



**PATIENT**

Scooby Wood

**SPECIES**

Canine

**BREED**

Shih Tzu Mix

**SEX**

Male Neutered

**AGE**

12.10 years

**WEIGHT**

15lbs

**INTERPRETED BY**

Maggie Machen Lamy,  
DVM, DACVIM  
(Cardiology)

**IMAGING PERFORMED BY**

Greg Kuhlman, DVM

**HOSPITAL NAME**

Red River Animal  
Emergency Hospital &  
Referral Center

**REFERRING VET**

Dr. Kuhlman

**INVOICE**

47423

**DATE**

4/6/26

**PRESENTING CLINICAL SIGNS**

History: Presented 2/25/26 for a progressively worsening cough that had been present for several weeks; dry and hacking, severe enough to disrupt sleep, and was easily elicited with tracheal palpation. At that time, mild decreased energy was noted, while appetite and water intake remained normal. PE revealed loud heart sounds, a palpable thrill, and a murmur auscultated diffusely across the thorax. CXR showed globoid cardiac silhouette with a VHS of 11.8 and minimal pulmonary edema. Subsequently started on Enalapril (2.5mg PO BID), Furosemide (6.25mg PO SID), and Pimobendan (1.25mg PO am and 2.5mg PO pm), with reported clinical improvement for approximately 2–3 weeks following initiation of therapy. Recurrence of the dry, hacking cough despite continued medications. Additionally, over the past month, has exhibited limb stiffness when lying on his side, rather than appearing relaxed. Sedated with Torb. BP (before Torb): 108mmHg.  
-Abnormal PE/Chem/CBC/UA Results (2/25/26): revealed mild hyperglobulinemia (4.6 g/dL), elevated ALT (179 U/L) and ALKP (985 U/L), and mild hypochloremia (107 mmol/L), with a normal CBC.

**ECHOCARDIOGRAM FINDINGS**

2D, m-mode, color flow and doppler imaging is available. Diffuse thickening of mitral valve leaflets (anterior>posterior) with mild prolapse into the left atrial lumen. Moderate to severe eccentric mitral regurgitation with moderate left atrial dilation (LA:Ao > 1.6). Normal LV diameter with adequate myocardial function. The tricuspid valve appears mildly thickened, with mild tricuspid regurgitation. Normal right atrial and ventricular diameter. The pulmonic and aortic valves are normal in morphology and mobility. Normal pulmonic and aortic outflow velocities. Mild aortic and pulmonic 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)
<b>NORMAL PARAMETER</b>	4.5-5.5	<2.7	1.3	<1.6	28-40	40-100	<0.6
<b>PATIENT</b>	NM	NM	NM	1.75	38	70	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>	NM	1.2	0.9	6.8	2.3	2.6	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)

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



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Bonagura et al. Echocardiography: principles of interpretation, Vet	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 moderate to severe mitral and mild tricuspid regurgitation. Moderate left atrial enlargement indicates there is relatively low risk for imminent complication; however, risk for progression to spontaneous congestive heart failure in the future is elevated. A small aortic valve insufficiency is noted, and a baseline BP is recommended. No additional issues such as pulmonary hypertension are identified.

Given these findings, continued Pimobendan is indicated in this patient as below. Assessment of progression in the future will help predict long term outcome; however, prognosis is guarded at this stage (B2). Fifty percent of stage B2 patients typically develop CHF within 2-2.5 years of diagnosis. The median time to development of CHF in B2 cases treated with pimobendan is 3.5 years.

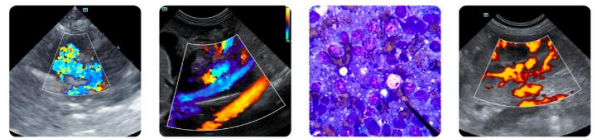
While mainstem bronchi compression may certainly be contributing to an increase in coughing, other primary airway contributions should also be considered (tracheal collapse, COPD/chronic bronchitis, etc.). Consider hydrocodone for any mechanical component due to cardiomegaly. If the cough is poorly controlled and/or progresses long term, pulmonary hypertension (PAH) can develop secondarily. Signs of clinically relevant PAH include exertional dyspnea or exertional syncope. It is important to note that PAH does not cause the cough; rather, the cough leads to PAH. In my opinion these radiographs and echo findings do not support CHF and Lasix/Enalapril are likely unnecessary; however, **a Radiologist review of the films is strongly recommended. Repeat films may also be helpful for further evaluation.**

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**

Continue Pimobendan 0.3mg/kg PO q12h. Highly recommend a Radiologist review of the films to confirm Lasix/Enalapril are unnecessary. Consider hydrocodone and/or further cough evaluation as indicated.

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



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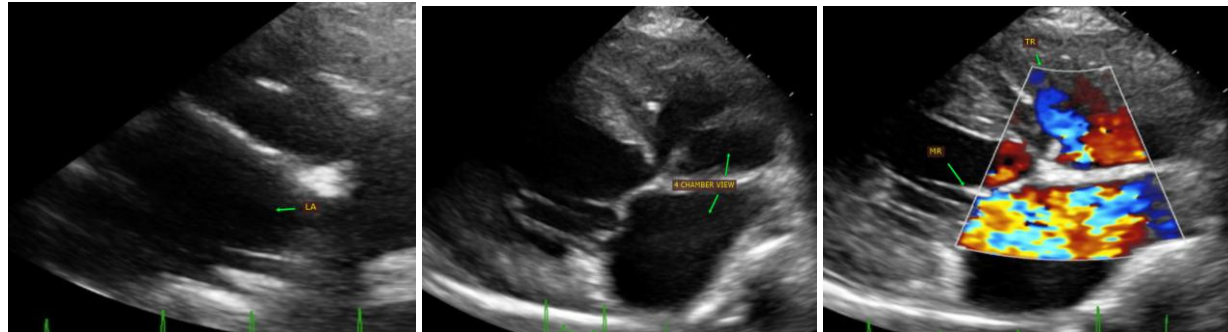
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## IMAGES



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.

**Maggie Machen Lamy, DVM**

**Diplomate of the American College of Veterinary Internal Medicine (Cardiology)**

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