



**PATIENT**

Lani Makanui

**SPECIES**

Feline

**BREED**

DSH

**SEX**

Female Spayed

**AGE**

13 years

**WEIGHT**

NP

**INTERPRETED BY**

Maggie Machen  
 Lamy, DVM, DACVIM  
 (Cardiology)

**IMAGING PERFORMED BY**

Jenna Walsh, CVT

**HOSPITAL NAME**

Eugene Animal  
 Hospital

**REFERRING VET**

Dr. Polk

**INVOICE**

30221

**DATE**

4/12/23

**PRESENTING CLINICAL SIGNS**

History: Bradycardia on exam (65-105bpm). BP: 188mmHg. Elevated ProBNP.  
 -Abnormal PE/Chem/CBC/UA Results: Reticulocyte hemoglobin 14.9, Cre 2.5, BUN 39, TCO2 25, BNP 762, USG 1.015

**ELECTROCARDIOGRAPHIC FINDINGS** \*Note: Single lead ECGs are evaluated as a rhythm strip.

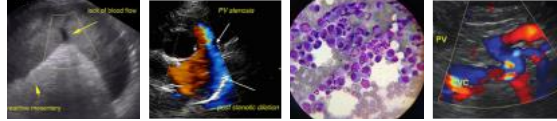
Morphology/MEA cannot be definitively commented on.  
 A single lead ECG is available; 50mm/s, 20mm/mV. 2 separate rhythms are identified. The initial part of the tracing shows a small upright QRS with a heart rate of 111bpm. P waves cannot be identified; however, this may be due to device insensitivity. A wider QRS rhythm takes over with a slightly lower heart rate of 107bpm. Grouped beating then develops with what appears to be ventricular premature contractions. No P waves are seen throughout the entire tracing; however, these are not ruled out.  
 ECG diagnosis: Open for multiform bradyarrhythmia's; suspect sinus arrest or complete AV block with an escape rhythm and VPCs.

**ECHOCARDIOGRAM FINDINGS**

2D, m-mode, color flow and doppler imaging is available. The left ventricular wall is decreased in dimension with regions of remodeling. There is a diffusely hyperechoic endocardium consistent with fibrosis. The LV is mildly dilated. The systolic function is mildly decreased with evidence of diastolic dysfunction as well. The papillary muscles are mildly remodeled. The left atrium is severely dilated and bulbous in appearance. The right atrium is minimally dilated. The right ventricle appears largely normal. The mitral valve is normal with mild MR. Normal velocity. Blood flow through both the LVOT and RVOT is normal in velocity. No obvious pericardial effusion seen. No pleural effusion. No obvious cardiac tumors.

**CARDIAC CHART**

FELINE CARDIAC PARAMETERS	BODY WEIGHT (kg)	HR (BPM)	IVSd (cm) (Moise, Pipers)	LVIDd (cm) (Moise, Pipers)	LWVd (cm) (Moise, Pipers)	FS (%)	EF (%)
NORMAL PARAMETER	-----	150-240	0.35-0.55	<2 (mean 1.5)	3.5-0.55	35-67	80-100
PATIENT	NP	100	0.38	2.0	0.31	35	68
FELINE CARDIAC PARAMETERS	LA/AO (Boon)	LA/AO HEART BASE (Swe) (Abbott)	LA 2D short axis Base view (cm) (Abbott)	LVOT VEL (m/s)	RVOT VEL (m/s)	E max (m/s)	
NORMAL	<1.5	<1.3	<1.2	<1.6	<1.3	<0.9	
PATIENT	1.6	2.0	1.94	0.9	0.9	NM	
<p>*Note: All measurements based upon multi-modal images and methods. An average value is reported.                      Adapted from June Boon, Veterinary Echocardiography, 1998                      Abbott J &amp; MacLean H JVIM 2006;20: 111-119, Moise et al. Am J Vet Res 47:1476, 1986. Pipers et al. Am J Vet Res 40:882, 1979.</p>							



**PATIENT**

Lani Makanui

**SPECIES**

Feline

**BREED**

DSH

**SEX**

Female Spayed

**AGE**

13 years

**WEIGHT**

NP

**INTERPRETED BY**

Maggie Machen  
Lamy, DVM, DACVIM  
(Cardiology)

**IMAGING PERFORMED BY**

Jenna Walsh, CVT

**HOSPITAL NAME**

Eugene Animal  
Hospital

**REFERRING VET**

Dr. Polk

**INVOICE**

30221

**DATE**

4/12/23

**INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS**

The finding of severe left atrial enlargement in the face of decreased wall thickness, diffuse fibrosis/remodeling and LV dysfunction is most consistent with Restrictive Cardiomyopathy (RCM); however, some prior infectious or inflammatory insult to the myocardium cannot be definitively ruled out. Without serial studies, end-stage HCM is also possible (burnout). If the bradycardia is chronic, this can also lead to myocardial damage; however, correlation is speculative.

Regardless of categorical classification, the finding of this degree of atrial dilation puts this patient at high risk for spontaneous congestive heart failure and/or blood clot events, and lifelong medications are warranted as below even without reported clinical signs. I would not utilize Lasix, as the patient is already azotemic; however, any change in breathing will warrant this medication.

The mean survival time for cats with this degree of disease is <1 year; however, an asymptomatic status is always a good start. There will always remain risk for progression to CHF and development of blood clots in the future. Monitoring of sleeping breathing rates at home is recommended as the best way to screen for recurrent CHF at home.

The ECG does show a significant bradycardia which is most likely explained by AV dissociation or complete AV block. This is purely speculative as the limitation of a single lead tracing is a lack of sensitivity (ie P waves may be present and just unable to be visualized). **A complete 6 lead ECG is strongly recommended for a more definitive diagnosis.** There are also ventricular premature beats noted, which suggests a dual issue. Again, given that this patient is asymptomatic, monitoring would be reasonable, and no treatment is warranted based upon what is seen here. That being said, referral should be considered. Any arrhythmic patient carries risk for sudden death, which should be expressed to the owner.

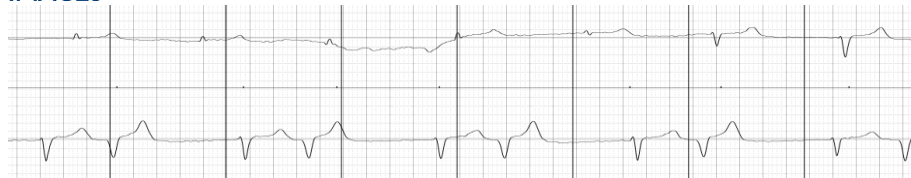
Anesthesia is contraindicated with bradyarrhythmia's.

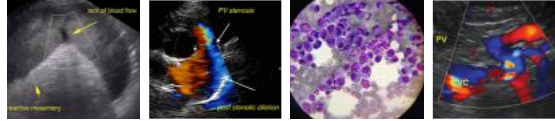
**PLAN**

Consider referral as discussed as a full 6 lead ECG is indicated for advanced evaluation. Screening BP recommended. Institute blood thinner Clopidogrel (Plavix) 75mg tablets; give ¼ tab orally once daily (NOTE: this medication is very bitter on the cut edges). Institute Pimobendan 1.25mg PO q12h. Do not utilize Lasix as the patient is asymptomatic with renal disease.

A recheck echocardiogram is recommended in 6 months to assess progression.

**IMAGES**





**PATIENT**

Lani Makanui

**SPECIES**

Feline

**BREED**

DSH

**SEX**

Female Spayed

**AGE**

13 years

**WEIGHT**

NP

**INTERPRETED BY**

Maggie Machen  
Lamy, DVM, DACVIM  
(Cardiology)

**IMAGING PERFORMED BY**

Jenna Walsh, CVT

**HOSPITAL NAME**

Eugene Animal  
Hospital

**REFERRING VET**

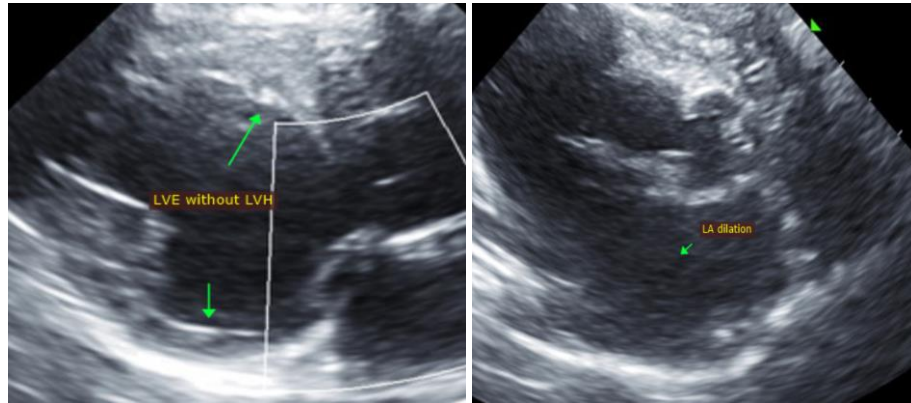
Dr. Polk

**INVOICE**

30221

**DATE**

4/12/23



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