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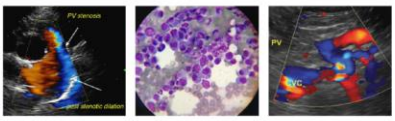


SonoPath
Clinical Sonography & Telecytology
EDUCATIONAL TELECONSULTATION SERVICES™
1-800-838-4268 info@sonopath.com SonoPath.com

PATIENT

Jessee Yokley

SPECIES

Canine

BREED

Goldendoodle

SEX

Female Spayed

AGE

11 years

WEIGHT

47lbs

INTERPRETED BY

Maggie Machen Lamy, DVM, DACVIM (Cardiology)

IMAGING PERFORMED BY

Rachel Runnells, RVT

HOSPITAL NAME

SVS Imaging KC

REFERRING VET

Dr. Mervin

INVOICE

23812

DATE

4/21/22

PRESENTING CLINICAL SIGNS

History: In the last week has started having issues/times of weakness when excited. Fell once running upstairs and hit head. Possible mild seizure after hitting head. Recent weight loss.
-Abnormal PE/Chem/CBC/UA Results: Irregular heartbeat with runs in the 180-210 range and then intermittent but less duration runs of 130 range. Pulses are synchronous with same variable pattern. ECG supports pattern. Intermittent VPC. No murmur.
-Chest radiographs: Mild rounding of cardiac silhouette without obvious enlargement.

ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. Diffuse thickening of mitral valve leaflets with no obvious prolapse into the left atrial lumen. Mild anterior-directed mitral regurgitation with normal left atrial dimension. Decreased LV diameter with adequate myocardial function. Increased LV wall thicknesses globally. The tricuspid valve appears mildly thickened with moderate tricuspid regurgitation. Mild to moderate right atrial enlargement; significant right ventricular dilation and hypertrophy consistent with pulmonary arterial hypertension. Subtle systolic flattening of the IVS consistent with pressure overload. The pulmonic and aortic valves are normal in morphology and mobility. Mild MPA and branch dilation. No obvious pulmonic or aortic insufficiency. Normal pulmonic and aortic outflow velocities. No pericardial or pleural effusion noted. No cardiac tumors observed.

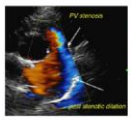
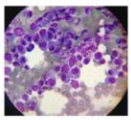
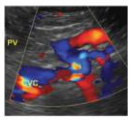
CARDIAC CHART

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	5.2	NM	1.1	1.3	28	50	0.3
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	1.7	1.1	21.3	2.5	2.1	1.5
*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

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

The primary abnormality identified is severe pulmonary hypertension (PAH), as evidenced by significant right heart pressure overload. The estimated systolic pulmonary arterial pressure is >80mmHg, with normal being <25mmHg. The degree of hypertrophy and dilation of the right

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ventricle and MPA is indicative of severe right-heart pressure overload. Of additional great concern, the left heart appears volume depleted with a small dimension and increased wall thickness. This is most consistent with pseudohypertrophy due to dehydration or volume depletion and **baseline lab work is recommended immediately**. There is also mild mitral regurgitation; however, this appears well compensated for at this time.

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. No chronic respiratory history is provided, making the underlying issue open at this time. 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. **Highly recommend fluid resuscitation if azotemia is present, as this can also contribute to syncope and tachycardia.** As mentioned previously, adequate cough control is also key to managing these cases if present.

These findings are likely related to the arrythmia. Follow up and treatment of the arrythmia should be dictated by the ECG report.

Once stable, 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. Unfortunately, the prognosis overall is poor, 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

Renal/CBC panel ASAP. Consider fluid therapy if indicated. Baseline BP as discussed. Institute sildenafil 1-2mg/kg PO q8h. Institute Pimobendan at 0.3mg/kg PO q12h. Consider ancillary respiratory therapy if indicated by baseline chest radiographs and clinical signs.

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

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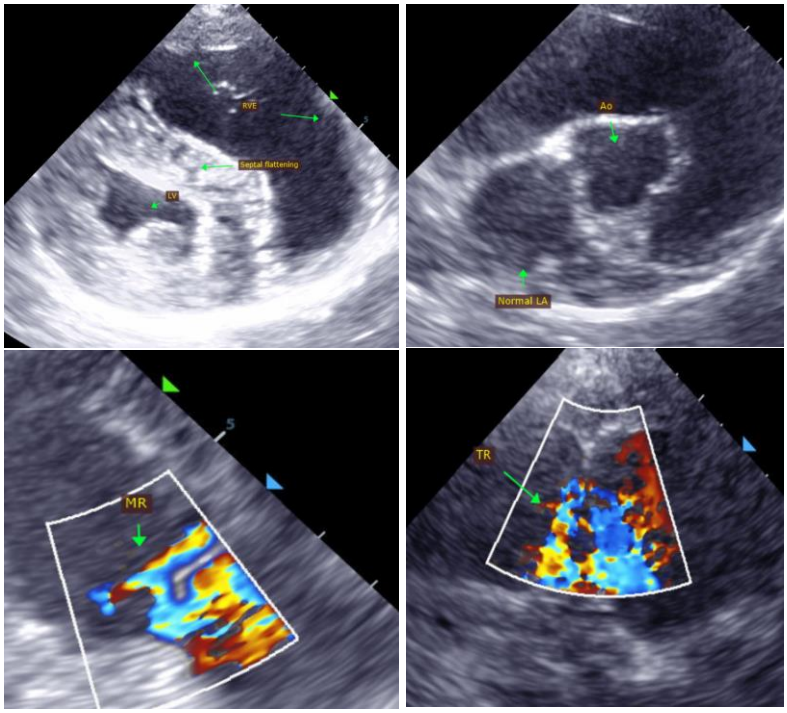

The information and recommendations provided are based on the images presented by the referring veterinarian. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

Thank you for this referral. 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