


PATIENT

Gryphon White

PRESENTING CLINICAL SIGNS

History: Heart murmur. Newly diagnosed hypothyroid just started Thyrotabs. Has an obvious arrhythmia on auscultation. No current heart medications.

SPECIES

Canine

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, 20mm/mV. The underlying rhythm is sinus in origin with an average heart rate of 120bpm. P for every QRS complex and vice versa. The P and QRS morphologies are positive. Isolated VPCs throughout with periods of trigeminy. Singles only; monomorphic. No supraventricular premature beats, pauses or other dysrhythmias observed.

BREED

Boxer

ECG diagnosis: Normal sinus rhythm with isolated VPCs.

SEX

Male Neutered

ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. Mild mitral valve thickening with no obvious prolapse into the left atrial lumen. Mild eccentric mitral regurgitation is identified. Normal left atrial dimension. Normal LV diameter with normal myocardial function. The tricuspid valve appears subjectively normal, and there is no obvious tricuspid regurgitation. The right heart appears normal (subjective). No overt evidence of pulmonary arterial hypertension. No aortic or pulmonic abnormalities; however, both outflow velocities are mildly elevated. Laminar flow. No aortic or pulmonic insufficiency. No pericardial or pleural effusion noted. No cardiac tumors observed.

AGE

10years

WEIGHT

72lbs

CARDIAC CHART
INTERPRETED BY

 Maggie Machen Lamy,
 DVM DACVIM
 (Cardiology)

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			NM	<1.3	37	70	0.55
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	120	2.2	2.2	32.7	NM	4.1	2.6
*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)
<i>*Note: All measurements based upon multi-modal images and methods. An average value is reported.</i>				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

IMAGING PERFORMED BY

Crystal Hill, RVT

HOSPITAL NAME

The Maples Animal Hospital

REFERRING VET

Dr. Kazienko

INVOICE

23392

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3/31/22



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INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

The only structural abnormality is mildly increased flow velocity through both great vessels. No obvious stenosis is visualized, and in the absence of structural issues this is considered a benign flow abnormality. Baseline lab work is strongly recommended to ensure volume changes are not contributing. Systolic function is intact. A small mitral leak is noted, which may reflect early valve disease or may be physiologic in origin. No significant valve insufficiencies are noted, and no right heart dilation identified.

Ventricular premature contractions were identified 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 this 10-year-old Boxer with RV origin VPCs, ARVC is suspected (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 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, anti-arrhythmic therapy is not clearly indicated. 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

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



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

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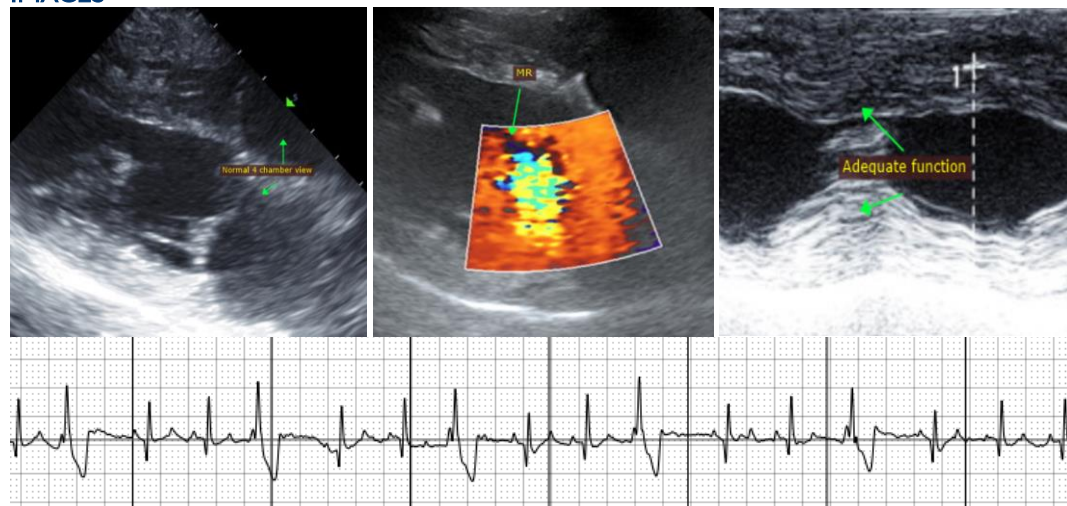
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IMAGES



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.

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