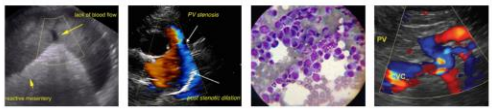
PAUS
Pet Animal Ultrasound Service
4paus.com 781-635-5677



SonoPath
Clinical Sonography & Telecytology
EDUCATIONAL TELECONSULTATION SERVICES™
1-800-838-4268 info@sonopath.com SonoPath.com

PATIENT
Daisy Silva

SPECIES
Canine

BREED
Mastiff

SEX
Female Spayed

AGE
6 years

WEIGHT
92lbs

INTERPRETED BY
Maggie Machen Lamy, DVM DACVIM (Cardiology)

IMAGING PERFORMED BY
Pamela Harrigan, RDCS

HOSPITAL NAME
Anchor Animal Hospital

REFERRING VET
Dr. Lavin

INVOICE
22915

DATE
3/3/22

PRESENTING CLINICAL SIGNS

History: New grade I/VI systolic murmur; no clinical signs. ProBNP elevated at 2351. BP: 190-220mmHg. Sedated with gabapentin, trazadone, butorphanol.

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. The average heart rate is 120bpm (range 83-136bpm). 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; monomorphic with an LBBB morphology. No supraventricular premature beats, pauses or other dysrhythmias observed.
ECG diagnosis: Normal sinus rhythm with 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 mildly increased.
Left atrium: The left atrium is normal.
Mitral valve: The mitral valve is normal with no MR.
Aortic valve/Aorta: The aortic valve is normal in morphology and mobility. Borderline aortic outflow velocity. No aortic insufficiency. The aortic root and ascending segment are dilated.
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 no tricuspid regurgitation.
Pulmonic valve/Pulmonary artery: The pulmonic valve is normal in morphology and mobility. Trace pulmonic insufficiency. Normal RVOT velocity; laminar flow.
Pericardium/other: No obvious cardiac shunts. No pericardial or pleural effusion noted. No obvious cardiac masses.

2-Dimensional Measurements

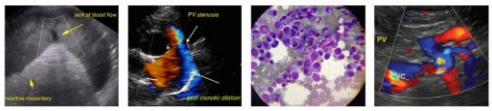
Ao diam (cm)	3.2
LA diam (cm)	2.9
LA:Ao (Swe)	0.9
IVS thickness (cm)	1.5
LVID diastole (cm)	3.6
PW thickness (cm)	1.5
LVID systole (cm)	1.9
FS (%)	47

Doppler Measurements

PV Vmax (m/s)	0.7
AoV Vmax (m/s)	1.8
MR Vmax (m/s)	NA
TR Vmax (m/s)	NA
TR PG (mmHg)	NA

INTERPRETATION OF THE FINDINGS

The primary abnormalities identified are mild LV hypertrophy and a dilated aorta. This is likely due to reported systemic hypertension and should be monitored for regression once the pressures are controlled. The only cause of a murmur identified is a borderline elevated LVOT velocity. This is a benign murmur origin that often waxes and wanes with heart rate and/or volume status. No additional issues are identified and the remainder of the structural and function is normal.



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The reported blood pressure is elevated, which is supported by the echocardiogram findings. Vasodilation is recommended with Amlodipine to effect. Additionally, screening for predisposing underlying causes of SHT is recommended (Cushings, PLN, adrenal tumor, etc.), as primary disease is relatively uncommon and a rule out diagnosis. Consultation with an IM specialist may be useful.

Isolated VPCs are noted on the ECG as well. 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 (arrhythmic disease; a rule out diagnosis), develop secondary to significant cardiac disease (not present), or be extra-cardiac in origin; i.e., due to pain, stress, inflammation, cancer, GI disease, DIC/sepsis, etc. In a dog with systemic hypertension this may be related. 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.

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. 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.

RECOMMENDATIONS

- Institute Amlodipine to effect.
- Screen for underlying causes of SHT, IM consultation, etc.
- Consider holter monitor v monitor at home.
- 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.
- Monitor for development of a cough, labored breathing, exercise intolerance or collapse episodes.

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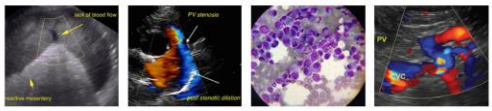

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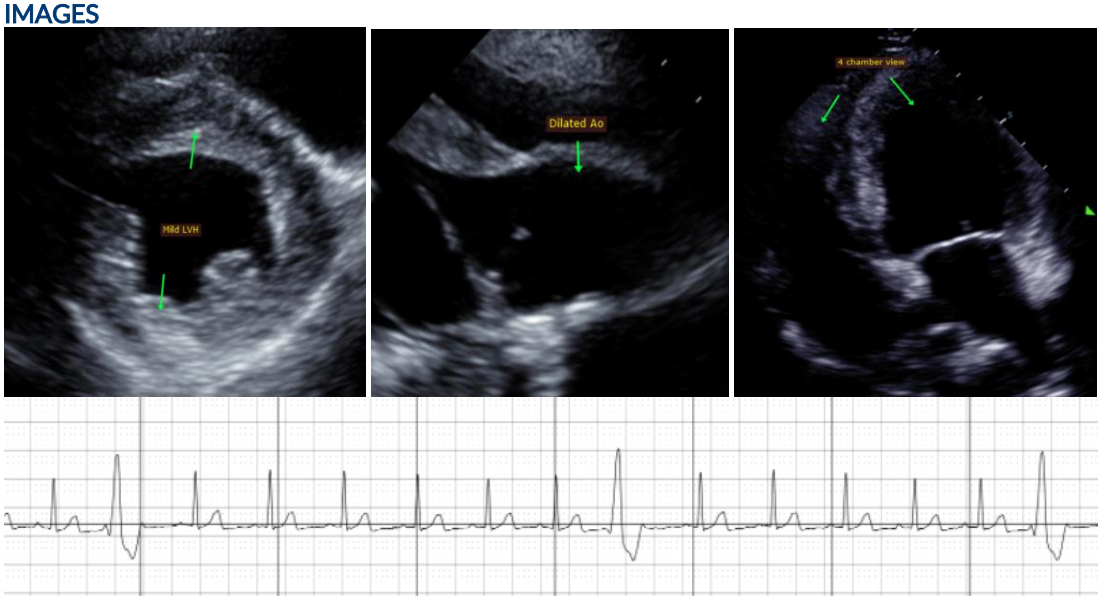
PLAN

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

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