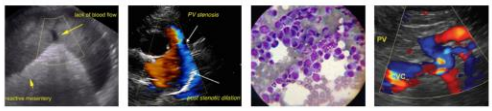
PAUS
Pet Animal Ultrasound Service
4paus.com 781-635-5677



SonoPath
Clinical Sonography & Telecytology
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PATIENT
Zoey Horrigan

SPECIES
Canine

BREED
Miniature Schnauzer

SEX
Female Spayed

AGE
12 years

WEIGHT
25lbs

INTERPRETED BY
Maggie Machen Lamy, DVM DACVIM (Cardiology)

IMAGING PERFORMED BY
Pamela Harrigan, RDCS

HOSPITAL NAME
Falmouth Animal Hospital

REFERRING VET
Dr. Hauser

INVOICE
24217

DATE
5/16/22

PRESENTING CLINICAL SIGNS
History: Grade lll/VI murmur; no clinical signs. BP: 130, 136, 136mmHg. Sedated with torb/alfaxan.

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 20-125bpm). The underlying rhythm is sinus in origin. P and QRS morphologies are positive. Frequent sinus pauses/sinus arrest with the longest being 3 seconds in length. Four blocked P waves are visualized, consistent with 2nd degree intermittent AV block (low grade).
ECG diagnosis: Suspect Sick Sinus Syndrome with sinus arrest and 2nd degree AV block.

ECHOCARDIOGRAM FINDINGS
2D, m-mode, color flow and Doppler imaging is available.
Left ventricle: The LV diameter is mildly increased with adequate function. LV wall thicknesses are normal.
Left atrium: The left atrium is moderately dilated.
Mitral valve: The mitral valve is diffusely thickened with mild prolapse into the left atrial lumen. Moderate 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: Mild RA dilation.
Tricuspid valve: The tricuspid valve appears mildly thickened with moderate 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)	1.7
LA diam (cm)	3.0
LA:Ao (Swe)	1.8
IVS thickness (cm)	0.74
LVID diastole (cm)	3.0
PW thickness (cm)	0.77
LVID systole (cm)	1.6
FS (%)	47

Doppler Measurements

PV Vmax (m/s)	0.42
AoV Vmax (m/s)	1.1
MR Vmax (m/s)	5.4
TR Vmax (m/s)	2.5
TR PG (mmHg)	25

INTERPRETATION OF THE FINDINGS
Chronic degenerative valve disease causing moderate mitral and tricuspid regurgitation. Moderate left atrial enlargement indicates there is relatively low risk for imminent complication, however risk for progression to spontaneous congestive heart failure in the future is elevated. TR is noted; however, pulmonary pressures appear normal. No additional issues are identified.

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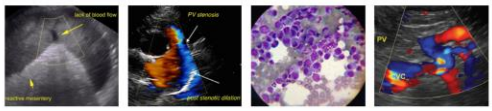

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Given LA dilation, Pimobendan is recommended as below. Assessment of progression in the future will help predict long term outcome, however prognosis is guarded at this stage (B2).

The ECG findings are most consistent with Sick Sinus Syndrome (SSS), which is a form of sinus node dysfunction. These findings may be exacerbated by sedation and reassessment when not sedated is strongly recommended. The diagnosis of SSS is based upon a combination of what appears to be inappropriate sinus node function (pauses/arrest) in addition to brief AV block. The disease is typically idiopathic in origin and is overrepresented in Schnauzers. 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.

This condition poses a significant contraindication for general anesthesia, and it is not advised prior to a holter monitor/referral in this case.

RECOMMENDATIONS

- Institute heart muscle support Pimobendan 0.3mg/kg PO q12h.
- Baseline BP recommended.
- Reassess ECG without sedation to ensure persistence of findings.
- If elected, consider a holter monitor 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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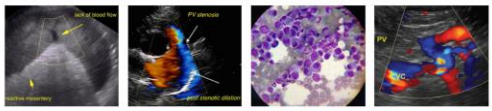

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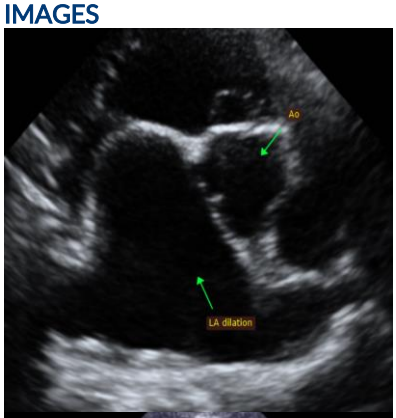
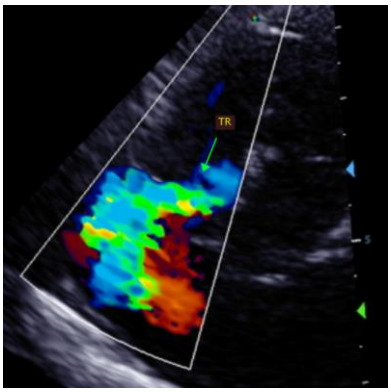
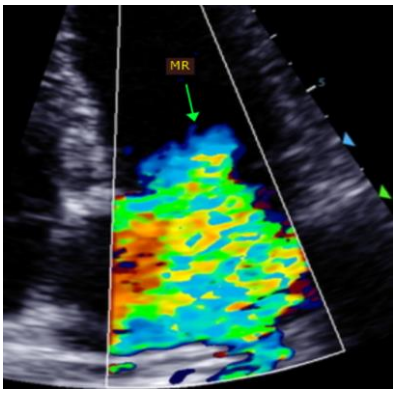
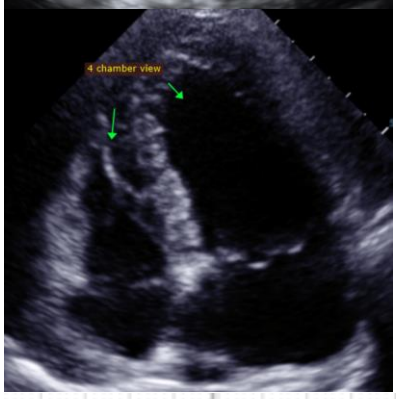
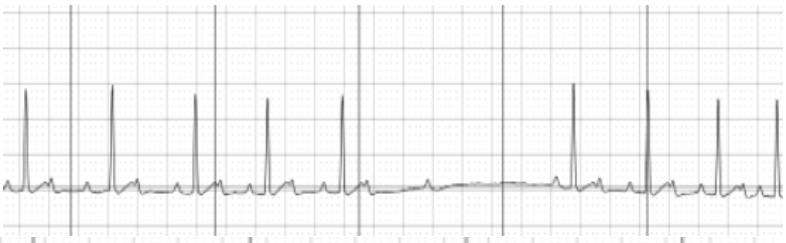
IMAGES

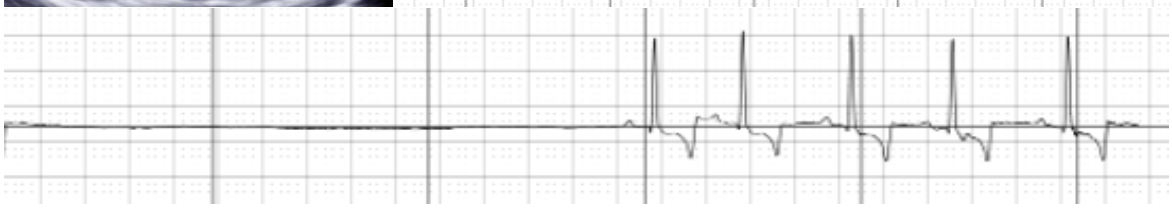












The information and recommendations provided are based on the images presented by the referring veterinarian. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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)
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