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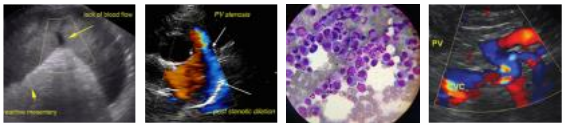


ANIMAL SOUNDS NW
MOBILE VETERINARY ULTRASOUND
IMAGING PERFORMED BY
AnimalSoundsNW.com 541-357-9423

PATIENT
Jess Pelroy

SPECIES
Canine

BREED
Chihuahua

SEX
Female Spayed

AGE
9 years

WEIGHT
Not provided

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

IMAGING PERFORMED BY
Jenna Walsh, CVT

HOSPITAL NAME
Four Corners Veterinary Clinic

REFERRING VET
Dr. Jessie

INVOICE
21814

DATE
11/1/21

PRESENTING CLINICAL SIGNS

History: In July patient started having syncopal episodes and had a murmur grade 4/6. Radiographs were taken and found to have a VHS of >13 with dorsal displacement of trachea. Patient was started on Furosemide 6.25mg BID, Benazepril 1.25mg BID, Vetmedin 0.625mg AM and 0.3125mg PM. Even on medication patient continues to have syncopal episodes. Heart Rate and Respiratory Rates HR 170 and RR 45 both in clinic.
-Blood Pressure: 123/67 MAP 91mmHg.

RADIOGRAPHIC FINDINGS *NOTE: Images submitted for supplemental cardiac information only.

(7/29/2021) Cardiomegaly. No obvious evidence of CHF.

ELECTROCARDIOGRAPHIC FINDINGS *Note: Single lead ECGs are evaluated as a rhythm strip. Morphology/MEA cannot be definitively commented on.

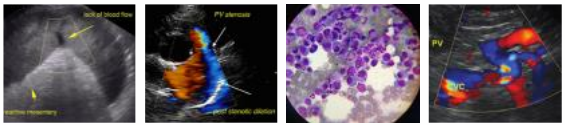
A single lead ECG is available; 25mm/s, 20mm/mV. The average heart rate is 210bpm with a regular rhythm. The rhythm is sinus in origin, with a p for every QRS complex and vice versa. The P and QRS morphologies are positive. No ectopic beats, pauses or dysrhythmias observed.
ECG diagnosis: Normal sinus tachycardia.

ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. The mitral valve is severely diffusely thickened with prolapse into the left atrial lumen. There is severe eccentric mitral regurgitation present. There is severe left atrial enlargement. There is severe left ventricular dilation. Left ventricular systolic function is hyperdynamic. There is normal systolic flow velocity across the aortic valve. The aortic valve appears trileaflet with normal mobility. No AI. The main pulmonary artery is prominent. Mild right atrial and right ventricular dilation. RV hypertrophy. The tricuspid valve is moderately thickened with septal prolapse and moderate tricuspid regurgitation. Velocity consistent with severe pulmonary hypertension. 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	4.5	4.8	1.9	2.5	59	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	212	0.6	0.63	NP	2.7	2.6	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)



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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

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)

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Chronic degenerative valve disease causing severe mitral and moderate tricuspid regurgitation. Severe left atrial enlargement indicates the risk for spontaneous left-sided congestive heart failure is elevated. There is also concurrent severe pulmonary hypertension, which may indicate underlying pulmonary pathology as well. No additional issues are noted.

Syncope in this patient is certainly cardiogenic in origin and are most consistent with severe pulmonary hypertension in addition to poor forward cardiac output. PAH can cause exertional dyspnea/collapse and exercise intolerance. PAH typically develops secondary to chronic elevated LA pressure or secondary to airway disease. The TR velocity and RV/MPA changes support a chronic severe pulmonary hypertension with a gradient >100mmHg (normal <30mmHg). This degree of PAH can also lead to hepatic congestion, and if poorly controlled can ultimately result in right-sided CHF. Early CHF can also lead to syncope, and careful dose titration of diuretic is recommended as below should the episodes persist. If syncope persists despite these changes, other causes should be considered such as an arrhythmia not captured on the ECG, etc.

Pending response, cough suppression (up to q4-6 hours) may also be helpful for QOL if needed. Monitoring of sleeping breathing rates is recommended as the best way to screen for CHF at home. The degree of PAH is concerning for pulmonary changes as well and repeat radiographs once stable on medications may be useful for future comparison.

The average survival of canine patients with this severity of disease and diagnosis of CHF is 8-9 months on medications, however they generally are able to maintain a good quality of life. Going forward the risk will remain high for CHF, development of arrhythmias/syncope and sudden death, and close monitoring is advised.

Omega fatty acid supplementation and mild salt restriction may also be of some long-term benefit. Monitor for development of a worsening cough, labored breathing, exercise intolerance or collapse episodes.

PLAN

Institute Spironolactone 1-2mg/kg PO q12h. Administer Furosemide 1-2mg/kg PO q12h. Administer Benazepril 0.5mg/kg PO q12h. Administer Pimobendan 0.3mg/kg PO q12h. Initiate sildenafil 1-2mg/kg PO q8h. Administer ACE-I 0.5mg/kg PO q12h.

A renal panel/BP is recommended in 10-14 days 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/persist.

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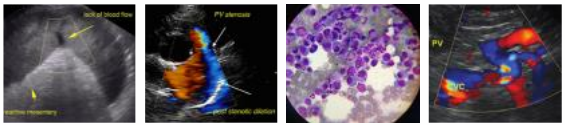

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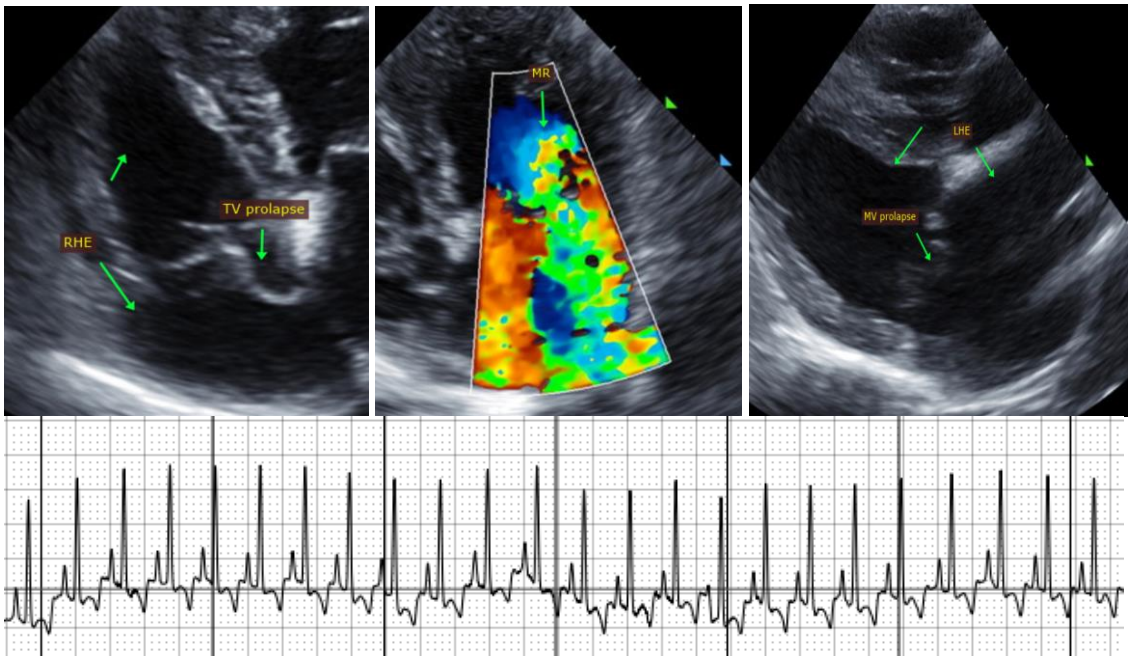
IMAGES



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