



PATIENT

Anna Mae Klatt

SPECIES

Canine

BREED

Pug Mix

SEX

Female Spayed

AGE

20 years

WEIGHT

20lbs

INTERPRETED BY

Maggie Machen
Lamy, DVM, DACVIM
(Cardiology)

IMAGING PERFORMED BY

Fred Gromalak

HOSPITAL NAME

Kuenzi Family Pet
Hospital

REFERRING VET

Not provided

INVOICE

20746

DATE

8/25/21

PRESENTING CLINICAL SIGNS

History: Seen at Lakeshore Veterinary Specialists on 4/12/20019. Master problems: Ventricular escape beats Significant sinus arrhythmia. Mild thickening of the mitral and tricuspid valves. Functional murmur. Previous medications were L-Thyroxine 0.2mg, Novox (Carprofen) 25 mg, Tramadol 50mg, Heartgard.

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, 10mm/mV. The average heart rate is 80bpm (range 30-150bpm). The rhythm is sinus in origin, with a p for every QRS complex and vice versa. The P and QRS morphologies are positive. No ectopic beats, pauses or other dysrhythmias observed. ECG diagnosis: Profound sinus bradycardia with presumed respiratory variation; rule out high vagal tone versus sinus node dysfunction.

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 central mitral regurgitation with no left atrial dilatation. No LV dilatation with adequate myocardial function. The tricuspid valve appears normal with no tricuspid regurgitation. 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. No pericardial or 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	NM	NA	1.4	1.3	31	60	0.18
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	50	1.5	0.65	9.1	1.9	3.0	2.1
*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)
				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)



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INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Overtly normal cardiac structure and function. No significant valve leaks are appreciated, and systolic function is intact. No additional issues are identified.

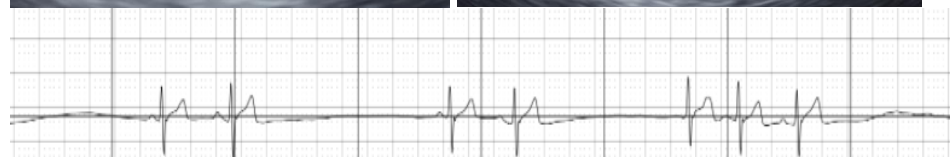
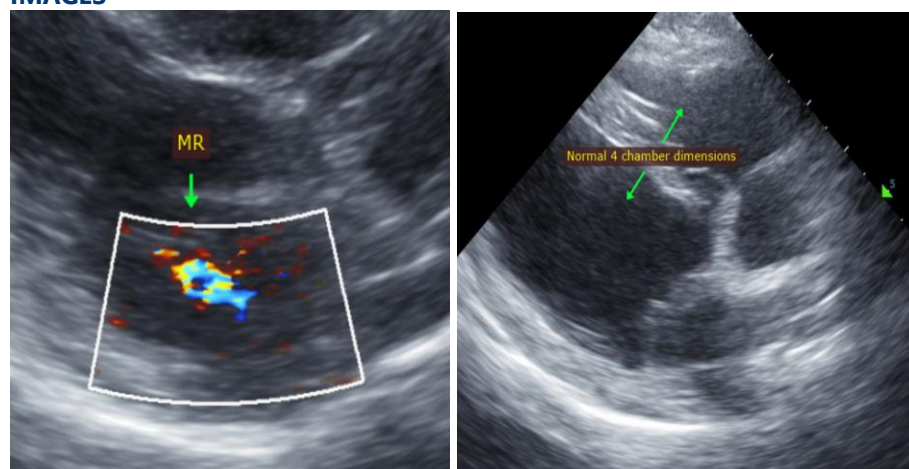
The ECG is most consistent with a sinus arrhythmia with suspected respiratory variation. The concerning finding in this case is the resting heart rate is remarkably low, which should be further explored. This is typically a normal finding secondary to high vagal tone (causes for high vagal tone can be investigated including GI, respiratory, neurologic disease, etc.) or can be inappropriate and reflect sinus node dysfunction. Given that this was noted on the 2019 study, a normal variant/high vagal tone is suspected. The only way to know the difference is to assess response to exercise (does the heart rate/rhythm have a normal response?) or an atropine challenge (0.04mg/kg IV or IM). If the rate does not stimulate appropriately, anesthesia should be aborted and a holter monitor considered as the next step in evaluation with consideration of referral.

Given these findings, no cardiac medications are clearly indicated. Assessment of progression in the future will help predict long term prognosis, which is highly variable at this stage (B1). Omega fatty acid supplementation and mild salt restriction may be of some long-term benefit. Monitor for development of a progressive murmur, cough, labored breathing, exercise intolerance or collapse episodes.

No cardiac contraindication for general anesthesia (pending a normal atropine challenge).

Recommend conservative monitoring with a recheck echocardiogram in 1 year to screen for any progressive issues. Follow up for the arrhythmia should be dictated by response to atropine.

IMAGES





PATIENT

Anna Mae Klatt

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.

SPECIES

Canine

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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Maggie Machen Lamy, DVM

Diplomate of the American College of Veterinary Internal Medicine (Cardiology)

info@sonopath.com

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