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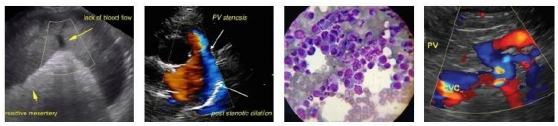


IMAGING PERFORMED BY
pawsonography@gmail.com 530-786-8340

PATIENT
Jenna Carlson

SPECIES
Canine

BREED
Chihuahua

SEX
Female Spayed

AGE
13.9 years

WEIGHT
14lbs

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

IMAGING PERFORMED BY
Loetitia St-Jacques, LVT/RVT

HOSPITAL NAME
Incline Veterinary Hospital

REFERRING VET
Dr. Moger

INVOICE
28803

DATE
2/6/23

PRESENTING CLINICAL SIGNS

History: Having syncopal episodes in the face of having a grade 5/6 heart murmur. P was seen at rDVM (ER) for her first noted episode about 8-9 months ago. It was determined that these were syncopal episodes and not seizures. P has since had 4-5 episodes that O has documented. The episodes are not associated with any specific event or activity.
Pertinent previous echo findings (MML 2021): CVD B1

ELECTROCARDIOGRAPHIC FINDINGS

A six lead ECG is available at 50mm/s; 10mm/mV. The average heart rate is 150bpm (range 82-230bpm). The rhythm is sinus in origin, with a p for every QRS complex and vice versa. The P wave morphology is positive with a normal dimension. Normal PR. The QRS morphology is positive with normal dimension. MEA is normal. No ectopic beats, pauses or dysrhythmias observed.
ECG diagnosis: Normal sinus rhythm with respiratory variation and significant heart rate variability.

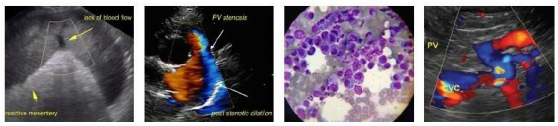
ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. The mitral valve is diffusely thickened with significant prolapse into the left atrial lumen. There is severe eccentric mitral regurgitation present. The MR velocity is normal. There is severe left atrial enlargement. There is moderate left ventricular dilation. Left ventricular systolic function is hyperdynamic. Mild right atrial and ventricular dilation (subjective). Mild thickening of the tricuspid valve with trace TR. Velocity consistent with mild to moderate PAH. There is normal systolic flow velocity across the aortic valve. The aortic valve appears trileaflet with normal mobility. The main pulmonary artery is normal in diameter. The pulmonic valve is normal in appearance. No pericardial/pleural effusion or cardiac masses are seen.

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	5.6	3.5	NM	2.5	45	78	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	195	1.3	0.84	6.4	3.6	3.6	2.0
*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)

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



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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

Chronic degenerative valve disease persists with significant progression. Previously mild disease is now severe, with severe mitral and mild tricuspid regurgitation. Severe LA enlargement indicates the risk for spontaneous congestive heart failure is elevated. There is also mild to moderate pulmonary arterial hypertension present, which should be monitored going forward. No additional issues are identified. The ECG is most consistent with high vagal tone and is overall normal.

Syncope in a dog with this degree of structural disease is most likely cardiogenic in origin. Cardiac causes include pulmonary hypertension (moderate in this case), early CHF/poor cardiac output (very possible), rupture of a chord or LA tear (not seen), arrhythmia (possible, although not seen), or vasovagal events (possible). Given the degree of LA dilation and the severity of MR, I am concerned for early CHF and decompensation as a possibility. Radiographs are recommended; however, full cardiac support should be initiated with monitoring closely for improvement/persistence of symptoms. Sildenafil is also recommended to lower pulmonary pressures. If episodes still persist, other causes should be investigated (holter monitor, neurology consult, etc.).

Close monitoring for development of associated clinical signs (development of a cough, labored breathing, exercise intolerance or worsening collapse episodes) is recommended. Monitoring of sleeping breathing rates is recommended as the best way to screen for CHF at home. Prognosis is guarded to poor given the severity of cardiac disease and dilation and high risk for decompensation, worsening collapse episode, and/or development of spontaneous CHF.

Omega fatty acid supplementation and mild salt restriction may also be of some long-term benefit.

Elective anesthesia is not advised.

PLAN

Baseline CXR recommended. Institute Pimobendan 0.3mg/kg PO q12h. Institute furosemide (Lasix) 1mg/kg PO q12h. Institute Benazepril/Enalapril 0.5mg/kg PO q12h. Institute Spironolactone 1-2mg/kg PO q12h. Institute sildenafil 1-2mg/kg PO q12h. If syncope persists, further evaluation is advised.

Lab work is recommended in 1-2 weeks to ensure tolerance of medications, then every 3-4 months lifelong.

A recheck echocardiogram is recommended in 6 months to screen for progression, sooner if clinical signs arise.

IMAGES

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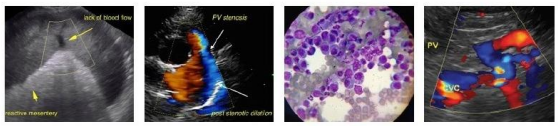

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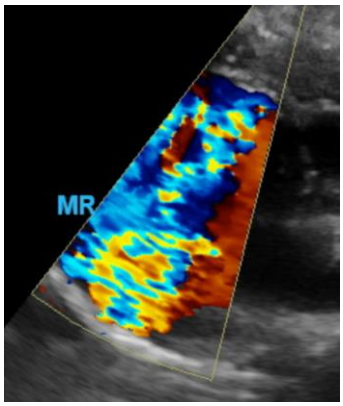

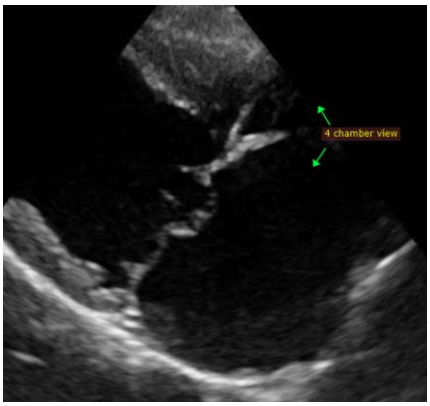

The information and recommendations provided are based on the images presented by the referring veterinarian. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

Thank you for this referral. 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