



PATIENT

Duke Morenzoni

SPECIES

Canine

BREED

Miniature Pinscher

SEX

Male Neutered

AGE

12 years

WEIGHT

12.1lbs

INTERPRETED BY

Maggie Machen
Lamy, DVM
DACVIM (Cardiology)

IMAGING PERFORMED BY

Pamela Harrigan,
RDCS

HOSPITAL NAME

Wood River Animal
Hospital

REFERRING VET

Dr. Schuelke

INVOICE

29683

DATE

3/17/23

PRESENTING CLINICAL SIGNS

History: Recheck echo. History chronic valvular disease- Stage B1. Presently, Duke is doing well. Needs anesthesia for dental prophyl.

-Pertinent previous echo findings (5/10/21 MML): LA 1.4 cm, LA:Ao 1.2, LV 1.66 cm, minimal LAE, mild MR, no TR.

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, 10mm/mV, 2 minutes duration. The average heart rate is 100bpm (range 68-150bpm). The rhythm is sinus in origin, with a p for every QRS complex and vice versa. P and QRS morphologies are positive. A single interpolated VPC is appreciated. No supraventricular premature beats, pauses or other dysrhythmias observed.

ECG diagnosis: Normal sinus rhythm with a single isolated VPC.

ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and Doppler imaging is available.

Left ventricle: The LV diameter is mildly increased with hyperdynamic myocardial function. LV wall thicknesses are normal.

Left atrium: The left atrium is moderately dilated.

Mitral valve: The mitral valve is diffusely thickened with marked prolapse into the left atrial lumen. Moderate to severe eccentric mitral regurgitation with a normal velocity.

Aortic valve/aorta: The aortic valve is normal in morphology and mobility. Normal aortic outflow velocity; laminar flow. No aortic insufficiency.

Right ventricle: Normal right ventricular diameter and morphology indicating no overt evidence of pulmonary arterial hypertension.

Right atrium: Normal RA dimension.

Tricuspid valve: The tricuspid valve appears normal with trace tricuspid regurgitation. Normal velocity.

Pulmonic valve/pulmonary artery: The pulmonic valve is normal in morphology and mobility. No pulmonic insufficiency. Normal RVOT velocity; laminar flow.

Pericardium/other: No pericardial or pleural effusion noted. No obvious cardiac masses.

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2-Dimensional Measurements

Ao diam (cm)	1.2
LA diam (cm)	1.9
LA:Ao (Swe)	1.6
IVS thickness (cm)	0.64
LVID diastole (cm)	2.7
PW thickness (cm)	0.68
LVID systole (cm)	1.0
FS (%)	64

Doppler Measurements

PV Vmax (m/s)	0.63
AoV Vmax (m/s)	1.4
MR Vmax (m/s)	4.9
TR Vmax (m/s)	2.5
TR PG (mmHg)	25

INTERPRETATION OF THE FINDINGS

Chronic degenerative valve disease causing moderate to severe mitral and trace tricuspid regurgitation persists with evidence of progression. Previously mild LA dilation is now moderate, with an increase in LV dimension as well. Quantitatively the MR is increased



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comparatively. This is concerning for progressive issues going forward. No additional issues such as pulmonary hypertension are noted.

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A single isolated VPCs is noted on the ECG as well, which is a new finding. VPCs are ectopic beats generated from abnormal conductive or fibrotic tissue in the ventricles of the heart muscle, and even frequent single VPCs will often cause no clinical signs in dogs. When sustained however, ventricular tachycardia can lead to symptoms such as lethargy and collapse.

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VPCs are a very non-specific finding. They can be primary in origin (arrhythmic disease; a rule out diagnosis), develop secondary to significant cardiac disease, or be extra-cardiac in origin, i.e., due to pain, stress, inflammation, cancer, GI disease, DIC/sepsis, etc. In this senior dog with moderate structural cardiac disease, they are likely due to stress and cardiac disease; however, ruling out systemic issues is reasonable (senior labs, AUS, etc.). Unfortunately, there is always an elevated risk for collapse and sudden death in any arrhythmic patient, and even on medications this risk unfortunately still persists.

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In addressing arrhythmias in dogs, we must not only consider why they are happening as above, but also whether or not treatment is warranted. Given the mild nature of the arrhythmia, consider application of a holter monitor if interested in further evaluation.

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This will tell us the frequency and complexity of the rhythm over 24 hours of normal activity. An alternative approach would be to simply monitor at home for symptoms and utilize a holter monitor should the patient begin to experience clinical signs such as lethargy or collapse, which is also reasonable. No obvious indication for anti-arrhythmic therapy based upon what is seen here. Discussion with the owner is advised.

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Given these findings in addition to development of VPCs, Pimobendan is recommended as below. Prognosis is guarded at this stage (B2), with risk for spontaneous CHF, development of arrhythmias, LA tear and/or sudden death going forward.

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Pamela Harrigan,
 RDCS

RECOMMENDATIONS

- Institute Pimobendan 0.25-0.3mg/kg PO q12h.
- Consider holter monitor v monitor at home.
- Consider systemic screening as discussed.
- Baseline BP is recommended.
- Omega fatty acid supplementation and mild salt restriction may be of some long-term benefit.
- Anesthetic risk is considered moderately elevated. Avoid ketamine, telazol, Dexdomitor (or other alpha-2 agonists) and acepromazine. Recommend having lidocaine CRI available for use in the event of worsening ventricular arrhythmias under anesthesia (CRI 50–75mcg/kg/min). Cardiac protective drug choices (opioid/benzodiazepine premedication, propofol or alfaxalone induction, iso or sevoflurane gas) are recommended. Pre-oxygenate for 5-10 minutes prior to induction and recover in O2 cage. Monitor for arrhythmias, hypotension, and hypoxia both intra and post-operatively and intervene as necessary. Moderate IV fluid restriction is recommended to avoid fluid overload, while considering comorbidities, hydration status, BP, etc.

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- Monitor for development of a cough, labored breathing, exercise intolerance or collapse episodes.

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PLAN

- Recommend conservative monitoring with a recheck echocardiogram and ECG in 6 months, sooner if any development of clinical signs.

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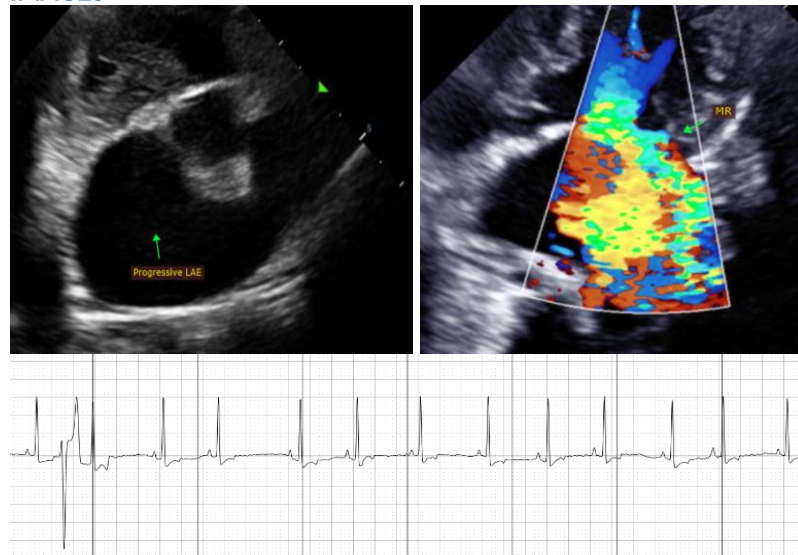
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IMAGES



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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.

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Pamela Harrigan,
 RDCS

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.

HOSPITAL NAME

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Echocardiogram performed by: Pamela Harrigan, RDCS
 Pet Animal Ultrasound Service (4paus.com)

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