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Pet Animal Ultrasound Service
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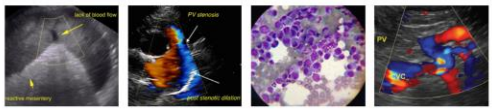


SonoPath
Clinical Sonography & Telecytology
EDUCATIONAL TELECONSULTATION SERVICES™
1-800-838-4268 info@sonopath.com SonoPath.com

PATIENT
Riley Ferreira

SPECIES
Canine

BREED
Boston Terrier

SEX
Female Spayed

AGE
11 years

WEIGHT
15lbs

INTERPRETED BY
Maggie Machen Lamy, DVM DACVIM (Cardiology)

IMAGING PERFORMED BY
Pamela Harrigan, RDCS

HOSPITAL NAME
Anchor Animal Hospital

REFERRING VET
Dr. Lavin

INVOICE
22914

DATE
3/3/22

PRESENTING CLINICAL SIGNS

History: Mammary mass; Cushing's disease, stable. Intermittent arrhythmia noted on exam - not seen on in-house ECG. No murmur asculted. Becomes cyanotic when stressed. Echo prior to anesthesia for mass removal.
-Current medications: Vetoryl 10mg, 1 in a.m., Enalapril 5mg, 1 t SID, Telmisartan 2 0mg, 1/4 t SID.

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 100bpm (range 30-188bpm). The rhythm is sinus in origin, with a p for every QRS complex and vice versa. P and QRS morphologies are positive. A single APC is identified. Frequent sinus arrest with no escape beat or blocked P waves noted.
ECG diagnosis: Sick sinus syndrome.

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 mildly dilated.
Mitral valve: The mitral valve is mildly thickened with no prolapse into the left atrial lumen. Trace mitral regurgitation.
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.
Right atrium: Mild RA enlargement.
Tricuspid valve: The tricuspid valve appears mildly thickened with moderate tricuspid regurgitation; velocity consistent with early pulmonary hypertension.
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

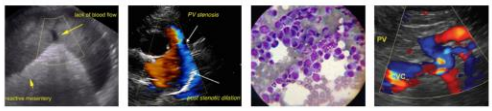
Ao diam (cm)	1.5
LA diam (cm)	2.4
LA:Ao (Swe)	1.6
IVS thickness (cm)	0.8
LVID diastole (cm)	2.1
PW thickness (cm)	1.1
LVID systole (cm)	1.3
FS (%)	38

Doppler Measurements

PV Vmax (m/s)	0.71
AoV Vmax (m/s)	1.5
MR Vmax (m/s)	NM
TR Vmax (m/s)	3.4
TR PG (mmHg)	46

INTERPRETATION OF THE FINDINGS

The echocardiogram shows chronic degenerative valve disease with trace mitral and moderate tricuspid regurgitation. The quantity of TR is significant and mild right atrial enlargement has developed. Mild pulmonary hypertension is noted, which should be monitored going forward. Regardless, these changes do not reflect high risk for complication at this time and monitoring is advised.



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The quantity of MR is insignificant yet the LA is mildly enlarged, this is likely due to the arrythmia rather than underlying structural issues. No additional issues are identified.

Of much greater concern, the ECG findings are most consistent with **Sick Sinus Syndrome (SSS),** which is a form of sinus node dysfunction. The diagnosis of SSS is based upon a combination of what appears to be inappropriate sinus node function (sinus arrest) in addition to abnormal escape foci and APCs. The disease is typically idiopathic in origin and is overrepresented in terrier breeds. The classical form is progressive deterioration of the electrical system resulting in persistent bradycardia/sinus arrest, significant lethargy and collapse. Other possible contributing factors such as high vagal tone, electrolyte abnormalities, Addison's disease, etc. should also be ruled out.

Typically, SSS heart rates range from asystole to tachycardia as seen here, making medical therapy difficult to utilize safely. Treatment of bradycardia (heart rate stimulants) can exacerbate inappropriate tachycardia and I would not institute therapy or an atropine challenge without a holter monitor. Highly recommend a holter monitor, and/or referral to a Cardiologist to determine the full extent of the arrhythmia. Consultation for possible treatment options (medical and/or surgical) will depend upon holter results. An alternative way to proceed in this case is simple monitoring at home given the patient's asymptomatic status. The first sign of progression would be fainting/syncopal episodes. If not recently performed, screening lab work is highly recommended to rule out metabolic derangements, Addison's, etc.

Given that this is an anesthetic screening, this does pose a significant contraindication to anesthesia. Anesthesia is not advised prior to a holter monitor/referral in this case.

RECOMMENDATIONS

- No cardiac medications are clearly indicated prior to further evaluation.
- Consider further arrhythmia evaluation through a holter monitor and/or referral. Alternatively, simple monitoring may be elected in an asymptomatic dog.
- Omega fatty acid supplementation and mild salt restriction may be of some long-term benefit.
- **Elective sedation/anesthesia is not advised.**
- Monitor for development of a cough, labored breathing, exercise intolerance or collapse episodes.

PLAN

- Recheck ECG pending holter results. If declined, a recheck ECG is recommended in 3-4 months, sooner if clinical signs arise.
- Recommend conservative monitoring with a recheck echocardiogram in 6 months, sooner if any development of clinical signs.

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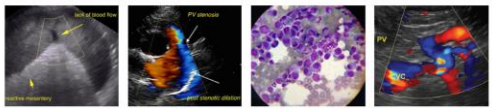

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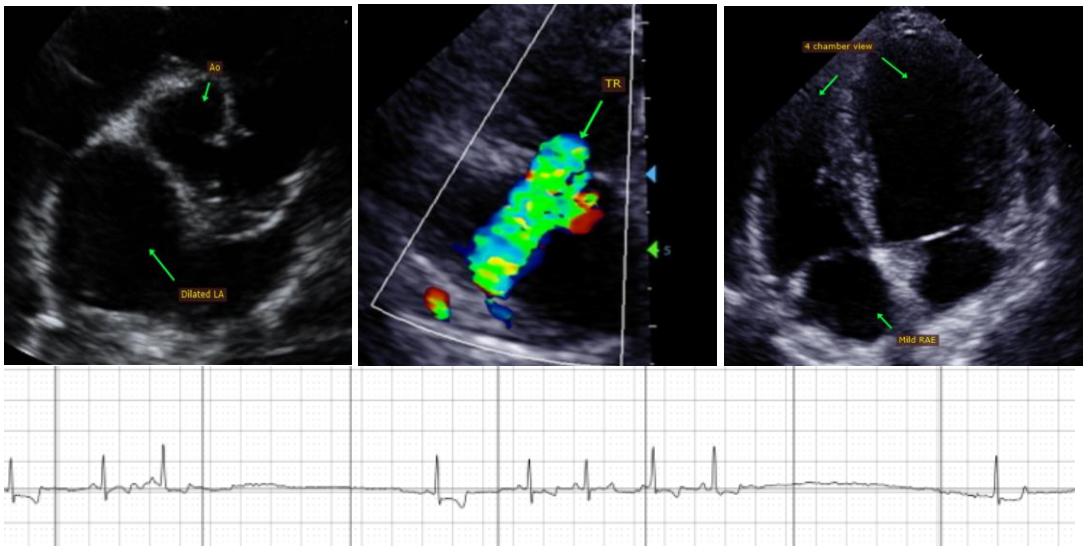
IMAGES



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