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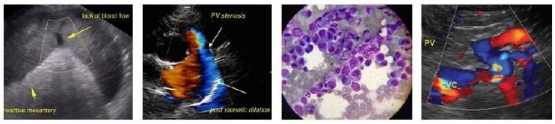


THE FOCAL ZONE
IMAGING PERFORMED BY
289-808-2608 info@thefocalzone.com

PATIENT
Rocky Crocco

SPECIES
Canine

BREED
American Eskimo

SEX
Male Neutered

AGE
11 years

WEIGHT
33.3lbs

INTERPRETED BY
Maggie Machen Lamy, DVM DACVIM (Cardiology)

IMAGING PERFORMED BY
Crystal Hill, RVT

HOSPITAL NAME
Chippawa Animal Hospital

REFERRING VET
Dr. Van Leeuwen

INVOICE
25498

DATE
7/22/22

PRESENTING CLINICAL SIGNS

History: Presented after second collapsing episode (last episode occurring ~ 2months ago). Collapse occurred while at the park following exercise, though early in the AM (not overly hot) and not strenuous exercise. Patient was non-responsive for seconds, had pale mm and then was wobbly when walking, though overall recovered quite quickly PE at presentation: BAR, vitals WNL including pink/moist mm. Ears scant waxy debris AU. Eyes crystalline cataracts OU, 3 mm raised eyelid margin mass lower eyelid near lateral canthus that is pink and lobulated. No murmur appreciated, pulses strong and synchronous. Only medication is Gabapentin.
BP: 211, 204, 212, 209mmHg.

ELECTROCARDIOGRAPHIC FINDINGS *Note: Single lead ECGs are evaluated as a rhythm strip. Morphology/MEA cannot be definitively commented on.

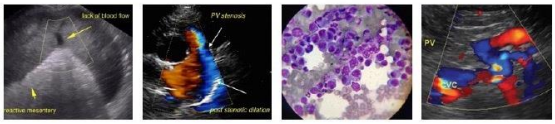
A single lead ECG is available; 25mm/s, 20mm/mV. The average heart rate is 75bpm (range 65-83bpm). P waves cannot be readily visualized due to low voltage complexes; however, a sinus origin is suspected. P for every QRS complex and vice versa. The P and QRS morphologies are positive. No ectopic beats, pauses or other dysrhythmias observed. ECG diagnosis: Suspect normal sinus bradycardia.

ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. Normal mitral valve leaflets with no prolapse into the left atrial lumen. Trivial mitral regurgitation with normal left atrial dimension. Normal LV diameter 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 mildly elevated 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	NM	1.5	34	60	0.5
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	1.4	1.4	15.1	1.5	3.5	2.3
*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				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)



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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	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)

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Overtly normal cardiac structure and function. No significant valve leaks are noted, and no congenital defects visualized. The systolic function is adequate for this breed and there is no chamber enlargement seen.

The ECG is largely unremarkable with a respiratory sinus arrhythmia. It is worth noting that the resting heart rate is relatively low (sinus bradycardia), which is suspected to indicate high vagal tone. No AV block or other issues are identified.

No structural cause of the episodes is identified. A screening ECG does not necessarily rule out malignant intermittent arrhythmias, and a holter monitor can be considered although suspicion is low. More likely is the cause of high vagal tone (such as neurologic disease) is leading to a relatively low rating heart rate. Ensure a normal response to light activity or stress is documented. If there is any question on appropriateness of this response, an Atropine challenge can be administered.

The reported blood pressure is elevated and should be reassessed for accuracy particularly given no reported clinical signs of severe hypertension (retinal changes, etc.) or evidence of LVH on echo. Ideally obtain serial measurements in a controlled, low stress environment and continue until 3 consecutive readings plateau within 5mmHg of variability. If persistently >180mmHg despite a relatively calm demeanor, recommend institution of amlodipine to effect. Additionally, if deemed accurate, screening for predisposing underlying causes of SHT is recommended (Cushings, PLN, adrenal tumor, etc.), as primary disease is relatively uncommon and a rule out diagnosis.

No cardiac medications are indicated. Monitor at home for any further episodes, cough/labored breathing and/or exercise intolerance.

Pending a normal heart rate response to atropine, no contraindicaiton for general anesthesia.

PLAN

Reassess BP is recommended. Consider Atropine challenge (0.04mg/kg IV or IM and assess response) and/or light exercise test. If the response is normal, consider causes of high vagal tone. If the response is abnormal, consider a holter monitor.

Recheck if murmur develops in the future, or any signs of cardiac compromise occur.

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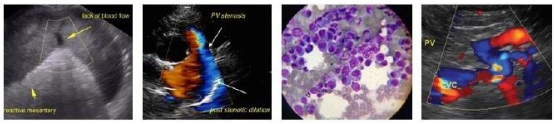

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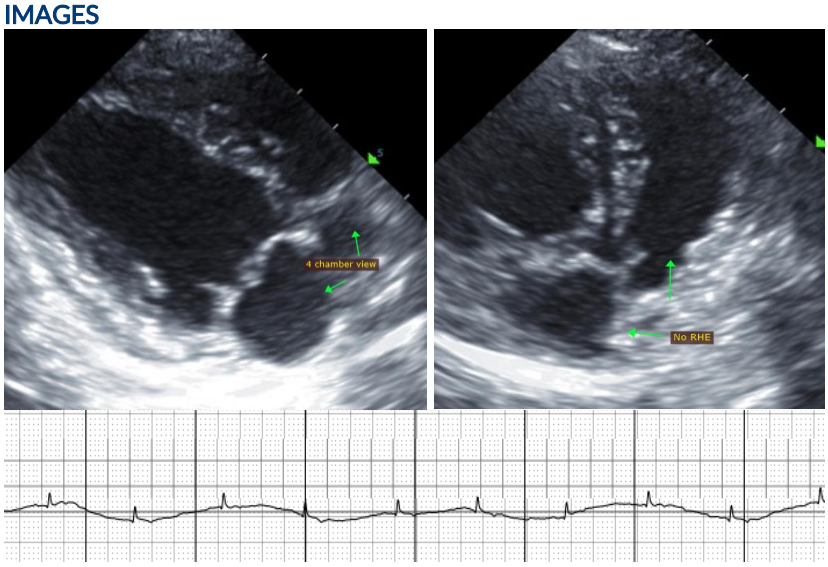
IMAGES



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.

Maggie Machen Lamy, DVM
Diplomate of the American College of Veterinary Internal Medicine (Cardiology)
info@sonopath.com