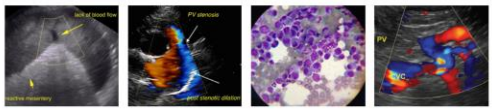
PAUS
Pet Animal Ultrasound Service
4paus.com 781-635-5677



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

PATIENT
Lexi Smith

SPECIES
Canine

BREED
Boxer

SEX
Female Spayed

AGE
8 years

WEIGHT
77lbs

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
24722

DATE
6/10/22

PRESENTING CLINICAL SIGNS

History: Presented for acting "off". Pacing and seems uncomfortable; makes coughing/gagging noises. Also has history Cushing's disease, well-controlled on Vetoryl. On labs: lipase 1856 (slightly elevated), all else within normal limits.
-Radiograph report: No cardiomegaly or CHF.
-ECG report: Single and couplet VPCs. AIVR. Sotalol was recommended; however, was discontinued due to diarrhea.
-Current medications: Vetoryl 60 mg q24h; Sotalol 40 mg q12h.
-Prior abdominal ultrasound study (12/3/21): 1) hepatopathy (vacuolar or metabolic type) 2) right adrenal cranial pole nodule ~ 1.6 x 2 cm (difficult to image due to deep chested conformation and aerophagic breed associated GI).

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 underlying rhythm is sinus in origin with an average heart rate of 150bpm. The vast majority of the tracing shows ventricular bi- and trigeminy. VPCs are monomorphic; primarily singles; however, several couplets are identified. Instantaneous couplet heart rate is 250bpm. No triplets or runs of VT appreciated.
ECG diagnosis: Normal sinus rhythm with frequent single and couplet 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 in dimension.
Mitral valve: The mitral valve is mildly thickened with no prolapse into the left atrial lumen. No 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: Prominent right ventricular diameter and morphology indicating no overt evidence of pulmonary arterial hypertension.
Right atrium: RA mildly dilated.
Tricuspid valve: The tricuspid valve appears normal with no tricuspid regurgitation.
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)	2.3
LA diam (cm)	3.2
LA:Ao (Swe)	1.4
IVS thickness (cm)	1.3
LVID diastole (cm)	3.4
PW thickness (cm)	1.5
LVID systole (cm)	1.6
FS (%)	52

Doppler Measurements

PV Vmax (m/s)	0.88
AoV Vmax (m/s)	1.6
MR Vmax (m/s)	NA
TR Vmax (m/s)	NA
TR PG (mmHg)	NA

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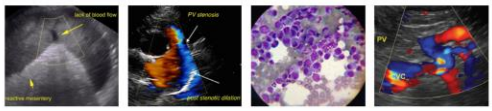

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INTERPRETATION OF THE FINDINGS

The cardiac structure and function are essentially normal in this patient. There is mild right heart prominence/dilation in some views, however this is angle dependent and may be a normal variant. The left heart dimensions are normal, and the systolic function is adequate. No valvular insufficiencies were noted, and no structural issues identified.

Frequent ventricular premature contractions were however confirmed as the cause of the noted arrhythmia. VPCs are 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.

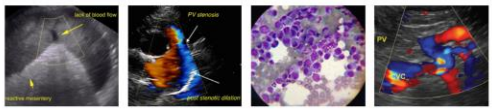
VPCs are a very non-specific finding. They can be primary in origin (such as ARVC), be secondary to significant cardiac disease (not present in this study) or be extra-cardiac in origin; i.e., due to pain, stress, inflammation, cancer, GI disease, DIC/sepsis, etc. In a 6yo Boxer, there is high suspicion for ARVC (most common age of onset 8yo, often asymptomatic). ARVC can occur with or without systolic dysfunction and structural issues, however this should be monitored going forward for any progressive change to function. It is always reasonable to rule out other differentials for VPCs (AUS, tick titers, troponin, etc.) however suspicion is low given the signalment of the patient. 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. ARVC carries a HIGHLY variable prognosis, with some dogs able to remain asymptomatic for extended periods of time, and others developing exercise intolerance, syncopal episode, and refractory arrhythmias/sudden death imminently.

Based strictly upon the amount of arrhythmia present on the available ECG, anti-arrhythmic therapy is indicated. Recommended use of sotalol is based upon the frequency and finding of tight couplets**. Diarrhea is noted previously on this medication; however, the alternative (Mexiletine), is known to cause more frequent GI upset**. Highly recommend supportive GI care during initiation phase in hopes of improving GI signs and tolerating the medication long-term. Once Sotalol is on board, an extended time ECG and/or **holter monitor** is the gold standard next step to allow monitoring of the rhythm throughout 24 hours of a normal day to ensure good rhythm control.

Monitor at home for collapse, exercise intolerance, and/or lethargy. Anesthesia is not recommended until good arrhythmic control is achieved. Lifelong mild to moderate activity restriction is advised.

RECOMMENDATIONS

- Institute sotalol 80mg tablets, give ½ tab PO q12h.
- Fish oil supplementation is recommended for dogs with arrhythmias (1000mg of omega 3 and 6 once to twice daily **as tolerated**). Do not start this medication until Sotalol is well tolerated.
- Lifelong mild to moderate activity restriction.
- Anesthesia is not recommended until good arrhythmic control is achieved. Lifelong mild to moderate activity restriction is advised.



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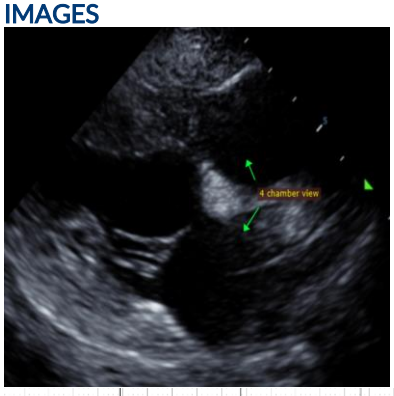
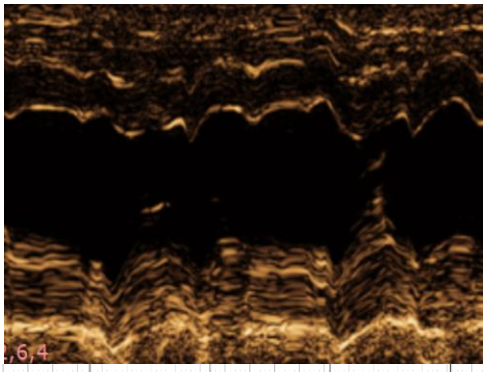
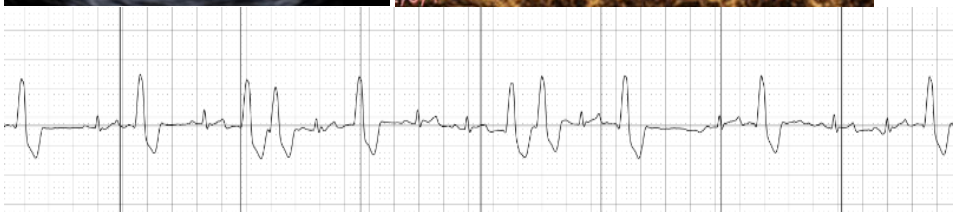
PLAN

- Recheck ECG in 1-2 weeks to assess response (goal is significant reduction in ectopy without a significant change in underlying sinus rate)
- Consider holter at this time if desired.
- Recommend conservative monitoring with a recheck echocardiogram 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