

**PATIENT**

Lucy Ulrich

SPECIES

Canine

BREED

Chihuahua

SEX

Female Spayed

AGE

3.12.10

WEIGHT

7lbs

INTERPRETED BYMaggie Machen Lamy,
DVM, DACVIM
(Cardiology)**HOSPITAL NAME**

Pet Wellness Center

REFERRING VET

Dr. Twardus

INVOICE

22934

DATE

3.4.22

PRESENTING CLINICAL SIGNS

History: Recheck echo. Presented for coughing. Grade 4/6 murmur, dental disease.

-Current medications: Pimobendan 0.625mg BID, Apoquel 3.6mg ½ SID.

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

-Pertinent previous ultrasound results (11/2/2018 MML): CVD moderate, trace TR. LA; 1.76, LV: 2.4.

-STAT: Requested.

-Imaging performed by: Stephanie Pearce RDCS, RVT.

ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. Diffuse nodular thickening of mitral valve leaflets (anterior>>posterior) with significance prolapse into the left atrial lumen. Moderate to severe eccentric mitral regurgitation with moderate left atrial dilation. Normal MR velocity. Mildly increased LV with hyperdynamic myocardial function. The tricuspid valve appears thickened with septal prolapse mild prolapse and mild tricuspid regurgitation. Velocity consistent with moderate pulmonary hypertension. Mild right atrial enlargement Mild right ventricular prominence. The pulmonic and aortic valves are normal in morphology and mobility. Normal pulmonic outflow velocities. Normal aortic outflow velocities. No pulmonic or aortic insufficiency. No pericardial or pleural effusion noted. No cardiac tumors observed.

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)
NORMAL PARAMETER	4.5-5.5	<2.7	1.3	<1.6	28-40	40-100	<0.6
PATIENT	5.9	3.8	NM	1.86	44	77	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)
NORMAL PARAMETER	50-100	0.7-1.7	0.7-1.6	BELOW	BELOW	BELOW	BELOW
PATIENT	136	1.4	1.3	3.2	1.9	2.9	1.6
*Normal chamber parameters expressed as a mean value (SD)				3	1.27 (5.3)	2.46 (2.46)	1.36 (5.5)
BODY WEIGHT DEPENDENT PARAMETERS				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

Chronic degenerative valve disease persists with evidence of mild progression. While the quantity of MR has increased comparatively, the left heart is only slightly increased. This is relatively slow progression, given that the prior study was in 2018. Of more concern, moderate pulmonary hypertension has developed with mild right heart changes. This is likely due to the reported cough in this predisposed breed. No additional issues are identified.

Given the combination of MV disease and moderate PAH, certainly recommend continuing Pimobendan lifelong with a dose increase as below. No obvious indication for Sildenafil at this time; however, highly recommend aggressively addressing the cough. If any syncope or exertional dyspnea are noted, institute Sildenafil at that time. Prognosis is guarded at this stage (B2).

The cough is likely multi-factorial in origin. The left atrial enlargement may partially be causing mainstem bronchi compression, however this breed is highly predisposed to both upper and lower airway disease as well and primary respiratory causes for coughing (tracheal collapse seen on films, respiratory infection, etc.) should also be considered. Pulmonary antibiotics, hydrocodone, etc. may be useful for acute onset of a primary airway cough. Screening chest radiographs are highly recommended.

Anesthetic risk is considered moderately elevated. Cardiac protective drug choices (opioid/benzodiazepine premedication, propofol or alfaxalone induction) are recommended. Monitor for arrhythmias, hypotension, and hypoxia both intra and post-operatively and intervene as necessary. Judicious IV fluid rates are recommended to avoid fluid overload. Avoid heart rate stimulating drugs such as atropine unless clinically indicated. **Pre-oxygenate for 5-10 min prior to intubation and recover in O2 if possible.**

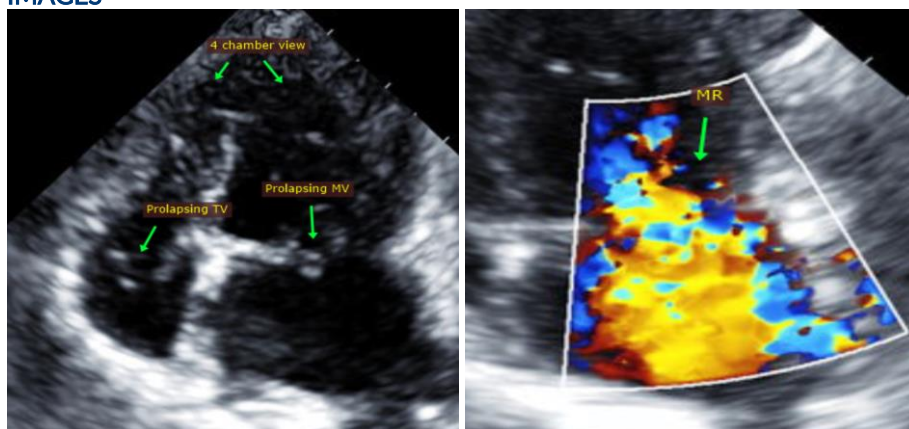
Omega fatty acid supplementation and mild salt restriction may also be of some long-term benefit. Monitor for development of a progressive cough, labored breathing, exercise intolerance or collapse episodes.

PLAN

Screening chest radiographs and BP recommended. Continue Pimobendan at an increased dose, give 1.25mg am and 0.625mg pm. Aggressive cough suppression, course of Baytril, etc. depending on CXR review. If exertional dyspnea/collapse develop, institute Sildenafil 1-2mg/kg PO q8h.

Recommend monitor for progression with a recheck echocardiogram in 6 months, sooner if any development of clinical signs.

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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