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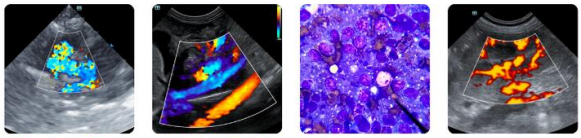

Clinical Sonography & Telecytology
Educational Teleconsultation Services™

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PATIENT

Blue Chandra

SPECIES

Canine

BREED

Weimaraner

SEX

Male Neutered

AGE

7.20.13

WEIGHT

67.7lbs

INTERPRETED BY

Maggie Machen Lamy, DVM, DACVIM (Cardiology)

IMAGING PERFORMED BY

Loetitia Saint-Jacques, LVT

HOSPITAL NAME

Desert Hills Animal Hospital

REFERRING VET

Dr. Coats

INVOICE

46824

DATE

2/12/26

PRESENTING CLINICAL SIGNS

History: Presented for general malaise; lethargic, not eating ~40 hours, O very concerned P at end of his life as he is acting like previous dogs at their end. O has been out of town from January 31-February 9th, was doing fine w/ pet sitter. Some runny stool a few days ago, yesterday a normal bowel movement. Refusing his favorite foods, not wanting to walk. Has been drooly past 48 hours. On physical exam noted P had pale mucus membranes. No murmur; bradycardic at 80 bpm, no arrhythmia.
-Abnormal PE/Chem/CBC/UA Results: CBC- all WNL Hct=47% (37-55%), Platelets=277 (165-500)
Chem 11- ALT=551 (10-118)-was WNL 7/25 cPL<90-WNL
**Patient acutely decompensated & passed away shortly after workup. Was sitting normally in kennel, then passed.*

ELECTROCARDIOGRAPHIC FINDINGS

A six lead ECG is available at 25mm/s; 10mm/mV. The underlying rhythm is sinus in origin with an average heart rate of 88bpm. 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. The MEA is normal. Frequent ventricular rhythm noted throughout, must consistent with AIVR. The HR oscillates from 90-150bpm. Isolated VPCs are noted. No VT appreciated.
ECG diagnosis: Frequent accelerated idioventricular rhythm. Isolated VPCs.

ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. Mild diffuse thickening of mitral valve leaflets with no prolapse into the left atrial lumen. Trace mitral regurgitation with no left atrial dilation. Normal MR velocity. Normal LV diameter with adequate myocardial function. The tricuspid valve appears normal with trace tricuspid regurgitation. Normal velocity. Normal right atrial and ventricular diameter and morphology indicating no overt evidence of pulmonary arterial hypertension. The pulmonic and aortic valves are normal in morphology and mobility. Normal pulmonic and aortic outflow velocities with laminar flow. No obvious aortic or pulmonic insufficiency. Scant pericardial effusion in some views; however, the finding is inconsistent (suspect normal). No pleural effusion noted. No obvious cardiac masses.

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	4.5	2.0	NM	1.3	31	58	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	1.3	1.1	30.7	3.4	4.2	2.9
*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 **Note: All measurements based upon multi-modal images and methods. An average value is reported.*				5	1.40 (4.5)	2.74 (5.2)	1.60 (4.7)
				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)

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	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

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

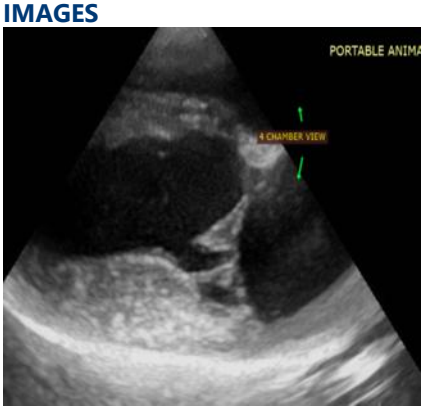
Overtly normal cardiac dimensions and function, with no obvious dysfunction or dilation of the left heart. Trace MR/TR may reflect early valve disease or may simply be physiologic in origin. Follow up is advised should a murmur develop in the future. No significant valvular leaks are visualized, and no evidence of pulmonary hypertension. No obvious tumors are seen associated with the right heart or heart base; however, it is important to note that extra-cardiac masses are easily missed in the absence of effusion. A thoracic CT scan could be considered.

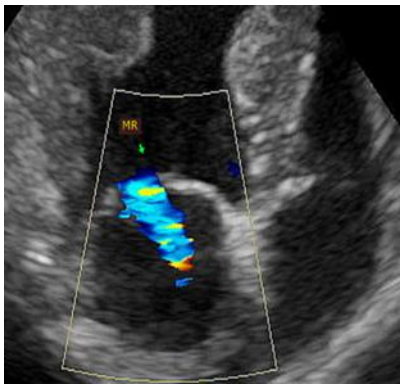
What is seen on the available ECG is most consistent with an accelerated idioventricular rhythm (AIVR). This is based upon the initiation period of the rhythm (lacking a tight premature coupling interval) and the heart rate, which at most is recorded at 150bpm. AIVR is also supported by a patient with systemic illness/malaise and no reported collapse or severe lethargy (which is typical of VT). AIVR is similar to VT in appearance as it is also generated from the ventricle; however, the rate is slower and there is typically no hemodynamic compromise (normal BP/pulses, no clinical signs). The term 'accelerated' is used as a comparison to the sinus rate (in this case the sinus rate is 90bpm while AIVR rate is accelerated at 130bpm). VT is a malignant, highly unstable rhythm with a HR>180-200bpm consistently and accompanies weakness, lethargy/collapse, poor peripheral pulses and hypotension. AIVR does not require therapy and does not generally lead to VT. AIVR typically develops due to extra-cardiac causes (such as adrenal/splenic tumors, GI disease, etc.), which in this case remains undiagnosed. It is assumed that the rhythm seen here is secondary to whatever the primary illness is in this patient rather than being a cause. VPCs are also noted, which appear to be singles in origin.

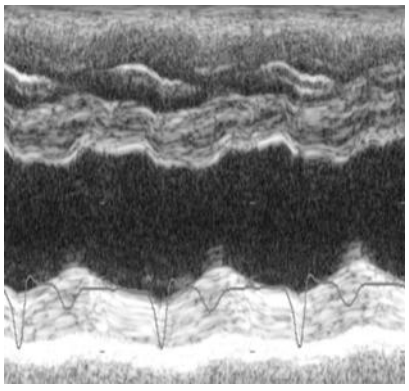
It is unusual for a patient with AIVR to deteriorate and lead to acute sudden death, as was presumably the case here. Systemic evaluation was reportedly only mildly abnormal and exactly what happened in this case remains unclear. A necropsy could be considered for further information to help understand he sequence of events.

Based upon what is seen on this tracing, anti-arrhythmic therapy was not warranted in this case.

IMAGES







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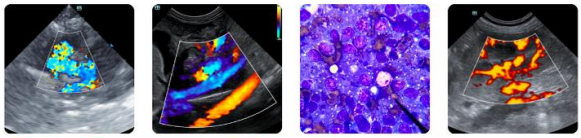

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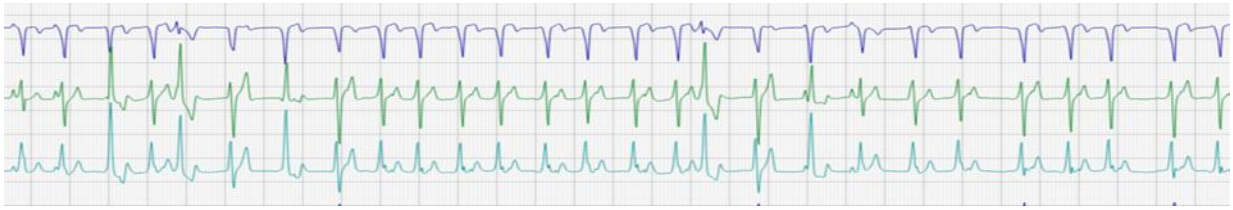

The information and recommendations provided are based on the images presented by the referring veterinarian. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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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