



**PATIENT**

Indira Rucki

**SPECIES**

Canine

**BREED**

Havanese

**SEX**

Female Spayed

**AGE**

10 years

**WEIGHT**

12.31lbs

**INTERPRETED BY**

Maggie Machen  
Lamy, DVM  
DACVIM (Cardiology)

**PRESENTING CLINICAL SIGNS**

History: Indy was noted to have a heart murmur in November when she was seen for coughing. Cardiomegaly was noted on chest films. She was started on Pimobendan. Being treated newly diagnosed PLN. Cough improved but not resolved on medications. Good appetite and normal energy. On auscultation: NSR, grade IV/VI murmur with PMI left apical area radiating to right, PSS, lung fields clear. BP: 230-240 x multiple.

-Current medications: 1) Pimobendan/vetmedin 1.25mg 1 tab twice a day 2) Telmisarten 20mg 1/4 tab daily 3) Clopidogrel/Plavix 10mg/ml 0.6mls daily 4) Omega 3 fatty acids daily 5) Gabapentin 50mg as needed for vet visits 6) Hydrocodone with homatropine/hycodan 5mg/ml 1 ml twice a day \*No sedation for study.

**ECHOCARDIOGRAM FINDINGS**

2D, m-mode, color flow and Doppler imaging is available.

**Left ventricle:** The LV diameter is borderline increased with hyperdynamic function. LV wall thicknesses are mildly increased.

**Left atrium:** The left atrium is moderate to severely dilated.

**Mitral valve:** The mitral valve is diffusely thickened with mild prolapse into the left atrial lumen. Moderate to severe eccentric mitral regurgitation. Elevated velocity.

**Aortic valve/Aorta:** The aortic valve is normal in morphology and mobility. Normal aortic outflow velocity; laminar flow. Mild to moderate aortic insufficiency.

**Right ventricle:** Mild right ventricular hypertrophy. A muscular thickening is seen along the RVOT creating a dynamic obstruction.

**Right atrium:** The RA is prominent.

**Tricuspid valve:** The tricuspid valve appears mildly thickened with mild tricuspid regurgitation. Severely elevated velocity.

**Pulmonic valve/Pulmonary artery:** The pulmonic valve is normal in morphology and mobility. No pulmonic insufficiency. Elevated RVOT velocity with a dynamic profile.

**Pericardium/other:** No pericardial or pleural effusion noted. No obvious cardiac masses.

**Heart rhythm:** ECG reveals a sinus rhythm with an average HR of 160bpm.

**IMAGING**

**PERFORMED BY**

Pamela Harrigan,  
RDCS

**HOSPITAL NAME**

Mass Veterinary  
Services

**REFERRING VET**

Dr. Masloski

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22730

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**2-Dimensional Measurements**

Ao diam (cm)	1.3
LA diam (cm)	2.8
LA:Ao (Swe)	2.2
IVS thickness (cm)	0.9
LVID diastole (cm)	2.7
PW thickness (cm)	0.9
LVID systole (cm)	0.9
FS (%)	67

**Doppler Measurements**

PV Vmax (m/s)	3.0
AoV Vmax (m/s)	1.8
MR Vmax (m/s)	7.5
TR Vmax (m/s)	5.3
TR PG (mmHg)	114

**INTERPRETATION OF THE FINDINGS**

Unusual case. The primary issue is 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. There are also markers of systemic hypertension, including LV hypertrophy and a significant aortic insufficiency. Further vasodilation may be indicated going forward. Finally, a significant dynamic obstruction is seen through the RVOT. This is unusual to see in dogs and appears heart rate dependent. The obstruction is mild (max 3m/s); however, the TR velocity is



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severe which is a mismatch in determining right ventricular pressure. My assumption is this patient has only mild pulmonary hypertension, given a lack of significant right heart enlargement. No additional issues are identified.

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Given these findings, Pimobendan is recommended as below. Additionally, Hydrocodone should be continued to maintain the cough going forward. No obvious indication for Sildenafil or additional therapy at this time. Monitor of signs of progressive PAH, including exertional dyspnea or collapse. Assessment of progression in the future will help predict long term outcome, however prognosis is guarded at this stage (B2).

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The cough is suspected to be due to a combination of mainstem bronchi compression and potentially airway disease in this predisposed breed. Screening CXR, hydrocodone, etc. may be useful.

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**RECOMMENDATIONS**

- Administer Pimobendan 0.3mg/kg PO q12h.
- Consider more aggressive vasodilator therapy based upon reported BP in hospital and secondary cardiac changes. An ACE-I/Amlodipine may be reasonable.
- Administer Hydrocodone as needed.
- Omega fatty acid supplementation and mild salt restriction may be of some long-term benefit.
- 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.
- Monitor for development of a cough, labored breathing, exercise intolerance or collapse episodes.

**INTERPRETED BY**  
Maggie Machen  
Lamy, DVM  
DACVIM (Cardiology)

**PLAN**

- Recommend conservative monitoring with a recheck echocardiogram in 6 months, sooner if any development of clinical signs.

**IMAGING PERFORMED BY**  
Pamela Harrigan,  
RDCS

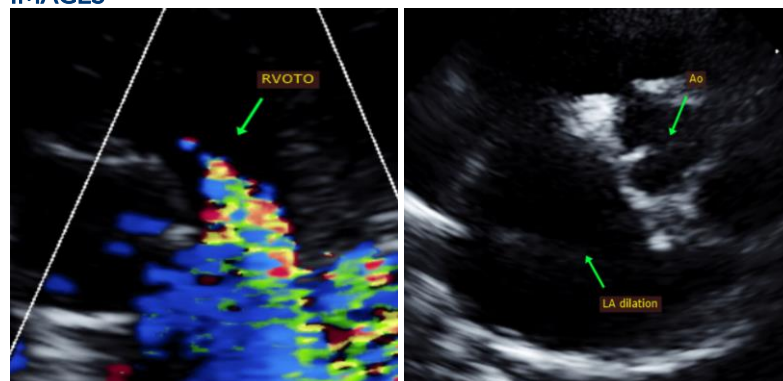
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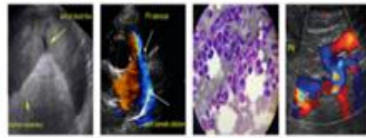
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**IMAGES**





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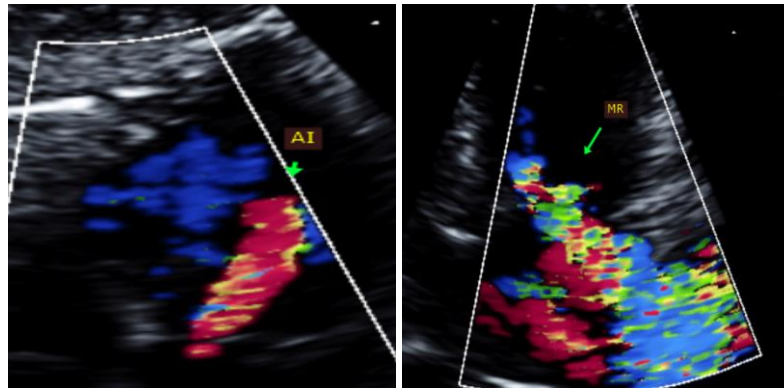
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The information and recommendations provided are based on the images presented by the referring veterinarian. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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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**Echocardiogram performed by:**

Pamela Harrigan, RDCS  
Pet Animal Ultrasound Service (4paus.com)