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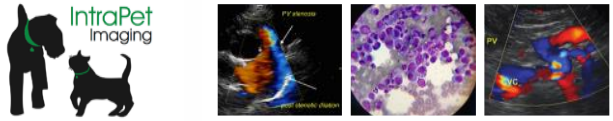

SonoPath
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PATIENT
Barnee Leonard

SPECIES
Canine

BREED
Yorkie

SEX
Male Neutered

AGE
12.5.05

WEIGHT
9.1lbs

INTERPRETED BY
Maggie Machen Lamy, DVM, DACVIM (Cardiology)

HOSPITAL NAME
Greenbrier Veterinary Clinic

REFERRING VET
Dr. Boccanfuso

INVOICE
24465

DATE
5.27.22

PRESENTING CLINICAL SIGNS

History: Presented 4/21 as a new client for follow up/second opinion from a collapse episode. Was seen by another vet that diagnosed collapsing trachea and started on pred and hydrocodone and did improve. At follow up appointment x-rays were taken, and pet has a significantly enlarged heart and moderate to severe broncho-interstitial lung pattern, no obvious collapsing trachea was noted. O states he smoked around pet for years so concerned for chronic bronchitis. On physical no murmur has been noted but lungs have some crackles on both inspiration and expiration. Screening BW showed mild azotemia.
-Pertinent abnormal PE/Chem/CBC/UA Results: 4/21/22- BUN 74, creat 1.9. 5/21/22 – BUN 60, creat 2.0 .
-Current medications: Prednisolone 5 mg - 1/2-tab EOD, Hydrocodone 5 mg - 1/4 q 6 to 8 as needed
-Sedation used: Not required to complete full diagnostic ultrasound.
-Pertinent previous ultrasound results: No previous.
-STAT: Not requested
-Imaging performed by: Andi Parkinson, BS, RDMS.

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. Trivial mitral regurgitation with minimal left atrial dilation. Normal to small LV diameter with adequate myocardial function. Mildly increased LV wall dimensions with mild papillary muscle hypertrophy. The tricuspid valve appears normal with trace tricuspid regurgitation. Normal right atrial and ventricular diameter and morphology indicating no overt evidence of pulmonary arterial hypertension. The pulmonic valve is normal in morphology and mobility. Mild thickening of the aortic valve. Normal pulmonic and mildly elevated aortic outflow velocities with laminar flow. No obvious pulmonic and trace aortic insufficiency. Aortic valve leaflets appear normal. 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	NA	NA	NM	1.4	27	56	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	106	1.2	0.9	4.1	1.5	1.7	1.3
*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.*				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)
				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)

Adapted from June Boon, Veterinary Echocardiography, 1998
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

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

The most significant abnormalities seen here are mild LV hypertrophy and a small aortic leak. These 2 findings are most suggestive of systemic hypertension, and a screening BP (preferably using Doppler) is highly recommended. Volume depletion may also be contributing to this finding, given the appearance of the LV and reported azotemia. If the BP is noted to be persistently >150mmHg, vasodilation with Amlodipine +/- Benazepril is indicated. Additionally, if deemed hypertensive, a full screening for underlying causes is recommended (PLN, renal disease, Cushings, etc.) through lab work +/- AUS. If the patient is NOT hypertensive, consider an infiltrative process or potentially primary HCM as an explanation for mild changes. No additional significant abnormalities are appreciated.

A collapse episode may be related to hypertension, volume depletion or other unknown cause. Follow up is advised should the episodes recur in the future. No structural cause or syncope is seen in this study.

Once BP is recorded and addressed, anesthetic risk is considered mild however cardiac protective drug choices (opioid/benzodiazepine premedication, propofol or alfaxalone induction, iso/sevoflurane gas) are recommended. Monitor for arrhythmias, hypotension, and hypoxia both intra and post-operatively and intervene as necessary. Judicious IV fluid rates are recommended to avoid fluid overload. Avoid heart rate stimulating drugs such as atropine unless clinically indicated.

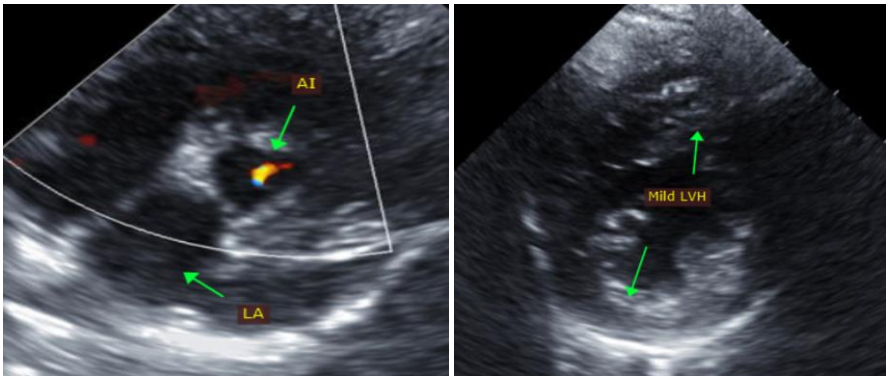
Omega fatty acid supplementation and mild salt restriction may also be of some long-term benefit. Monitor for development of a cough, labored breathing, exercise intolerance or collapse episodes.

PLAN

Baseline BP recommended, if BP >150mmHg, institute amlodipine +/- Benazepril to effect with a target stressed BP <130mmHg. Systemic screening for causes through lab work/AUS.

Monitor BP every 3-4 months due to AI. A recheck echocardiogram is recommended in 6 months to screen 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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