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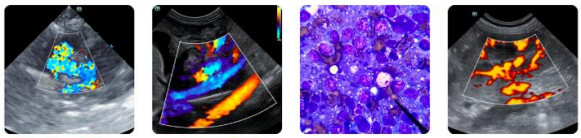

Clinical Sonography & Telecytology
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SonoPath
FOSTERING THE ART OF VETERINARY MEDICINE™
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PATIENT

Ellie Souza

SPECIES

Canine

BREED

Boxer

SEX

Female Spayed

AGE

5 years

WEIGHT

50.7lbs

INTERPRETED BY

Maggie Machen Lamy, DVM, DACVIM (Cardiology)

IMAGING PERFORMED BY

Loetitia Saint-Jacques, LVT

HOSPITAL NAME

Brighton Greens Veterinary Hospital

REFERRING VET

Dr. Janeway

INVOICE

47653

DATE

4/22/26

PRESENTING CLINICAL SIGNS

History: Asymptomatic with newly diagnosed arrythmia on auscultation. ECG showed supraventricular arrhythmia and ventricular arrythmia. Radiographs showed NSF (VHS 10.4). Normal thorax with no evidence of cardiomegaly, pulmonary metastatic disease, or intrathoracic lymphadenopathy. Grade 4/6 heart murmur.
-ECG report (Idexx): sinus rhythm with 6 APCs and 9 VPCS.

ELECTROCARDIOGRAPHIC FINDINGS

A six lead ECG is available at 25mm/s; 10mm/mV. The average heart rate is 180bpm. 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. VPCs throughout; singles only, monomorphic with an LBBB morphology (RV origin). No supraventricular ectopic beats, pauses or other dysrhythmias observed.
ECG diagnosis: Normal sinus tachycardia with frequent isolated VPCs.

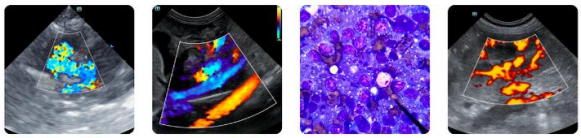
ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. The mitral valve appears mildly thickened with no MR. Slight left atrial dilation. Normal LV diameter with adequate myocardial function. Normal LV wall thickness. The tricuspid valve appears normal in form and function. Trace TR. Normal velocity. No overt evidence of pulmonary arterial hypertension or right heart compensation. The right heart is normal. The aortic valve is normal in morphology and mobility. Normal aortic and pulmonic outflow velocity. No aortic insufficiency. Normal pulmonic valve with no pulmonic insufficiency seen. No pericardial or pleural effusion noted. No obvious cardiac tumors.

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	2.2	NM	1.45	44	80	NM
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	1.3	23.0	2.8	4.1	2.3
*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)

Adapted from June Boon, Veterinary Echocardiography, 1998
Rishniw M and Hollis NE, J Vet Intern Med 2000; 14:429-435



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Hansson et al, Vet Rad and Ultrasound 2002 Bonagura et al. Echocardiography: principles of interpretation, Vet	40 50	2.62 (5.2) 2.88 (7.1)	5.48 (6.1) 6.07 (8.3)	3.96 (5.4) 4.46 (7.4)

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

The cardiac structure and function are essentially normal in this patient. No significant chamber dilation is noted, and systolic function is adequate. The left atrium is slightly enlarged; however, this is typically a normal variant without underlying pathology. No valvular insufficiencies are noted, and no structural issues identified.

Ventricular premature contractions (VPCs) were confirmed on the ECG. 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 5yo Boxer with RV origin VPCs, ARVC is the likely diagnosis. ARVC can occur with or without systolic dysfunction or structural issues; however, this should be monitored going forward for any progressive changes. 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 only single monomorphic VPCs present on the available ECG in this asymptomatic dog, anti-arrhythmic therapy is not clearly indicated. That said, the frequency is concerning and a holter monitor is highly recommended as the next step to allow monitoring of the rhythm throughout 24 hours of a normal day and help determine if treatment is indicated.

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

Holter monitor recommended. Consider systemic evaluation as discussed. If a holter is declined, recommend a recheck ECG is recommended in 2-3 months (sooner if any collapse episodes

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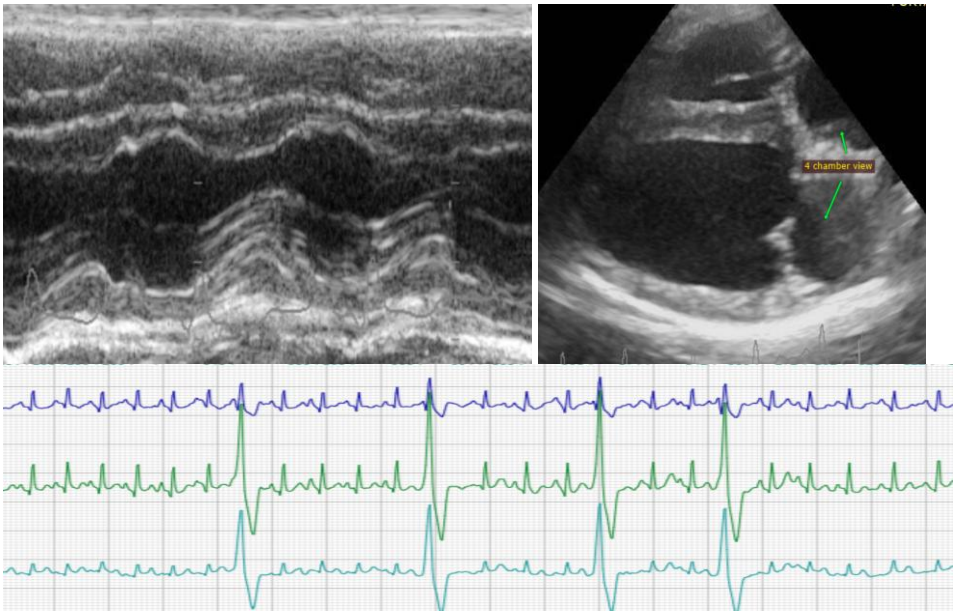
occur).

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

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