PATIENT

Vato Barker

SPECIES

Canine

BREED

Chihuahua

SEX

Male Neutered

AGE

7 years

WEIGHT

6.28lbs

INTERPRETED BY

Maggie Machen Lamy, DVM, DACVIM (Cardiology)

IMAGING PERFORMED BY

Dana Alterman, RDCS, LVT

HOSPITAL NAME

Eubank Animal Clinic

REFERRING VET

Dr. Russman

INVOICE

20466

DATE

8/10/21

PRESENTING CLINICAL SIGNS

History: Recheck echo. New syncope and murmur has increased from 4/6 to 5/6.
-Pertinent previous echo findings (3/2021 MML): thickened aortic valve with mild stenosis

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 140bpm (range 115-167bpm). 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 other dysrhythmias observed.
ECG diagnosis: Normal sinus rhythm with respiratory variation.

ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. Mild diffuse thickening of mitral valve leaflets with no prolapse into the left atrial lumen. No mitral regurgitation. Normal left atrial dimension. No LV dilation with adequate myocardial function. No significant LV wall thickening. The tricuspid valve appears subjectively normal, with no tricuspid regurgitation. Normal right atrial and ventricular diameter and morphology indicating no overt evidence of pulmonary arterial hypertension. The pulmonic valve is normal in morphology and mobility. Normal pulmonic outflow velocity with laminar flow. No pulmonic insufficiency. Significantly thickened aortic valve leaflets. There is mild aortic stenosis is noted on doppler. No obvious sub-aortic ridge. No aortic regurgitation. No pericardial or pleural effusion noted.
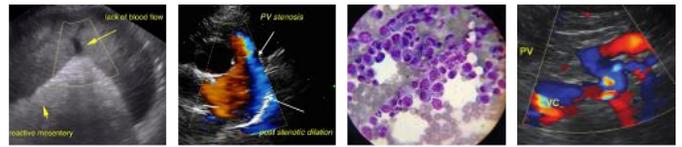
CARDIAC CHART

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	NA	NA	1.2	1.4	38	72	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	NM	2.5	1.3	2.8	1.47	2.1	1.3

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

BODY WEIGHT DEPENDENT PARAMETERS

*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

BODY WEIGHT (kg)	LA (cm)	LVIDd (cm)	LVIDs (cm)
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)

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INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Largely unchanged aortic stenosis (AS) is identified. While the aortic valve appears quite thickened, the stenosis appears mild based upon a lack of LV hypertrophy and the outflow velocity. That being said, there is always a possibility of a dynamic component that is worsened with elevated heart rates. No additional issues are identified, and the ECG is unremarkable.

At this point, it is difficult to know if syncope is due to structural changes or not. If the episodes are recurrent and occur only with significant exertion/heart rate stimulation, this may be related to a dynamic stenotic component. If this is the case, it is reasonable to institute Atenolol to block elevated heart rates and see if this improves the symptoms. If the syncope is NOT purely exertional however, other possibilities should be considered such as blood pressure swings, atypical seizures, etc. Further historical information is advised.

Prognosis is open, with many dogs in the mild/moderate category never experiencing associated clinical signs and others ultimately succumbing to malignant arrhythmias. If there is progression in the future, this will dictate a more guarded prognosis. Serial echocardiography is recommended lifelong to continue assessment for progression and risk for complication. Monitor for development of labored breathing, exercise intolerance or collapse episodes, as AS patients are more predisposed to development of arrhythmias than to CHF which is actually very uncommon. Mild exercise restriction is advised. Omega fatty acid supplementation (1000mg 1-2x daily) is of some long-term benefit for dogs predisposed to arrhythmias. Atenolol is often used in severe cases to decrease heart rate, however in a case that is borderline mild this is not indicated at this time.

If needed, anesthetic risk is mildly elevated. Avoid heart rate stimulating drugs such as atropine or glycopyrrolate unless clinically indicated. Avoid ketamine and acepromazine due to peripheral vascular effects. Mild IV fluid restriction is advised. Recommend prophylactic antibiotics prior to and during any orthopedic or dental procedure in the future given predisposition to endocarditis.

PLAN

If exertional syncope is confirmed and is recurrent, consider institute Atenolol 25mg tablets ¼ tab by mouth every 12 hours. Target heart rate is 140-160bpm stressed. If syncope is not purely exertional other possibilities should be considered.

Recommend recheck echocardiogram annually to screen for progression.
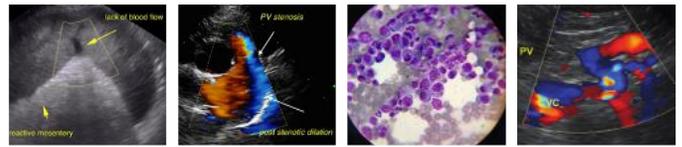
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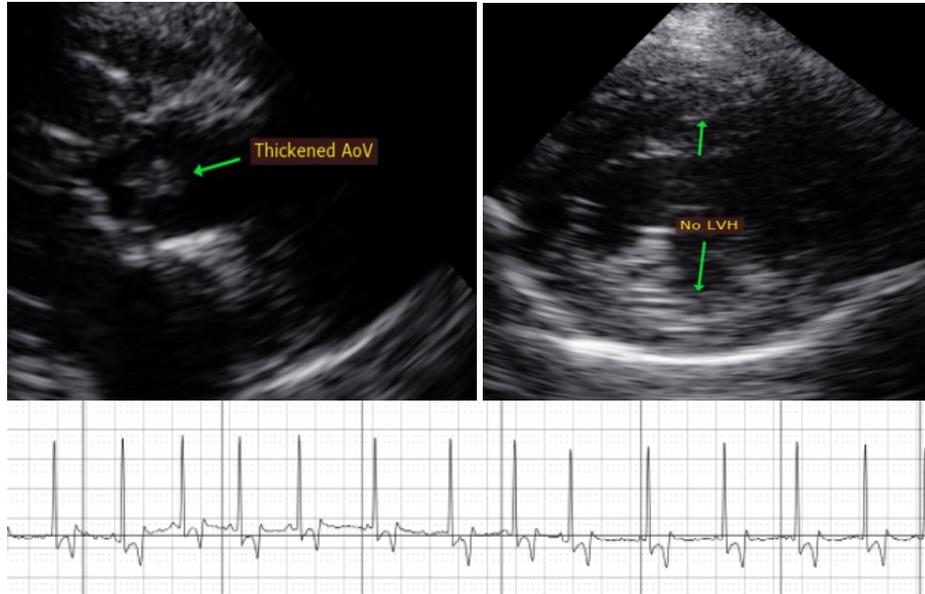**REFERRING VET**

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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