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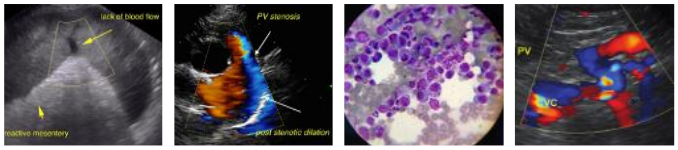


SonoPath.com
1-800-838-4268 info@sonopath.com

PATIENT
Sophie Robert

SPECIES
Canine

BREED
Goldendoodle

SEX
Female Spayed

AGE
11 years

WEIGHT
62.4lbs

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

IMAGING PERFORMED BY
Sang K Han

HOSPITAL NAME
Oso Pet Care Center

REFERRING VET
Dr. Han

INVOICE
22827

DATE
2/25/22

PRESENTING CLINICAL SIGNS

History: Coughing for 3 weeks, responded to Doxycycline initially.

ECHOCARDIOGRAM FINDINGS

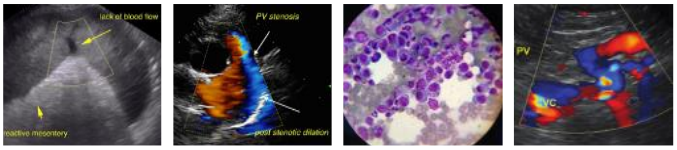
2D, m-mode, color flow and doppler imaging is available. Mild diffuse thickening of mitral valve leaflets with no prolapse into the left atrial lumen. Trivial mitral regurgitation with normal left atrial dimension. Decreased LV diameter with adequate myocardial function. Septal flattening. The tricuspid valve appears thickened with septal prolapse and moderate tricuspid regurgitation. Severe right atrial and ventricular dilation. The RV appears hypertrophied, consistent with severe pulmonary arterial hypertension. Septal flattening in systole. Significant MPA dilation. The pulmonic and aortic valves are normal in morphology and mobility. Normal pulmonic and aortic outflow velocities with laminar flow. No obvious aortic and mild 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	>4.0	1.5	1.0	34	66	0.2
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	160	0.6	0.7	28.3	1.9	1.7	1.1
*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)
Adapted from June Boon, Veterinary Echocardiography, 1998				25	2.18 (2.4)	4.48 (2.9)	3.10 (2.5)
Rishniw M and Hollis NE, J Vet Intern Med 2000; 14:429-435				30	2.33 (3.3)	4.83 (3.9)	3.39 (3.4)
Hansson et al, Vet Rad and Ultrasound 2002				35	2.48 (4.3)	5.17 (5.0)	3.69 (4.5)
Bonagura et al. Echocardiography: principles of interpretation, Vet Clin North Am 15:1177, 1995				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

There is severe pulmonary hypertension (PAH) present, as evidenced by an elevated TR velocity and severe right heart/MPA compensatory changes (dilation and hypertrophy). The estimated systolic pulmonary arterial pressure is >80mmHg, with normal being <25mmHg. This is causing severe hypertrophy and dilation of the right ventricle (indicating severe right-heart pressure overload). Clinical signs of weakness, heavy breathing, cyanosis, ascites and syncope are attributed to severe PAH. Note that coughing is not a sign of PAH; rather PAH develops secondary to a chronic cough rather than being a primary cause. Further evaluation/tx of the cough symptom is recommended through chest radiographs, broad spectrum antibiotics, hydrocodone, etc.



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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 highly recommended.**

Patients with this degree of PAH can develop right-sided congestive heart failure (ascites, pleural effusion) as is seen in this case, debilitating cyanosis/labored breathing and/or exertional syncope if poorly controlled. The prognosis is guarded to poor with an MST of <1 year after the onset of CHF, however a good quality of life is expected once controlled.

Medical management of PAH and CHF is indicated as below and initial therapeutic dosages are indicated. 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

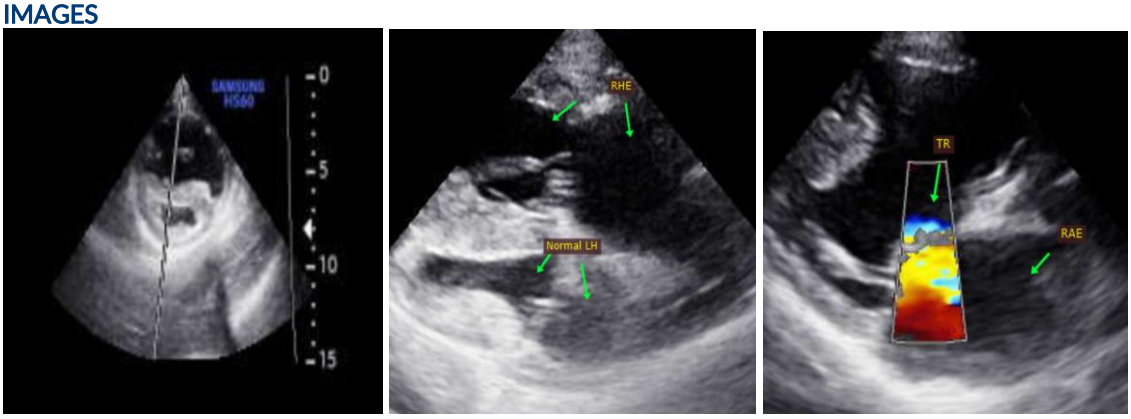
Consider further cough evaluation (CXR, Baytril course, AI prednisone course, hydrocodone, etc.). Administer diuretic furosemide 1-2mg/kg PO q12h. Institute sildenafil 1-2mg/kg PO q8h. Institute pimobendan 0.3mg/kg PO q12h. Institute spironolactone 1-2mg/kg PO q12h. Once eating well at home and clinical signs have resolved, institute ACE-I (benazepril or enalapril) 0.5mg/kg PO q12h.

Heartworm antigen test recommended.

Recommend renal panel in 10-14 days.

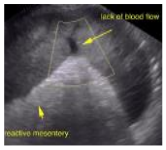
Once stabilized, recommend recheck echocardiogram in 6 months to reassess structure and function, sooner if any development of clinical signs.

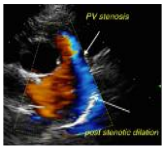
IMAGES

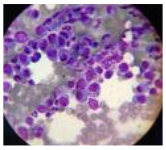
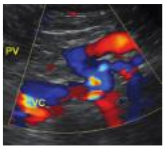


The information and recommendations provided are based on the images presented by the referring veterinarian. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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





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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)
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