



PATIENT

Sam Snyder

SPECIES

Canine

BREED

Maltese

SEX

Male Neutered

AGE

14 years

WEIGHT

6lbs

INTERPRETED BY

Maggie Machen Lamy,
DVM, DACVIM
(Cardiology)

IMAGING PERFORMED BY

Loetitia St-Jacques,
LVT/RVT

HOSPITAL NAME

Not provided

REFERRING VET

Dr. Kalivoda

INVOICE

21763

DATE

10/28/21

PRESENTING CLINICAL SIGNS

History: Recheck study; grade 3/6 murmur. Has been on medications long-term. Recent increase in cough.

-Current medications: Benazepril 5mg - 1/4-tab SID, Furosemide 12.5mg 1/2 tab SID, Pimobendan 5mg/ml 0.25ml BID, thyro tabs 0.1mg 1/2 tab SID, cough tabs 1/2 tab S-BID, Hydrocodone rarely.

Pertinent previous echo history:

6/2019 MML- CVD moderate, rec pimo

1/2020 MML: CVD moderate, AI; cont pimo rec reassess BP and treat if indicated

10/2020 SVS: CVD mild; cough without CHF, BP 130mmHg

2/2021 SVS: CVD moderate without obvious progression; mild/mod LAE, AI; rec ACEI and d/c lasix

ELECTROCARDIOGRAPHIC FINDINGS

A six lead ECG is available at 50mm/s; 10mm/mV. The average heart rate is 160bpm (range 130-200bpm). The rhythm is sinus in origin, with a p for every QRS complex and vice versa. The P wave morphology is positive with a normal dimension. Normal PR. The QRS morphology is positive with normal dimension. MEA is normal. No ectopic beats, pauses or dysrhythmias observed.

ECG diagnosis: Normal sinus rhythm with respiratory variation.

ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. Mild diffuse thickening of mitral valve leaflets with minimal prolapse into the left atrial lumen. Mild eccentric mitral regurgitation with mild left atrial dilation. Elevated MR velocity. Normal LV diameter with adequate myocardial function. The tricuspid valve appears normal with trace tricuspid regurgitation. Borderline velocity likely consistent with early pulmonary hypertension. Normal right atrial and ventricular diameter and morphology indicating no overt evidence of pulmonary arterial hypertension. The pulmonic and aortic valves are normal in morphology and mobility. Normal pulmonic and aortic outflow velocities with laminar flow. Trace aortic and no pulmonic insufficiency. No pericardial or pleural effusion noted. No obvious cardiac masses.

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	6.4	2.9	NM	1.5	58	90	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	NM	1.1	0.7	2.7	1.5	1.95	0.81
*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)
*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)

Adapted from June Boon, Veterinary Echocardiography, 1998



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Rishniw M and Hollis NE, J Vet Intern Med 2000; 14:429-435	30	2.33 (3.3)	4.83 (3.9)	3.39 (3.4)
Hansson et al, Vet Rad and Ultrasound 2002	35	2.48 (4.3)	5.17 (5.0)	3.69 (4.5)
Bonagura et al. Echocardiography: principles of interpretation, Vet Clin North Am 15:1177, 1995	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)

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INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Chronic degenerative valve disease causing mild mitral and trace tricuspid regurgitation. **These findings are similar to slightly improved compared to the most recent 2/2021 study.** Lack of significant left atrial enlargement indicates the current risk for complication is low. Mild pulmonary hypertension is noted, which is likely developing secondary to the cough/airway disease. A small aortic leak is noted which has been noted historically, and continued blood pressure monitoring is recommended. No concurrent issues such as systolic dysfunction are noted in this study. The ECG is unremarkable with a normal sinus rhythm.

Given these findings, the cough is certainly non-cardiogenic in origin. Respiratory disease is considered likely, and **screening chest radiographs may be helpful as a baseline.** If the cough is poorly controlled/progresses long term, this can certainly lead to worsening of PAH. Clinical signs of significant PAH include exertional dyspnea/collapse. Continued monitoring is advised. Cough control is recommended lifelong (hydrocodone, intermittent AI prednisone, fluoroquinolone for acute flare up, etc.).

Given only mild LA dilation at this time, Lasix can be safely discontinued as was previously suggested. Given that this dog has improved over time with medications, recommend continue Pimobendan and Benazepril for now; however, reassessment in the future may suggest neither medication is necessary any longer. As an aside, multiple opinions on this patient cloud accurate interpretation and recommendations as there is inherent inter-observer variability. If possible, consider a more consistent follow up plan.

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

Anesthetic risk is considered mild if needed. Cardiac protective drug choices (opioid/benzodiazepine premedication, propofol or alfaxalone induction, isoflurane gas) are recommended. **Pre-oxygenate for 5-10 minutes prior to induction.** Monitor for arrhythmias, hypotension, and hypoxia both intra and post-operatively and intervene as necessary. Mild IV fluid restriction is recommended to avoid fluid overload. Avoid heart rate stimulating drugs such as atropine unless clinically indicated.

PLAN

Discontinue Lasix. Baseline CXR and BP are strongly recommended. Continue Pimobendan and ACEI as previously recommended. If future evaluations reveal no progression, reassess need for both medications. Consider Hydrocodone +/- additional respiratory medication/work up as indicated.

Recommend conservative monitoring with a recheck echocardiogram in 6 months (ideal with a consistent follow up plan), sooner if any development of clinical signs.



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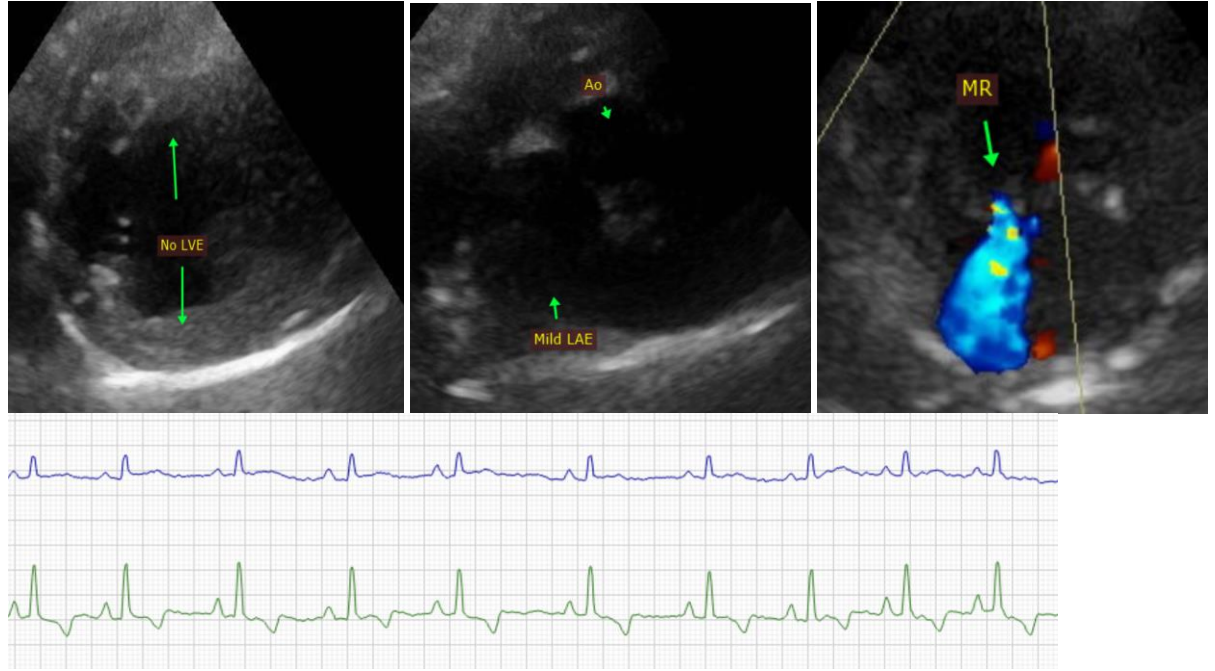
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IMAGES



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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.

IMAGING PERFORMED BY

Loetitia St-Jacques,
LVT/RVT

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
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info@sonopath.com

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