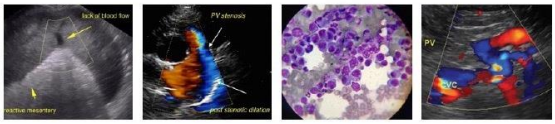
SonoPath
Clinical Sonography & Telecytology
EDUCATIONAL TELECONSULTATION SERVICES™
1-800-838-4268 info@sonopath.com SonoPath.com



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

PATIENT
Lady Hopkins

SPECIES
Canine

BREED
Shetland Sheepdog

SEX
Female Spayed

AGE
8 years

WEIGHT
25.8bs

INTERPRETED BY
Maggie Machen Lamy, DVM DACVIM (Cardiology)

IMAGING PERFORMED BY
Crystal Hill, RVT

HOSPITAL NAME
Acton Vet Clinic

REFERRING VET
Dr. Waldron

INVOICE
30323

DATE
4/18/23

PRESENTING CLINICAL SIGNS

History: Patient originally prescribed Furosemide in November 2021 for coughing. X rays Sept 22 for bloody stools also showed elevated VHS and patient was scheduled for Echo. Results suggested mitral insufficiency, tricuspid insufficiency and pulmonary hypertension. After echo results patient started Vetmedin and Fortekor which was switched to Enalapril. Patient was referred to referral hospital for cardio work up and was told to continue Furosemide, Pimobendan and Enalapril as well as start Theophylline. HR 140. Heart murmur grade 2/6.

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

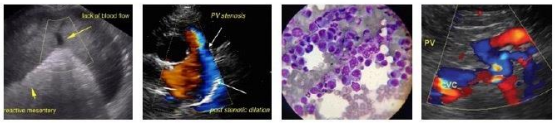
A single lead ECG is available; 50mm/s, 20mm/mV. The average heart rate is 130bpm (range 100-166bpm). The rhythm is sinus in origin, with a p for every QRS complex and vice versa. The P and QRS morphologies are positive. A single blocked P wave is observed, suspected to be secondary to high vagal tone. No ventricular premature contractions, significant pauses or other dysrhythmias observed.
ECG diagnosis: Respiratory sinus arrythmia with a single blocked P wave.

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. Mild eccentric mitral regurgitation with mild left atrial dilation. Normal MR velocity. Normal LV diameter with adequate myocardial function. The tricuspid valve appears normal with mild 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. 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	4.9	2.2	NM	1.5	34	63	0.6
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	160	1.8	1.2	11.7	2.1	4.2	2.8
*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)



PATIENT
Lady Hopkins

SPECIES
Canine

BREED
Shetland Sheepdog

SEX
Female Spayed

AGE
8 years

WEIGHT
25.8bs

INTERPRETED BY
Maggie Machen Lamy, DVM DACVIM (Cardiology)

IMAGING PERFORMED BY
Crystal Hill, RVT

HOSPITAL NAME
Acton Vet Clinic

REFERRING VET
Dr. Waldron

INVOICE
30323

DATE
4/18/23

Hansson et al, Vet Rad and Ultrasound 2002 Bonagura et al. Echocardiography: principles of interpretation, Vet Clin North Am 15:1177, 1995	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

Chronic degenerative valve disease causing mild mitral and tricuspid regurgitation. Lack of significant left atrial enlargement indicates the current risk for complication is low. No concurrent issues such as systolic dysfunction or pulmonary hypertension are noted in this study.

The history in this case is confounding, as the patient has been on Lasix for nearly 3 years without a clear documentation of CHF. Additionally, pulmonary hypertension is noted in the history, which is not appreciated here. In my opinion, this case is unlikely to have ever experienced CHF and Lasix is unnecessary. Further historical information may be beneficial to confirm. Pimobendan is reasonable to continue, as this can reduce LA and LV dimensions. Enalapril is also unnecessary, unless the systemic blood pressure is or was elevated. Further cough support should be considered, such as Hydrocodone, Theophylline, etc. depending on significance of the current clinical signs.

The ECG is most consistent with a respiratory sinus arrythmia and a single blocked P wave. The most likely cause for both findings is high vagal tone, which can develop secondary to respiratory of GI disease, both which are likely in this patient. Ensure the heart rate stimulates adequately with stress and/or light exercise. If there is any question, an atropine challenge can be administered.

Assessment of progression in the future will help predict long term prognosis, which is highly variable at this stage. Omega fatty acid supplementation and mild salt restriction may be of some long-term benefit. Monitor for development of a cough, labored breathing, exercise intolerance or collapse episodes.

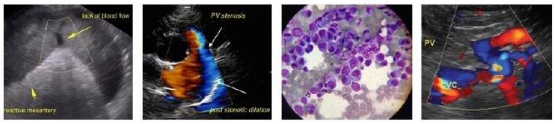
Anesthetic risk is considered mild if needed. Premediated with a vagolytic as discussed. Cardiac protective drug choices (opioid/benzodiazepine premedication, propofol or alfaxalone induction, isoflurane gas) are recommended. Pre-oxygenate for 5-10 minutes prior to induction. Monitor for arrhythmias, hypotension, and hypoxia both intra and post-operatively and intervene as necessary. Mild IV fluid restriction is recommended to avoid fluid overload.

PLAN

Based upon information available, no indication for Lasix and Enalapril therapy and both can be discontinued. Consider obtain further history. Continue Pimobendan 0.3mg/kg PO q12h. Consider further respiratory evaluation, such as repeat CXR, Hydrocodone, etc. Ensure the heart rate stimulates appropriately as discussed.

Recommend conservative monitoring with a recheck echocardiogram in 6 months, sooner if any development of clinical signs.

SonoPath
Clinical Sonography & Telecytology
EDUCATIONAL TELECONSULTATION SERVICES™
1-800-838-4268 info@sonopath.com SonoPath.com



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

PATIENT
Lady Hopkins

SPECIES
Canine

BREED
Shetland Sheepdog

SEX
Female Spayed

AGE
8 years

WEIGHT
25.8bs

INTERPRETED BY
Maggie Machen Lamy, DVM DACVIM (Cardiology)

IMAGING PERFORMED BY
Crystal Hill, RVT

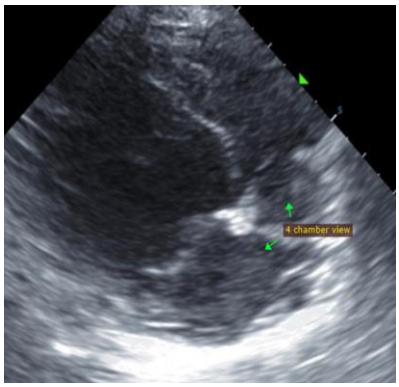
HOSPITAL NAME
Acton Vet Clinic

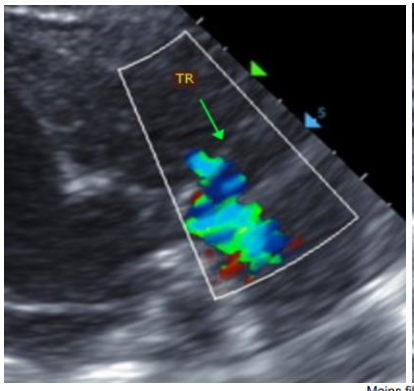
REFERRING VET
Dr. Waldron

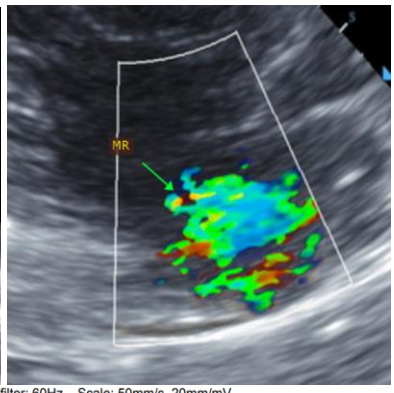
INVOICE
30323

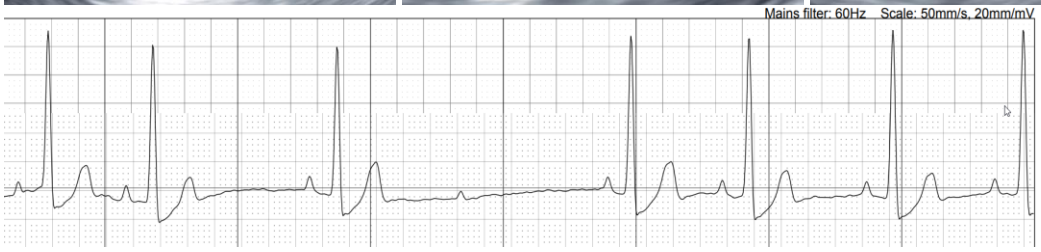
DATE
4/18/23

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