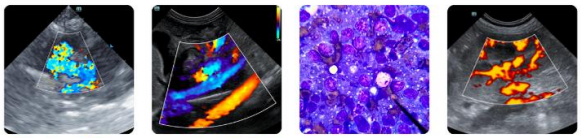


DATE

2.13.26

PATIENT

Zeus Erisman

SPECIES

Canine

BREED

Newfoundland

SEX

MN

AGE

4.11.14

WEIGHT

120lbs

INTERPRETED BY

Maggie Machen Lamy, DVM, DACVIM (Cardiology)

HOSPITAL NAME

Chadwell AH

REFERRING VET

Dr. Gold

INVOICE

46826

PRESENTING CLINICAL SIGNS

History: Came in pale and down in the back end and heart rate 200-230bpm with in house ECG.
-Pertinent abnormal PE/Chem/CBC/UA Results: Lab work WNL.
-Current medications: None.
-Sedation used: Not required to complete full diagnostic ultrasound.
-Pertinent previous ultrasound results: No previous.
-STAT: Requested
-Imaging performed by: Stephanie Warga RDCS, RVT.

ELECTROCARDIOGRAPHIC FINDINGS

A six lead ECG is available at both 25 and 50mm/s; 2mm/mV. Significant motion artifact throughout. The underlying rhythm is atrial fibrillation with a variable ventricular response rate (range 150-250bpm). No identifiable P waves with an irregularly irregular rhythm. VPCs are noted; singles and one isolated couplet. ECG diagnosis: Atrial fibrillation with highly variable ventricular rate. Single and couplet VPCs.

ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. The LV is normal in dimension (LVIDdN: 1.32, LIVDsN: 0.93) with mildly depressed function, yet highly variable depending on heart rate. No left atrial enlargement. The mitral valve appears normal in form and function, with no obvious prolapse into the left atrial lumen. Trace/mild central mitral regurgitation. Normal velocity. The tricuspid valve appears normal with trace/mild tricuspid regurgitation. Normal velocity. No right heart enlargement. The aortic valve is normal in morphology and mobility. No subvalvular ridge present; normal LVOT velocity. No aortic insufficiency. Normal pulmonic valve with no pulmonic insufficiency seen. Normal pulmonic outflow velocity. No effusions 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	5.0	2.5	NM	1.1	23	40	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			0.6	54.4	3.2	4.3	3.3
*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 **Note: All measurements based upon multi-modal images and methods. An average value is reported.* Adapted from June Boon, Veterinary Echocardiography, 1998 Rishniw M and Hollis NE, J Vet Intern Med 2000; 14:429-435				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)
				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)

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

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Interesting case. From a structural standpoint, the only abnormality identified is mild LV dysfunction. Without LA or LV dilation, this is most likely secondary to the arrythmia; however, early DCM phenotype cannot be ruled out. Trace/mild mitral and tricuspid regurgitation appear hemodynamically insignificant. No additional structural issues are seen.

The ECG does confirm an arrhythmia, with atrial fibrillation (AF), as well as single and couplet VPCs. AF is characterized by disorganized contractions of the atria leading to an irregular heart rhythm. The irregular heart rhythm rarely causes clinical signs in dogs. However, atrial fibrillation also usually causes an increase in the heart rate, and this can lead to clinical signs and CHF. Typically, the onset of AF is accompanied by average heart rates >200bpm and leads to biatrial dilation and decompensation to right-sided CHF (tachycardia-induced cardiomyopathy).

What is unusual in this case is the AF rate is extremely variable (150-250bpm), and typically the target of rate control is 140-160bpm. Clearly 250bpm is abnormal; however, in a giant breed dog it is possible lone or primary AF is the underlying issue simply with sympathetic stimulation. Additionally, the atria in this case are both normal, which is the usual reason for development of rapid malignant AF. In summary, my conclusion is this patient has primary/lone AF due to being a large breed dog, that is now sympathetically driven. It is assumed that the dysfunction is entirely secondary to the arrhythmia; however, follow-up is recommended. Rate control is not yet indicated and further workup for systemic signs should be pursued. The VPCs are of course also concerning; however, one single couplet does not clearly warrant therapy either.

Given the totality of the findings, no treatment is necessary at this time. Further workup for paresis/paralysis should be pursued through full systemic screening.

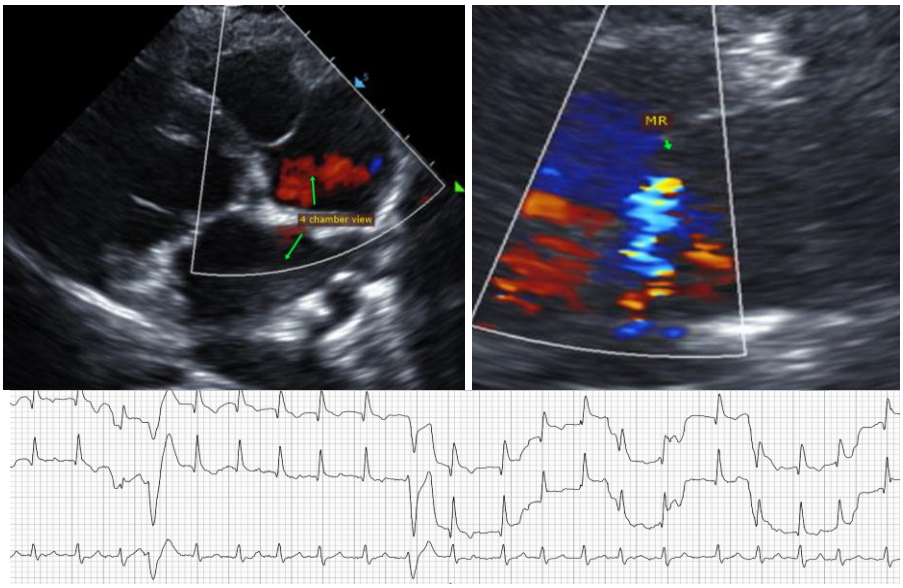
Monitor at home for cough, lethargy, inappetence, collapse/fainting episodes or increase in respiratory rate or effort. Monitoring of sleeping breathing rates is recommended to screen for recurrent CHF at home. Moderate activity restriction is advised. Omega fatty acid supplementation and mild salt restriction may be of some long-term benefit.

PLAN

No medications are clearly indicated. Reassess HR and rhythm in 1-2 weeks. Full systemic screening.

Recheck echocardiogram and ECG are recommended in 6 months to assess for progression, sooner if clinical signs arise

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
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info@sonopath.com