



PATIENT

Anthos Carrasquillo

SPECIES

Canine

BREED

Pug

SEX

Male Intact

AGE

15 years

WEIGHT

21.4lbs

INTERPRETED BY

Maggie Machen Lamy,
DVM, DACVIM
(Cardiology)

IMAGING PERFORMED BY

G. Ferrer, DVM

HOSPITAL NAME

Pulse: Pet Ultrasound
Services

REFERRING VET

Dr. Carrero

INVOICE

47776

DATE

5/6/26

PRESENTING CLINICAL SIGNS

History: Presented with non-expectorating cough mostly present at night. Some inappetence. Assess prior to anesthesia for enucleation.

ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. Mild diffuse thickening of mitral valve leaflets with no prolapse into the left atrial lumen. No mitral regurgitation with no left atrial dilation. Normal LV diameter with hyperdynamic myocardial function. The tricuspid valve appears mildly thickened with mild tricuspid regurgitation. Velocity consistent with mild to moderate PAH. Mild right heart enlargement. MPA and branches are mildly dilated. The pulmonic and aortic valves are normal in morphology and mobility. Normal pulmonic and aortic outflow velocities with laminar flow. No obvious aortic and trace 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	NA	3.5	NM	1.3	40	73	0.4
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	80	1.0	0.5	9.7	12.0	2.4	1.4
*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)
				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)

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

The only abnormality identified is mild to moderate pulmonary hypertension (PAH). This is based upon an elevated TR velocity and right heart/MPA enlargement in a coughing dog. The left heart is normal, and no additional issues are identified.

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 airway disease and in patients with idiopathic pulmonary fibrosis. In a Yorkie with respiratory disease, this is likely the



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underlying issue. Clinical signs of weakness, heavy breathing, and syncope are attributed to severe PAH, and may develop in the future.

Given the history and echocardiogram findings, this patient has airway disease that over time has begun to affect the heart (PAH) creating early pressure elevation. In other words, the cough is non-cardiac in origin; however, PAH is developing secondary to it. It is important to note the PAH is considered early given only mild changes and does not necessarily warrant therapy at this time as there is no known benefit to Sildenafil prior to associated clinical signs such as syncope.

Recommend continued airway workup and/or treatment (i.e., TTW, BAL and/or broad-spectrum pulmonary antibiotics such as Baytril, aggressive Hydrocodone, theophylline, etc.). Omega fatty acid supplementation may be of some long-term benefit.

No cardiac contraindication for general anesthesia. Pre-oxygenating for 5-10 minutes is recommended prior to induction.

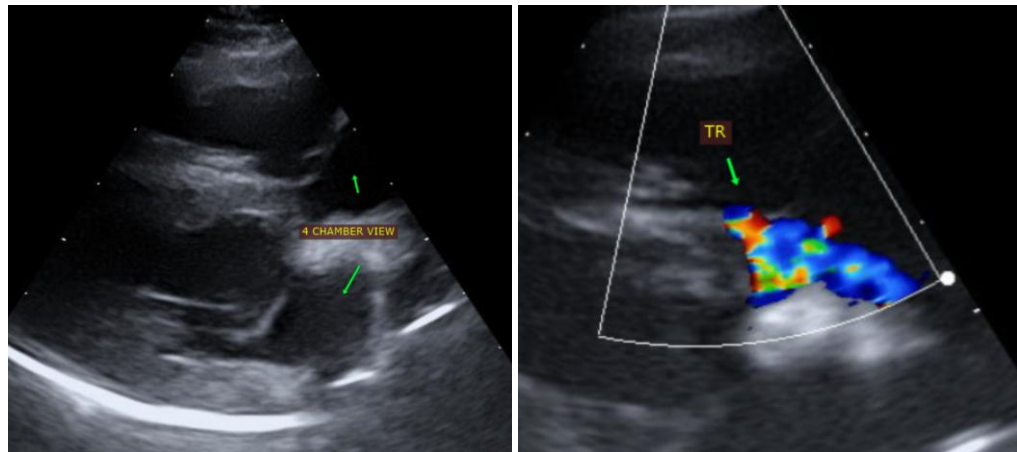
Monitor for development of a labored breathing, worsening cough, exercise intolerance or collapse episodes in the future.

PLAN

Consider further airway work up/treatment as discussed. If any exertional syncope or dyspnea develop, Sildenafil can be instituted 1-2mg/kg PO q8-12h.

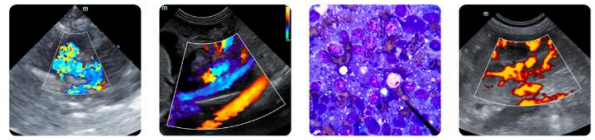
Recommend recheck echocardiogram in 6-12 months to screen for progression, sooner if any associated clinical signs are noted.

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



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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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