1.1	7.5	2.9	4.9	3.7
*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)
<i>*Note: All measurements based upon multi-modal images and methods. An average value is reported.</i>				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

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

Unfortunately, this patient has severe cardiomyopathy and systolic dysfunction. There is dilation and overload of all 4 chambers, resulting in insufficiency of the mitral and tricuspid valve. A component of valve disease is certainly possible, given the signalment. Regardless, the degree of dilation and pump failure is severe and there is high risk for imminent complication. Mild pulmonary hypertension is noted, which is likely secondary. No additional issues are seen.

Systolic failure can be primary in nature (DCM) or secondary to taurine deficiency, BEG diets, myocarditis, tachycardia-induced cardiomyopathy, or infiltrative disease such as lymphoma. In a small breed dog (i.e. an atypical signalment), highly recommend testing for primary causes in this case. A thorough diet history should be sought, with avoidance of BEG (boutique, exotic ingredient, grain-free) options. Additionally, a taurine level may be helpful (screen for malabsorption issue). Regardless of result, Taurine is recommended as below. Finally, a thyroid status should be obtained. Regardless of cause, prognosis is poor at this stage in the disease process, with an average survival time of <6 months.

Initiation of full cardiac supportive medications is recommended as below, even without reported clinical signs. This is due to exceedingly high risk for decompensation.

Omega fatty acid supplementation and mild salt restriction may be of some long-term benefit. Monitor for development of a cough, worsening labored breathing, exercise intolerance or collapse episodes in the future. Monitoring of sleeping breathing rates at home is recommended to assess response to medications and recurrence of CHF in the future.

Anesthesia is not advised.

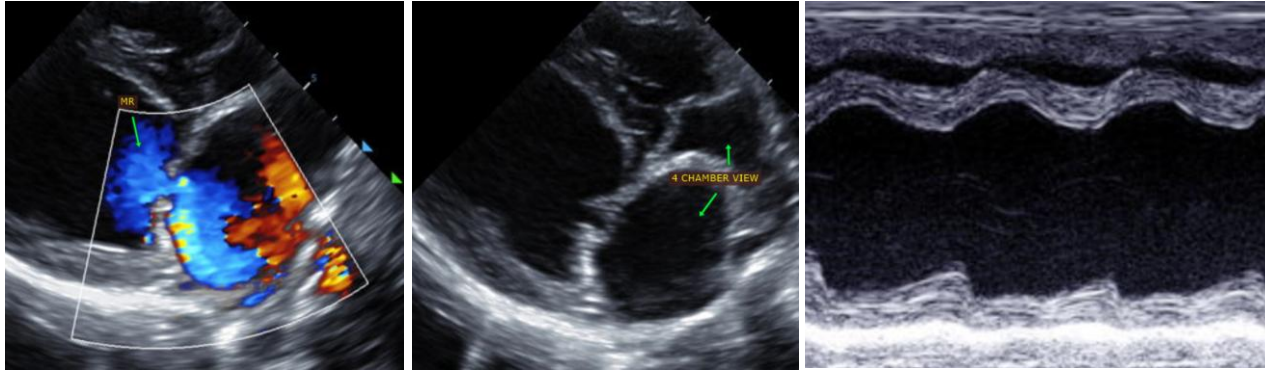
### **PLAN**

Institute Furosemide 1-2mg/kg PO q12h. Institute Pimobendan 0.25- 0.3mg/kg PO BID. Institute Spironolactone 1-2mg/kg PO BID. Recommend Taurine 500mg PO BID. Consider diet history and thyroid status as discussed.

Recheck renal panel/BP and clinical response in 1-2 weeks, then every 3-4 months lifelong. If doing well and BP is >130mmHg, institute ACE-I 0.5mg/kg PO q12h.

Recheck echocardiogram in 4-6 months to reassess cardiac function.

## 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.

**Maggie Machen Lamy, DVM**  
**Diplomate of the American College of Veterinary Internal Medicine (Cardiology)**  
**info@sonopath.com**