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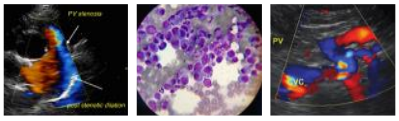

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PATIENT
Lucy Esposito

SPECIES
Canine

BREED
Chihuahua

SEX
Female Spayed

AGE
3.28.09

WEIGHT
9.2lbs

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

IMAGING PERFORMED BY
Stephanie Pearce, RDCS, RVT

HOSPITAL NAME
Pet Wellness Center

REFERRING VET
Dr. Twardus

INVOICE
22512

DATE
2.11.22

PRESENTING CLINICAL SIGNS

History: Recheck echo. Grade 3/6 murmur, cough.
-Pertinent abnormal PE/Chem/CBC/UA Results: NSF.
-Sedation used: Not required to complete full diagnostic ultrasound.
-Pertinent previous ultrasound results (03/16/2021): Mild MR, no LAE, moderate TR, moderate PAH, moderate RHE, TR: 3.6.
-STAT: Requested/Approved.

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

Significant biventricular cardiomegaly. No obvious evidence of CHF.

ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. Diffuse thickening of mitral valve leaflets with mild prolapse into the left atrial lumen. Mild eccentric mitral regurgitation with mild left atrial dilation. Normal MR velocity. Normal LV diameter with adequate myocardial function. Septal flattening in systole. The tricuspid valve appears thickened with severe tricuspid regurgitation. Velocity consistent with severe pulmonary hypertension. Severe RA enlargement. Severe RV dilation with hypertrophy. The pulmonic and aortic valves are normal in morphology and mobility. Normal pulmonic and aortic outflow velocities with laminar flow. No obvious aortic or pulmonic insufficiency. Mild MPA dilation. 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	6.0	4.5	NM	1.5	53	86	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	140	1.5	0.7	4.2	1.6	2.0	0.9
*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 **Note: All measurements based upon multi-modal images and methods. An average value is reported.*				5	1.40 (4.5)	2.74 (5.2)	1.60 (4.7)
				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

Compared to the prior study, there is evidence of progression of pulmonary pressures. The right heart is markedly enlarged, and the TR velocity elevated consistent with progression to severe pulmonary hypertension. The left heart disease is relatively stable with mild MR and mild LA enlargement. 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 chronic lung disease and in patients with idiopathic pulmonary fibrosis. If not performed, a heartworm antigen test is recommended. Given the progression of the disease seen here and a chronic cough, COPD/chronic bronchitis and/or collapsing trachea as an underlying cause is suspected. 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.

Pulmonary vasodilation using pimobendan and sildenafil is recommended as below. Additionally adequate cough suppression is indicated as the best way to slow progression in the future. If there was an acute increase in symptom a course of broad-spectrum antibiotic may also be indicated.

Use of theophylline and/or taper course of anti-inflammatory steroids can also be beneficial in these cases depending on severity of symptom, 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 guarded, however I am hopeful we can provide some medical relief going forward.

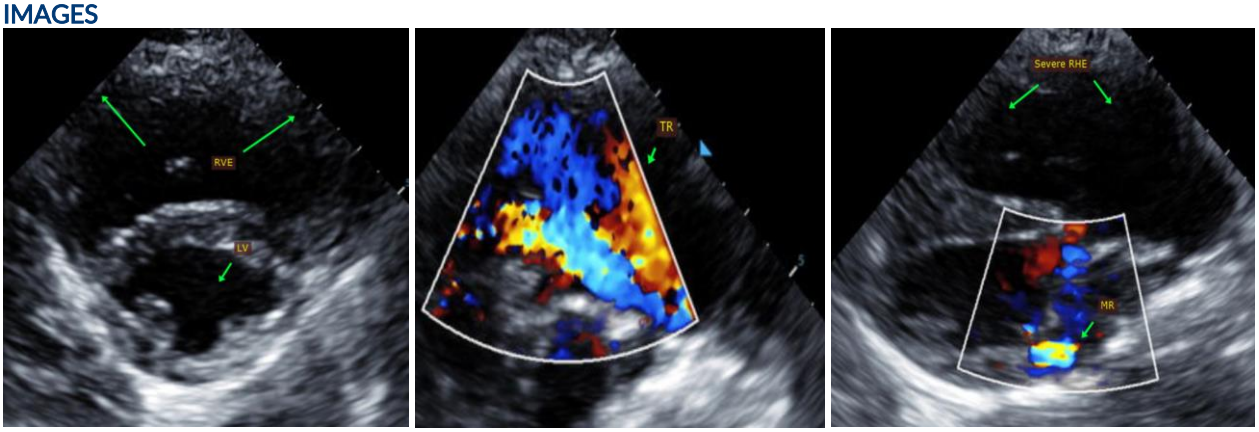
Omega fatty acid supplementation (anti-inflammatory) may be of some long-term benefit. Monitor for worsening of labored breathing, exercise intolerance or collapse episodes.

PLAN

Institute sildenafil (Viagra) 20mg tablets, give ½ tab PO q12h. Institute Pimobendan 2.5mg PO q12h. Recommend also use hydrocodone depending on chronic clinical signs of cough/exertional dyspnea. Consider a course of Baytril if an acute increase in symptom is reported.

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
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