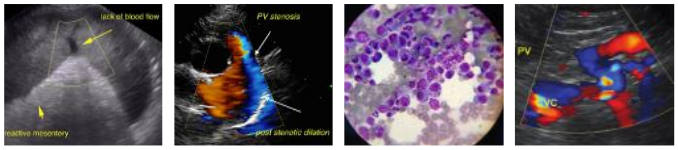
SonoPath
Clinical Sonography & Telecytology
EDUCATIONAL TELECONSULTATION SERVICES™



SonoPath.com
1-800-838-4268 info@sonopath.com

PATIENT
Loco Parsons

SPECIES
Canine

BREED
Boxer

SEX
Female Spayed

AGE
11 years

WEIGHT
66lbs

INTERPRETED BY
Maggie Machen Lamy, DVM, DACVIM (Cardiology)

IMAGING PERFORMED BY
Dr. Karen Ebersole

HOSPITAL NAME
Scanvet

REFERRING VET
Dr. Berberich

INVOICE
26478

DATE
9/21/22

PRESENTING CLINICAL SIGNS
History: Irregular cardiac rhythm found on exam. Asymptomatic.

ELECTROCARDIOGRAPHIC FINDINGS
A six lead ECG is available at 25mm/s; 10mm/mV, 120 seconds. The average heart rate is 150bpm. The rhythm is sinus in origin, with a p for every QRS complex and vice versa. The P wave morphology is positive with a normal dimension. Normal PR. The QRS morphology is positive with normal dimension. MEA is normal. Isolated VPCs are seen throughout; 45 in a two-minute tracing. The VPCs are monomorphic with an RBBB morphology, indicative of an LV origin. Singles only. No supraventricular premature beats, pauses or other dysrhythmias observed.
ECG diagnosis: Normal sinus rhythm with frequent isolated monomorphic VPCs.

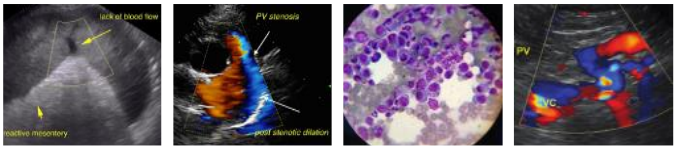
ECHOCARDIOGRAM FINDINGS
2D, m-mode, color flow and doppler imaging is available. Normal mitral valve leaflets with no obvious prolapse into the left atrial lumen. No mitral regurgitation is identified. Borderline left atrial dimension. Normal LV diameter with normal myocardial function. The tricuspid valve appears subjectively normal, and there is no tricuspid regurgitation. The right heart appears normal (subjective). No overt evidence of pulmonary arterial hypertension. The pulmonic and aortic valves are normal in morphology and mobility. Normal pulmonic and aortic outflow velocities. No aortic or pulmonic insufficiency. No pericardial or pleural effusion noted. No cardiac tumors observed.

CARDIAC CHART

CANINE CARDIAC PARAMETERS	MR VMAX (m/s)	TR VMAX (m/s)	LA/AO (Boon method)	LA/AO (Heart Base; Swe)	FS (%)	EF (%)	EPSS (cm)
NORMAL PARAMETER	4.5-5.5	<2.7	1.3	<1.6	28-40	40-100	<0.6
PATIENT	NA	NA	1.4	1.3	45	80	0.4
CANINE CARDIAC PARAMETERS	**HR** (BPM)	**AV VMAX** (m/s)	**PV MAX** (m/s)	**BODY WEIGHT** (kg)	**LA** 2D short axis Base view (cm)	**LVIDd** Avg; 2D and m-mode short axis (cm)	**LVIDs** Avg; 2D and m-mode short axis (cm)
NORMAL PARAMETER	50-100	0.7-1.7	0.7-1.6	BELOW	BELOW	BELOW	BELOW
PATIENT	NM	2.0	1.1	29.9	3.1	4.0	2.2
*Normal chamber parameters expressed as a mean value (SD)				3	1.27 (5.3)	2.46 (2.46)	1.36 (5.5)
BODY WEIGHT DEPENDENT PARAMETERS				5	1.40 (4.5)	2.74 (5.2)	1.60 (4.7)
**Note: All measurements based upon multi-modal images and methods. An average value is reported.*				10	1.50 (3.8)	3.27 (3.5)	2.06 (3.1)
				15	1.83 (2.0)	3.71 (2.4)	2.43 (2.1)
				20	2.02 (1.9)	4.14 (2.2)	2.80 (2.0)
				25	2.18 (2.4)	4.48 (2.9)	3.10 (2.5)
				30	2.33 (3.3)	4.83 (3.9)	3.39 (3.4)
				35	2.48 (4.3)	5.17 (5.0)	3.69 (4.5)
				40	2.62 (5.2)	5.48 (6.1)	3.96 (5.4)
				50	2.88 (7.1)	6.07 (8.3)	4.46 (7.4)

Adapted from June Boon, Veterinary Echocardiography, 1998
Rishniw M and Hollis NE, J Vet Intern Med 2000; 14:429-435
Hansson et al, Vet Rad and Ultrasound 2002
Bonagura et al. Echocardiography: principles of interpretation, Vet Clin North Am 15:1177, 1995

SonoPath
Clinical Sonography & Telecytology
EDUCATIONAL TELECONSULTATION SERVICES™



SonoPath.com
1-800-838-4268 info@sonopath.com

PATIENT

Loco Parsons

SPECIES

Canine

BREED

Boxer

SEX

Female Spayed

AGE

11 years

WEIGHT

66lbs

INTERPRETED BY

Maggie Machen Lamy, DVM, DACVIM (Cardiology)

IMAGING PERFORMED BY

Dr. Karen Ebersole

HOSPITAL NAME

Scanvet

REFERRING VET

Dr. Berberich

INVOICE

26478

DATE

9/21/22

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Overtly normal cardiac structure and function. No significant valve issues are noted. No right heart dilation or structural issues are identified. Systolic function is intact without evidence of DCM.

The ECG does show frequent ventricular premature contractions with periods of trigeminy. 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 senior Boxer, ARVC is possible (although the most common age of onset is 6-8y). ARVC can occur with or without systolic dysfunction or structural issues, however this should be monitored going forward for any progressive changes. Recommend rule out other differentials for ectopy in this senior dog through AUS, tick titers, troponin, etc. 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 in this asymptomatic dog (singles only), anti-arrhythmic therapy is not clearly indicated. A holter monitor should be considered as the next step to allow monitoring of the rhythm throughout 24 hours of a normal day and help determine if treatment is indicated. If declined, consider erring on the side of caution with institution of Sotalol in this case given the frequency seen here. Discussion with the owner is advised.

Fish oil supplementation is recommended for dogs with arrhythmias (1000mg of omega 3 and 6 once to twice daily). Mild activity/stress restriction is advised.

Monitor at home for collapse, exercise intolerance, and/or lethargy. If a holter monitor is elected, this will dictate whether therapy is needed and follow up protocol. I would not recommend anesthesia until the results are available if elected. If declined, an ECG should be monitored during general anesthesia and lidocaine administered in the event of sustained VT or malignant arrhythmias. Avoid stimulants such as atropine or glycopyrrolate unless indicated.

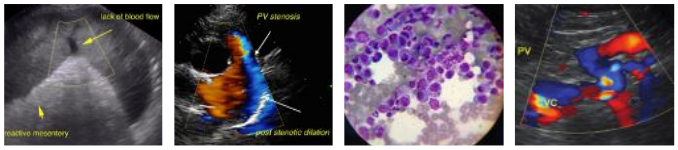
No cardiac medications are indicated at this time. Monitor for any development of cough, labored breathing or exercise intolerance.

PLAN

Consider Holter monitor as discussed. Consider systemic evaluation as discussed. If a holter is declined, institute Sotalol 1-2mg/kg PO q12h with a recheck ECG and/holter in 1-2 weeks.

A recheck echocardiogram is recommended every 6-12 months to screen for development of dilation/dysfunction.

SonoPath
Clinical Sonography & Telecytology
EDUCATIONAL TELECONSULTATION SERVICES™



SonoPath.com
1-800-838-4268 info@sonopath.com

PATIENT

Loco Parsons

SPECIES

Canine

BREED

Boxer

SEX

Female Spayed

AGE

11 years

WEIGHT

66lbs

INTERPRETED BY

Maggie Machen Lamy, DVM, DACVIM (Cardiology)

IMAGING PERFORMED BY

Dr. Karen Ebersole

HOSPITAL NAME

Scanvet

REFERRING VET

Dr. Berberich

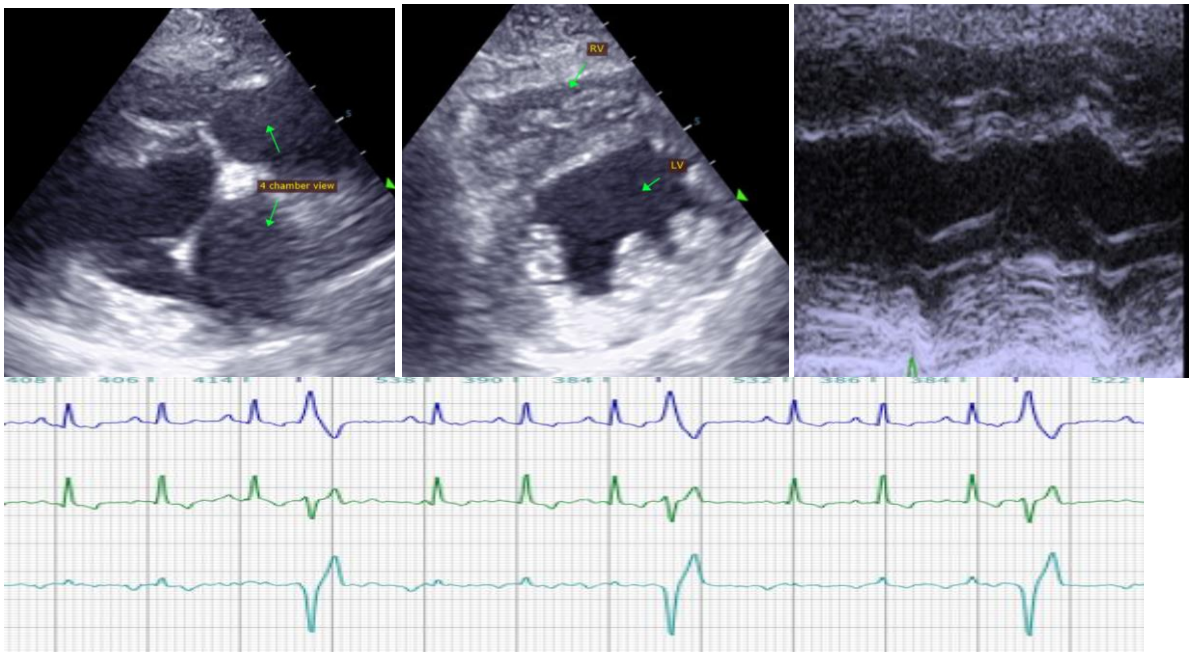
INVOICE

26478

DATE

9/21/22

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