



PATIENT

Chandler McDermott

SPECIES

Canine

BREED

Chihuahua

SEX

Male Neutered

AGE

10.21.09

WEIGHT

9.8lbs

INTERPRETED BY

Maggie Machen Lamy,
DVM, DACVIM
(Cardiology)

HOSPITAL NAME

Animal Emergency
Hospital

REFERRING VET

Dr. Martinoli

INVOICE

29039

DATE

2.16.23

PRESENTING CLINICAL SIGNS

History: Not eating this afternoon; trouble breathing. No history of heart issues; has had chronic mild cough and been treated for bronchitis for past 1-2 years. Cough has increased the past week.

-Current medications: None listed.

-Sedation used: Not required to complete full diagnostic ultrasound.

-Pertinent previous ultrasound results:

-STAT: Not requested

-Imaging performed by: Andi Parkinson, BS, RDMS.

RADIOGRAPHIC FINDINGS *NOTE: Images submitted for supplemental information only.

Right-sided cardiomegaly, Concern for primary respiratory pulmonary infiltrate. No obvious evidence of CHF.

ECHOCARDIOGRAM FINDINGS *Limited exam with patient standing in O2 chamber.

2D, m-mode, color flow and doppler imaging is available. Mild thickening of mitral valve leaflets with no obvious prolapse into the left atrial lumen. No mitral regurgitation with normal left atrial dimension. Normal LV diameter with adequate myocardial function. The tricuspid valve appears normal with no tricuspid regurgitation. Mild right atrial enlargement. Mild right ventricular enlargement and hypertrophy consistent with pulmonary arterial hypertension. The pulmonic and aortic valves are normal in morphology and mobility. Mild main PA and branch dilation. Mild pulmonic insufficiency. Normal pulmonic and aortic outflow velocities. 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)
NORMAL PARAMETER	4.5-5.5	<2.7	1.3	<1.6	28-40	40-100	<0.6
PATIENT	NA	NA	NM	1.2	48	80	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	NM	1.1	4.4	1.3	2.5	1.3
*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)

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

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Moderate pulmonary hypertension (PAH) is present, as evidenced by MPA and right heart enlargement. The estimated systolic pulmonary arterial pressure is 60mmHg (no measurable TR appreciated), with normal being <25mmHg. This is causing hypertrophy and dilation of the right heart and MPA (indicating right-heart pressure overload). The left heart appears normal, and 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. Patients with this degree of PAH and pulmonary disease can develop right-sided congestive heart failure (ascites), debilitating cyanosis, labored breathing and exertional syncope if poorly controlled.

Given an acute onset of labored breathing with a history of airway disease, the most common cause is an infectious or inflammatory insult causing a decline in already poor oxygenation status. A PTE cannot be ruled out but is less likely. Coverage with broad spectrum pulmonary antibiotic (fluoroquinolone) is recommended, in addition to aggressive vasodilation using Sildenafil. Lasix is certainly not indicated as diuretics can actually further reduce preload in cases of debilitating PAH and worsen clinical signs. If ascites or pleural effusion develops in the future, then certainly diuretic therapy becomes necessary.

Once stabilized, use of theophylline and/or taper course of anti-inflammatory steroids can also be beneficial in these cases, to treat exertional dyspnea or acute flare ups and decrease the inflammatory component as much as possible. PRN use of cough suppressants may also be beneficial. Unfortunately, the prognosis overall is poor, however I am hopeful we can provide some medical relief going forward.

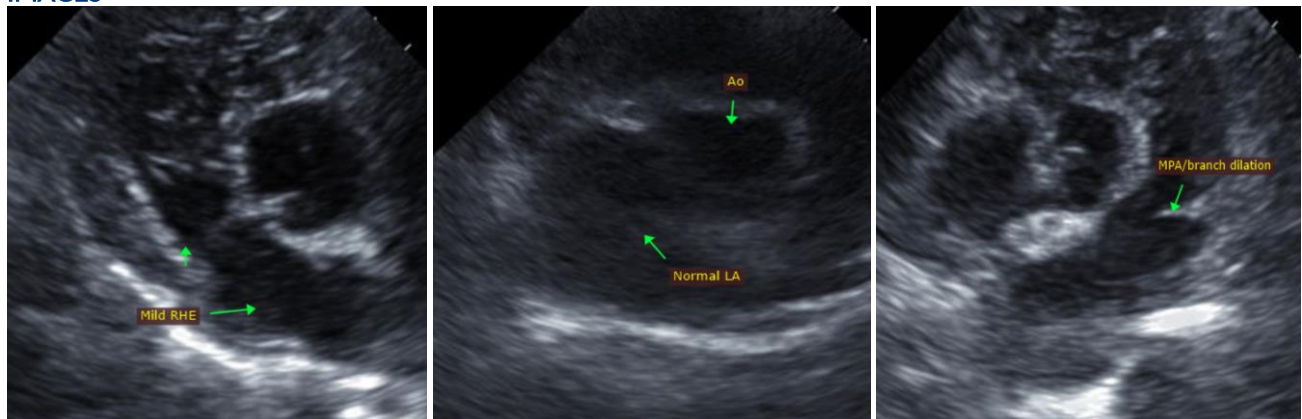
Omega fatty acid supplementation (anti-inflammatory) may be of some long-term benefit. Monitor for worsening of labored breathing, exercise intolerance or collapse episodes.

PLAN:

Consider Radiologist review of the films for further pulmonary evaluation. Institute course of pulmonary antibiotics (Enrofloxacin 5-7mg/kg PO q24h for 10 days or similar). Institute Sildenafil (Viagra) 1-2mg/kg PO q8h. Can also use hydrocodone and/or theophylline depending on chronic clinical signs of cough/exertional dyspnea.

Recommend recheck echocardiogram in 6 months to reassess pulmonary pressures, sooner if any development of clinical signs.

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)
info@sonopath.com