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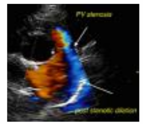
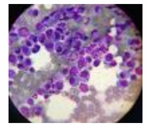
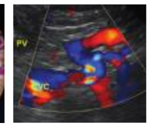




ANIMAL SOUNDS NW
MOBILE VETERINARY ULTRASOUND
IMAGING PERFORMED BY
AnimalSoundsNW.com 541-357-9423

PATIENT
Mabel Maldonado

SPECIES
Canine

BREED
Pug Mix

SEX
Female Spayed

AGE
14 years

WEIGHT
14.2lbs

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

IMAGING PERFORMED BY
Sara Hansen

HOSPITAL NAME
Bandon Veterinary Hospital

REFERRING VET
Dr. Hewitt

INVOICE
28152

DATE
1/6/23

PRESENTING CLINICAL SIGNS

History: Recheck echo. Patient had an isolated syncope or seizure event 12/10/22 after becoming excited. PE on 12/20/22 revealed slight increased respiratory effort, stenotic nares, stertorous breathing, no arrhythmias, Grade III/IV right sided murmur.

-Abnormal PE/Chem/CBC/UA Results (04/04/22) Mild liver value elevations ALT 145, ALKP 331, AST 77. I ran an Insulin panel 12/20/22 because of history of collapse and BG was 78 at time of exam. Panel was normal.

-Current medications: Sildenafil, Apoquel, Clopidogrel, Theophylline, Amlodipine, Synovi G4.

Pertinent previous echo findings (CCC 4/2022): TR 2.6, mild TR/RA/RVE suggestive of prior severe PAH

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

Mild right-sided cardiomegaly. No obvious evidence of CHF.

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 140bpm (range 90-188bpm). The rhythm is sinus in origin, with a p for every QRS complex and vice versa. The P morphology is positive. The QRS is inverted. No ectopic beats, pauses or dysrhythmias observed. ECG diagnosis: Normal sinus rhythm with respiratory variation.

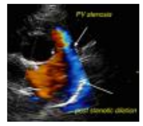
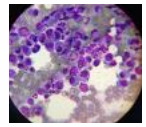
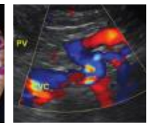
ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. Mild thickening of mitral valve leaflets with no prolapse into the left atrial lumen. Mild mitral regurgitation with no left atrial dilation. Normal LV diameter with normal myocardial function. The tricuspid valve appears mildly thickened with moderate tricuspid regurgitation. Mild to moderate right atrial enlargement. Mild right ventricular enlargement consistent with pulmonary arterial hypertension. The pulmonic and aortic valves are normal in morphology and mobility. Mild MPA and branch dilation. Mild pulmonic insufficiency. Normal pulmonic or 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	NM	3.0	1.3	1.3	56	89	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

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PATIENT	NM	1.5	1.4	6.4	1.6	2.2	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				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)
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				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

Moderate tricuspid regurgitation is identified with evidence of persistent pulmonary hypertension. The estimated PG is still elevated, with persistent right heart enlargement. Findings are similar to the 2022 study; however, previously severe disease was noted in that report. A small mitral leak is noted; however, the left heart dimensions are normal.

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 recommended. Regardless of etiology, patients with this degree of PAH can develop right-sided congestive heart failure (ascites), debilitating cyanosis, labored breathing and exertional syncope if poorly controlled.

Given the history, this reflects stable disease compared to the most recent exam. Exertional syncope is a hallmark of this particular pathology and may continue to recur in times of significant exertion or stress. Continuing Sildenafil is recommended going forward, with treatment of respiratory disease if indicated.

Monitor closely at home for development of any associated clinical signs, including cough, exertional dyspnea/syncope or significant lethargy. Unfortunately, the prognosis overall is guarded given the severity of disease.

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

Continue Sildenafil (for PAH) 1-2mg/kg PO q8-12h. Contniue Plavix, theophylline, etc as dictated by the prior report. Consider further respiratory treatment/evaluation depending on clinical signs.

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

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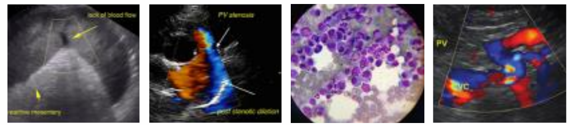

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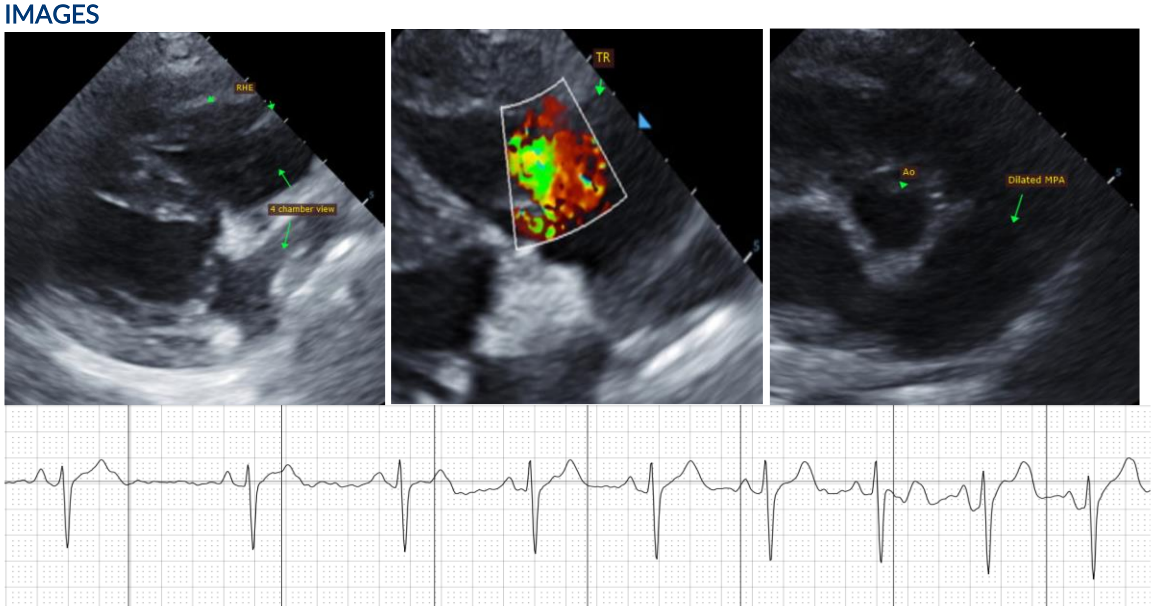
IMAGES



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.

Maggie Machen Lamy, DVM
Diplomate of the American College of Veterinary Internal Medicine (Cardiology)
info@sonopath.com