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Pet Animal Ultrasound Service
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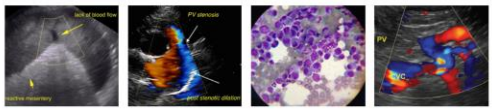

SonoPath
Clinical Sonography & Telecytology
EDUCATIONAL TELECONSULTATION SERVICES™
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PATIENT
Max Aquino

SPECIES
Canine

BREED
Labrador Retriever

SEX
Male Neutered

AGE
12 years

WEIGHT
77.6lbs

INTERPRETED BY
Maggie Machen Lamy, DVM DACVIM (Cardiology)

IMAGING PERFORMED BY
Pamela Harrigan, RDCS

HOSPITAL NAME
Littleton Animal Hospital

REFERRING VET
Dr. Brooks

INVOICE
23529

DATE
4/7/22

PRESENTING CLINICAL SIGNS

History: Recheck echo. History chronic valvular disease - Stage B1 with mild-moderate MR and mild TR with normal LA size. Also history VPCs. Currently doing well - good appetite and energy. On exam, grade II-III/VI heart murmur. BP: 150, 153, 155, 159 mmHg. *Sedated with 0.5 ml **dexdomitor.**
-Pertinent previous echo measurements: LA 3cm; LA:Ao 1.29; LV 4.70 cm. occasional monomorpic VPCs

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 100bpm (range 55-120bpm). The rhythm is sinus in origin, with a p for every QRS complex and vice versa. P and QRS morphologies are positive. Isolated VPCs throughout; singles only, polymorphism noted. No supraventricular ectopic beats, pauses or dysrhythmias observed.
ECG diagnosis: Normal sinus rhythm with respiratory variation. Isolated VPCs.

ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and Doppler imaging is available.
Left ventricle: The LV diameter is normal with adequate myocardial function. LV wall thicknesses are normal.
Left atrium: The left atrium is normal.
Mitral valve: The mitral valve is diffusely thickened with no prolapse into the left atrial lumen. Mild 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 mild 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.

2-Dimensional Measurements

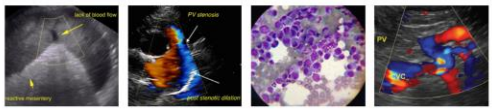
Ao diam (cm)	2.7
LA diam (cm)	3.3
LA:Ao (Swe)	1.3
IVS thickness (cm)	1.0
LVID diastole (cm)	3.9
PW thickness (cm)	0.9
LVID systole (cm)	2.6
FS (%)	31

Doppler Measurements

PV Vmax (m/s)	0.67
AoV Vmax (m/s)	1.1
MR Vmax (m/s)	5.5
TR Vmax (m/s)	2.11
TR PG (mmHg)	18

INTERPRETATION OF THE FINDINGS

Chronic degenerative valve disease persists with relative stability. Mild mitral and tricuspid regurgitation are noted, without progressive chamber enlargement. Lack of significant left atrial enlargement indicates the current risk for complication is low. No



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concurrent issues such as systolic dysfunction or pulmonary hypertension are noted in this study. Prognosis is highly variable at this stage (B1).

The ECG does confirm persistent isolated ventricular premature contractions (VPCs). 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.

VPCs are a very non-specific finding. They can be primary in origin such as ARVC, be secondary to significant cardiac disease (mild in this study), or be extra-cardiac in origin; i.e. due to pain, stress, inflammation, cancer, GI disease, DIC/sepsis, etc. In a senior dog with only mild structural disease, all additional causes can be considered. An abdominal ultrasound to monitor for any underlying abnormalities, in addition to full lab work, etc. can be considered. 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.

Based strictly on the amount of arrhythmia seen in hospital and a lack of associated clinical signs at home, no anti-arrhythmic treatment is clearly indicated. A holter should be considered as a next step, should any acute lethargy/collapse develop.

Although the patient's systolic function appears intact, avoiding dexdomitor prior to future evaluations is recommended as this can impact the results.

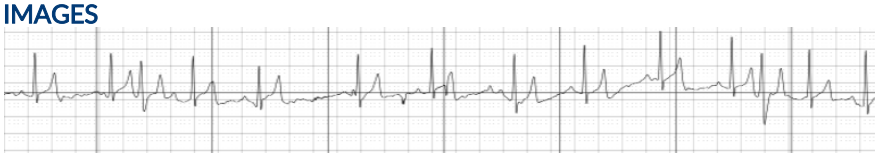
RECOMMENDATIONS

- No cardiac medications are clearly indicated.
- Fish oil supplementation is recommended for dogs with arrhythmias (1000mg of omega 3 and 6 once to twice daily).
- Consider a holter, systemic screening as discussed.
- Monitor at home for collapse, exercise intolerance, and/or lethargy.
- Anesthetic risk is considered mild if needed. Cardiac protective drug choices (opioid/benzodiazepine premedication, propofol or alfaxalone induction, isoflurane gas) are recommended. Pre-oxygenate for 5-10 minutes prior to induction. Monitor for arrhythmias, hypotension, and hypoxia both intra and post-operatively and intervene as necessary. Mild IV fluid restriction is recommended to avoid fluid overload. Avoid heart rate stimulating drugs such as atropine unless clinically indicated.

PLAN

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

IMAGES



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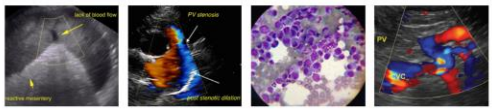

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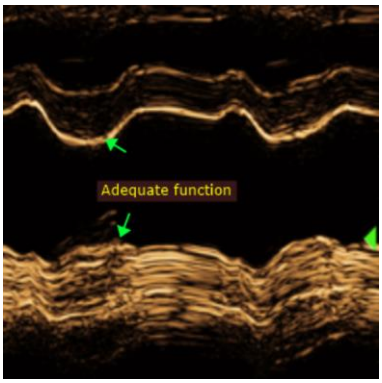

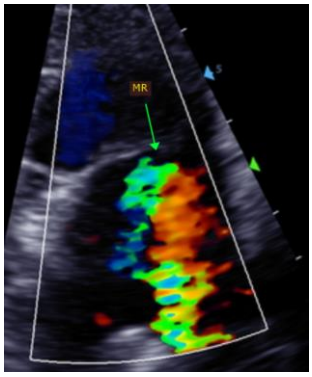

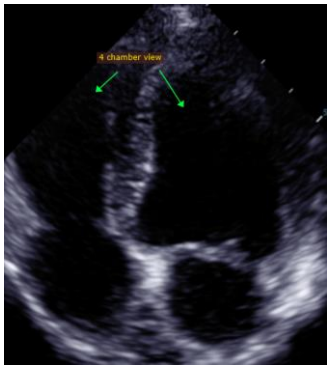

The information and recommendations provided are based on the images presented by the referring veterinarian. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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)
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