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Clinical Sonography & Telecytology
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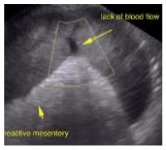
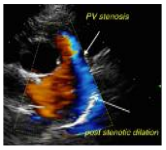
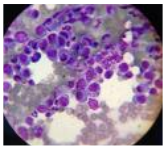
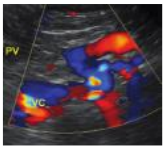

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1-800-838-4268 info@sonopath.com

PATIENT
Parcha Figaredo

SPECIES
Canine

BREED
Shih Tzi

SEX
Female Intact

AGE
14 years

WEIGHT
12.06lbs

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

IMAGING PERFORMED BY
G. Ferrer, DVM

HOSPITAL NAME
Paseos Veterinary Center

REFERRING VET
Dr. Ortiz

INVOICE
24479

DATE
5/31/22

PRESENTING CLINICAL SIGNS

History: Recheck echo (2017) – history of cardiac disease. Recently increased episodes of convulsions and syncope. Patient is with disturbance of balance. PE: grade 4/6 systolic HM on both sides. BP: 127/63 and mean 83
-Current medications: Enalapril, 5mg/ml: 0.5mls BID, Pimobendan, 1.8mg/ml: 1ml BID, Spironolactone 25mg (1/2 BID), Amlodipine. 10mg/ml: 0.25mls SID.
-Pertinent previous echo findings (3/2017): Mild LVE, LA/AO: 2.8, mild pulmonary hypertension with mild TR. *Syncope noted in the 2017 history.

ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. Diffuse thickening of mitral valve leaflets with prolapse into the left atrial lumen. Moderate mitral regurgitation with moderate left atrial enlargement. Borderline LV diameter with adequate myocardial function. The tricuspid valve appears thickened with septal prolapse and moderate tricuspid regurgitation. Velocity consistent with moderate pulmonary hypertension (suspected to be an underestimation). Mild to moderate right atrial enlargement; mild right ventricular dilation and hypertrophy consistent with pulmonary arterial hypertension. The pulmonic and aortic valves are normal in morphology and mobility. Moderate MPA and branch dilation. Mild pulmonic and no aortic 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	NM	4.0	NM	1.7	62	90	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	1.5	1.2	5.5	2.4	2.9	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)
				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

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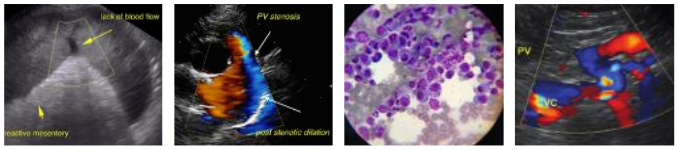

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INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

The most significant difference compared to the prior study is development of severe pulmonary hypertension. This is evidenced by an elevated TR velocity and significant right heart/MPA compensatory changes. The estimated systolic pulmonary arterial pressure is >80mmHg, with normal being <25mmHg. This is causing right heart and MPA enlargement indicative of right heart pressure overload. Clinical signs of weakness, heavy breathing, cyanosis, and syncope are attributed to severe PAH. The left heart disease remains moderate without evidence of progression comparatively.

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. Given the breed, chest x-rays are recommended with further respiratory historical information if available. This signalment is predisposed to chronic airway disease and if present the cough should also be addressed. 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 reported episodes, medical management with Pimobendan and Sildenafil is certainly indicated as below. Further historical information regarding the episodes is needed to determine if neurologic or cardiac causes are more likely; however, there is enough PAH to explain exertional episodes. That being said, there is a history of syncope in the prior 2017 report as well without significant PAH, and other possibilities should still be considered.

Depending on respiratory signs, 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. The prognosis overall is guarded, however I am hopeful we can provide some improved 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 1-2mg/kg PO q8h. Continue Pimobendan at 0.3mg/kg PO q12h. Consider neurologic evaluation, etc. as discussed. Consider hydrocodone as needed up to every 4-6hours PRN for cough if indicated.

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

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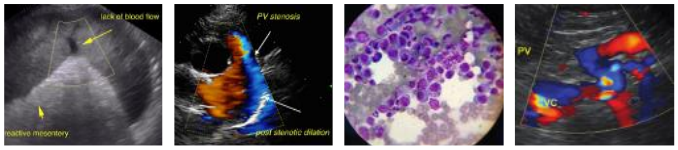

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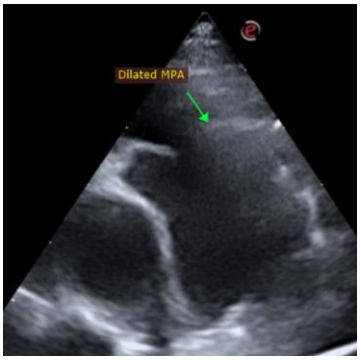
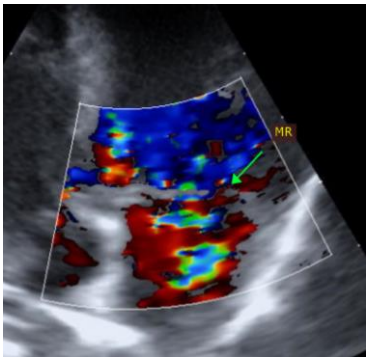
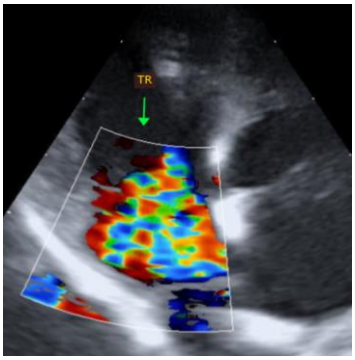
IMAGES







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