



## PATIENT

Rose Dickman

## SPECIES

Canine

## BREED

Cocker Spaniel Mix

## SEX

Female Spayed

## AGE

9 years

## WEIGHT

25.6lbs

## INTERPRETED BY

Maggie Machen Lamy,  
DVM, DACVIM  
(Cardiology)

## IMAGING PERFORMED BY

Dana Alterman,  
RDCS, LVT

## HOSPITAL NAME

Eubank Animal Clinic

## REFERRING VET

Dr. Russman

## INVOICE

22036

## DATE

11/15/21

## PRESENTING CLINICAL SIGNS

History: Recheck echo. Previous pulmonary hypertension diagnosis and IBD diagnosis. Recently started panting, increased RR.

-Current medications: Sildenafil and amlodipine.

-Pertinent previous echo findings (5/2021 AIS): Normal LA/LV. No RHE. Distended MPA

**ELECTROCARDIOGRAPHIC FINDINGS** \*Note: Single lead ECGs are evaluated as a rhythm strip. Morphology/MEA cannot be definitively commented on.

A single lead ECG is available; 50mm/s, 20mm/mV. The average heart rate is 120bpm (range 90-150bpm). The rhythm is sinus in origin, with a p for every QRS complex and vice versa. The P and QRS morphologies are positive. No ectopic beats, pauses or other dysrhythmias observed. ECG diagnosis: Normal sinus rhythm with respiratory variation.

## ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. The mitral valve is mildly thickened with no prolapse into the left atrial lumen. There is trace mitral regurgitation present. There is no left atrial enlargement. There is no left ventricular dilation. Left ventricular systolic function is adequate. There is normal systolic flow velocity across the aortic valve. The aortic valve appears trileaflet with normal mobility. No aortic insufficiency. The main pulmonary artery is mildly dilated compared to the aortic root. Mild enlargement of the right heart with mildly increased wall thickness. The tricuspid valve is mildly thickened with septal prolapse and mild tricuspid regurgitation. The tricuspid regurgitant velocity is consistent with moderate pulmonary hypertension. No pericardial/pleural effusion or cardiac masses are seen.

## 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>		3.9	1.3	1.3	48	80	0.3
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	1.2	11.6	1.8	2.9	1.5
*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



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**INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS**

Chronic degenerative valve disease causing trace mitral and mild tricuspid regurgitation. A normal left heart dimension with a lack of left atrial enlargement indicates the risk for left-sided spontaneous congestive heart failure is currently low. Moderate pulmonary hypertension persists as was previously documented, with mild right heart enlargement. No additional issues are identified.

Clinical signs of weakness, heavy breathing, cyanosis, and syncope are attributed to severe PAH. The underlying genesis of PAH is poorly understood in cases other than heartworm infestation, though it occurs with increased frequency in a variety of forms of chronic lung disease and in patients with idiopathic pulmonary fibrosis. If not performed, a heartworm antigen test is always recommended.

Given the previous echocardiogram findings, this likely reflects stable disease. This patient may have underlying lower airway disease (COPD/chronic bronchitis) causing the respiratory signs that over time has begun to affect the heart (PAH). It is important to note that **the cough is not CAUSED BY PAH, rather the cough LEADS TO PAH**. Patients with severe PAH can eventually develop right-sided congestive heart failure (ascites), debilitating cyanosis, labored breathing and exertional syncope if poorly controlled.

Continued medical management of PAH is indicated (Sildenafil). Repeat chest radiographs with a full Radiologist read may be useful given the change in symptom. A course of Baytril or similar antibiotic may be indicated pending results. Additionally, medications such as Theophylline can have great clinical benefit in these cases. Advanced pulmonary diagnostics may be necessary pending response.

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

**PLAN**

Administer Sildenafil 1-2mg/kg PO q8h. Consider hydrocodone with homatropine (0.5-1mg up to q4-6 hours PRN) for cough. Consider heartworm test, course of Baytril, baseline CXR, Theophylline, and advanced airway diagnostics as discussed.

A recheck echocardiogram and BP are recommended in 6 months to screen for progression, sooner if clinical signs arise.



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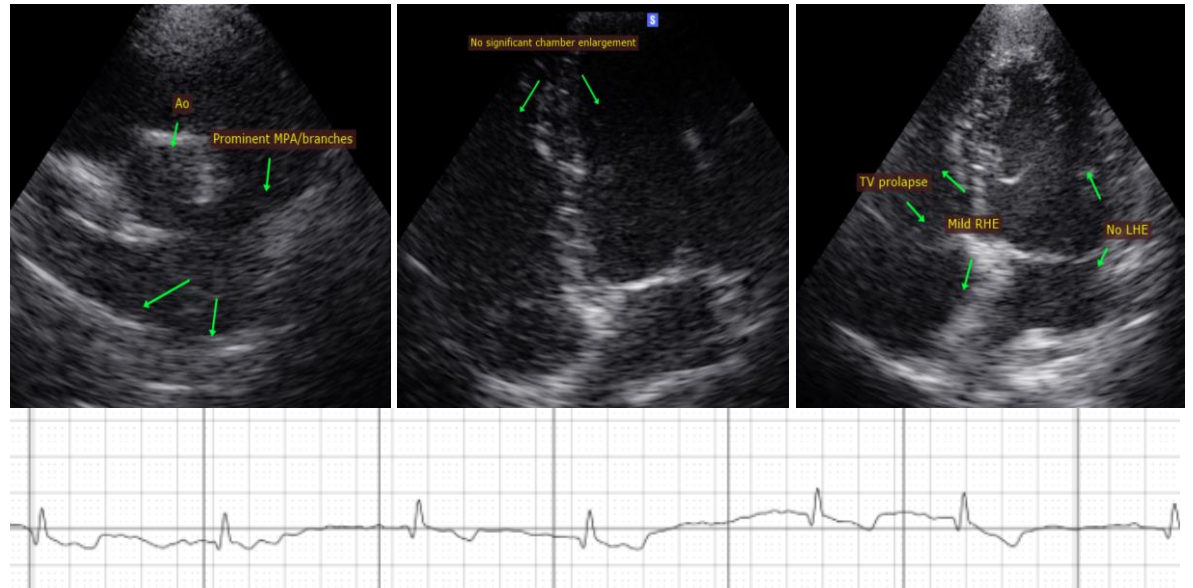
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**IMAGES**



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.

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