SonoPath
Clinical Sonography & Telecytology
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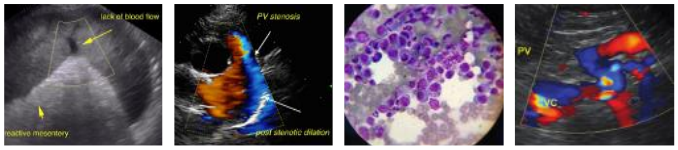

SonoPath.com
1-800-838-4268 info@sonopath.com

PATIENT
Ella Tardif

SPECIES
Canine

BREED
Pomeranian

SEX
Female Spayed

AGE
~10.5 years

WEIGHT
9.3lbs

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

IMAGING PERFORMED BY
Brian Barnes, DVM

HOSPITAL NAME
Westview Veterinary Hospital

REFERRING VET
Dr. Barnes

INVOICE
22841

DATE
2/28/22

PRESENTING CLINICAL SIGNS

History: Recheck echo. History of right-sided CHF, chronic airway disease, collapsing trachea and mainstem bronchi. Grade 3/6 AV murmur PMI left and right hemithorax. Clinically has improved with treatment and ascites has resolved. Still has wheezing respiration from airway disease. BP: 166mmHg.
-Current medications: Vetmedin 1.25mg BID, Fortekor 5 g x 1/2 BID, Spironolactone 25mg x 1/4 BID, Furosemide 10mg BID, and Sildenafil 10mg BID.
-Abnormal PE/Chem/CBC/UA Results: WBC 22.31 (N 5.05-16.76), Increased neuts and Baso. Urea 13.2 (N 2.5-9.6), ALT 132 (N 10-125), ALKP 273 (N 23-212) Proteinuria UPCR 1.04 , USG 1.0`12.
-Pertinent previous echo findings (2/14/2022 KB): Normal LA/LV, mild MR, moderate TR, moderate RHE, ascites/RCHF. TR: 3.7m/s.

ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. Mild diffuse thickening of mitral valve leaflets with no obvious prolapse into the left atrial lumen. Mild mitral regurgitation with a normal left atrial dimension. Normal LV diameter with adequate myocardial function. The tricuspid valve appears mildly thickened, and there is moderate tricuspid regurgitation. Moderate right atrial enlargement; moderate right ventricular dilation and hypertrophy consistent with significant pulmonary arterial hypertension. TR velocity supports moderate PAH. Subtle systolic flattening of the IVS consistent with pressure overload. The pulmonic and aortic valves are normal in morphology and mobility. Mild pulmonic insufficiency. MPA and branch dilation. 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	4.7	3.6	1.2	1.3	81	98	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	1.2	1.0	4.2	1.2	1.5	0.3

*Normal chamber parameters expressed as a mean value (SD)

BODY WEIGHT DEPENDENT PARAMETERS			
	3	1.27 (5.3)	2.46 (2.46)	1.36 (5.5)
	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)

Note: All measurements based upon multi-modal images and methods. An average value is reported.

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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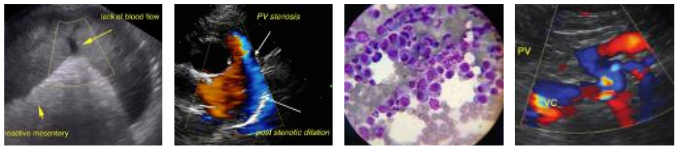

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INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Significant pulmonary hypertension (PAH) persists with moderate TR and an elevated TR velocity and right heart changes. The estimated systolic pulmonary arterial pressure is 60mmHg, with normal being <25mmHg. This is causing hypertrophy and dilation indicating right-heart pressure overload. Clinical signs of weakness, heavy breathing, cyanosis, ascites 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 highly recommended. Given the historical respiratory issues, this is the likely etiology and further workup/therapy is advised should symptoms persist.

Patients with this degree of PAH can develop right-sided congestive heart failure (ascites, pleural effusion) as was seen in this case, debilitating cyanosis/labored breathing and exertional syncope if poorly controlled. The prognosis is guarded to poor with an MST of <1 year after the onset of CHF, and respiratory disease may limit QOL if significant.

Continued medical management of PAH and CHF is indicated as below as previously recommended. It is reported that since the initial insult 2 weeks prior, the patient's ascites has resolved and is doing well at home. Based upon this, no changes to the medications are warranted at this time. The pulmonary pressures are unchanged from the prior study; however, use of Sildenafil should be based upon clinical response rather than this value, as there is some variability in the measurement. A therapeutic abdominocentesis should be performed in the future if and when the patient is inappetant or uncomfortable going forward.

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

Screening BP and HW Ag test. Continue Pimobendan, ACE-I, Spironolactone, Furosemide and Sildenafil as previously prescribed.

Recommend renal panel and BP every 3-4 months lifelong on diuretics.

Going forward, abdominocentesis is recommended PRN to maintain comfort and appetite.

Recommend recheck echocardiogram in 6 months to reassess structure and function, sooner if any recurrent clinical signs.

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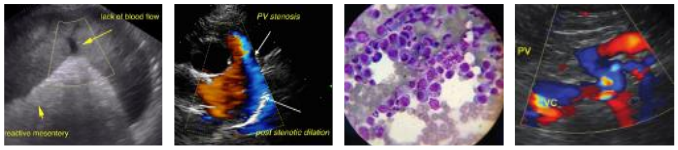

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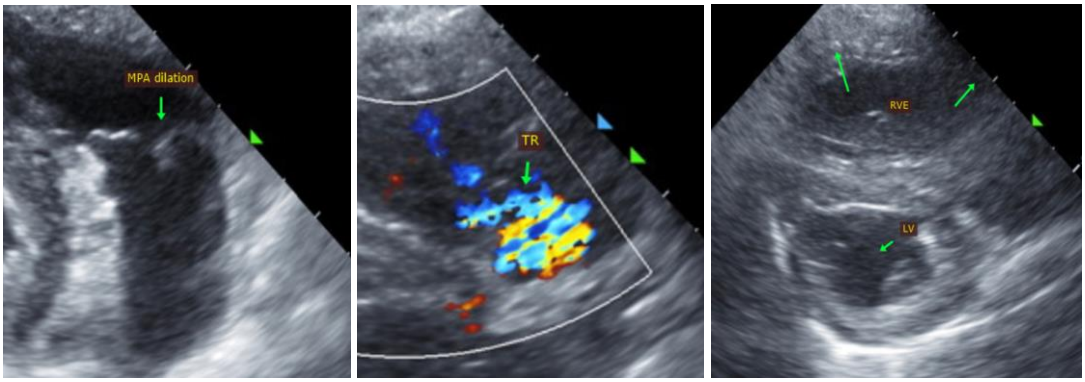
IMAGES



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