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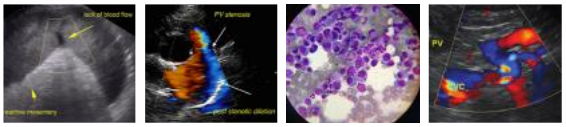


ANIMAL SOUNDS NW
MOBILE VETERINARY ULTRASOUND
IMAGING PERFORMED BY
AnimalSoundsNW.com 541-357-9423

PATIENT
AJ Avery

SPECIES
Canine

BREED
Jack Russell Terrier

SEX
Male Neutered

AGE
10 years

WEIGHT
9.66lbs

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

IMAGING PERFORMED BY
Jenna Walsh, CVT

HOSPITAL NAME
VCA Delta Oaks Animal Hospital

REFERRING VET
Dr. Samuel

INVOICE
22940

DATE
3/4/22

PRESENTING CLINICAL SIGNS

History: Grade 6/6 murmur. Historically 4/6. 3 days ago, patient had an event interpreted as a seizure by owner but could also be consistent with syncope.
-Sedation used: Torb.

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; 50mm/s, 5mm/mV. The average heart rate is 140bpm (range 120-167bpm). The rhythm is sinus in origin, with a p for every QRS complex and vice versa. The P and QRS morphologies are positive. A possible VPC is identified; however, this cannot be confirmed. No supraventricular premature beats, pauses or other dysrhythmias observed.
ECG diagnosis: Normal sinus rhythm with possible VPC; however, artifact cannot be ruled out.

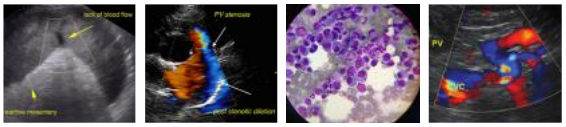
ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. Diffuse thickening of mitral valve leaflets with mild prolapse into the left atrial lumen. Severe eccentric mitral regurgitation with marked left atrial dilation. Normal MR velocity. Mildly increased LV diameter with hyperdynamic myocardial function. The tricuspid valve appears thickened with septal prolapse and moderate tricuspid regurgitation. Velocity consistent with moderate PAH. Mild right atrial and ventricular enlargement. The pulmonic and aortic valves are normal in morphology and mobility. Normal pulmonic and aortic outflow velocities with laminar flow. Mild aortic and no pulmonic insufficiency. Mild MPA dilation. No pericardial or pleural effusion noted. No obvious cardiac masses.

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	4.8	3.5	2.3	2.8	54	85	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	144	1.6	0.7	4.4	2.6	3.9	1.8
*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)
				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)

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



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Clin North Am 15:1177, 1995	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 LA dilation enlargement indicates the risk for spontaneous congestive heart failure is elevated and cardiac supportive medications are indicated as below. There is also moderate pulmonary arterial hypertension which should be monitored going forward. Systolic function is adequate, and no additional issues identified.

An episode in a dog with this degree of structural disease is most likely cardiogenic in origin, although an atypical seizure cannot be ruled out. 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 (not seen), or vasovagal events (unlikely). Given the combination of LA dilation and moderate PAH, I am concerned for a combination of PAH and early CHF as a possibility. Recommend initiate full cardiac support and monitor closely for improvement/persistence of symptoms. If episodes still persist, other causes should be investigated (holter monitor, neurology consult, etc.). A possible VPC is seen on the ECG; however, this is not definitive and simple follow up is advised. Finally, a Sildenafil trail can be utilized in this instance.

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.

PLAN

Baseline CXR and blood pressure are recommended. Institute furosemide (Lasix) 1-2mg/kg PO q12h. Institute spironolactone 1-2mg/kg PO q12h. Institute Pimobendan 0.25-0.3mg/kg PO q12h.

If syncope persists, further evaluation is indicated ASAP including repeat chest radiographs, ECG/holter monitor and/or neurologic consult. A Sildenafil trial can also be utilized in this instance 1-2mg/kg PO q12h and assess response.

Monitor renal panel and blood pressure in 1-2 weeks to ensure tolerance of medications, then every 3-4 months lifelong. If doing well and BP is >130mmHg, institute ACEI 0.5mg/kg PO q12h.

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

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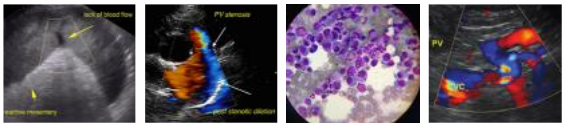

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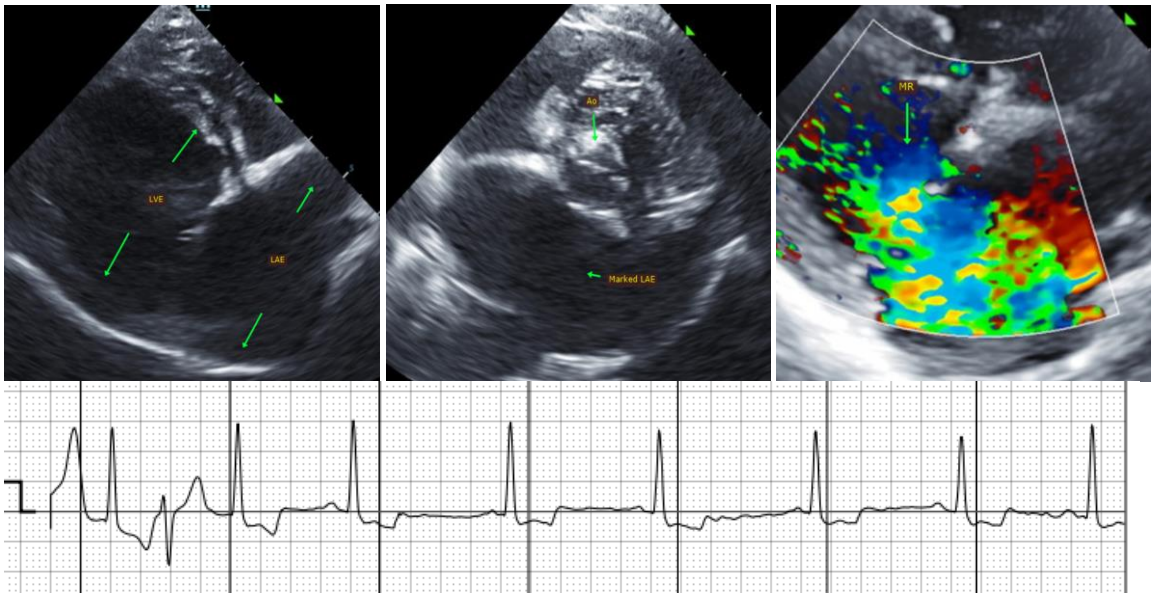
IMAGES



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