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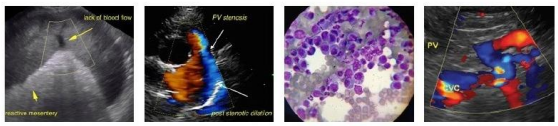


IMAGING PERFORMED BY
pawsonography@gmail.com 530-786-8340

PATIENT
Ziel Higgins

SPECIES
Canine

BREED
Cocker Spaniel

SEX
Male

AGE
11 years

WEIGHT
35.3lbs

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

IMAGING PERFORMED BY
Loetitia St-Jacques, LVT/RVT

HOSPITAL NAME
Fairgrounds Animal Hospital

REFERRING VET
Dr.Wehrman

INVOICE
21661

DATE
10/21/21

PRESENTING CLINICAL SIGNS

History: Crackles and wheezes bilaterally. Possible subtle grade 1 murmur. Lasix and Pimobendan were initiated and owner reports improvement in respiratory signs.
-CXR report: Nonspecific cardiomegaly, otherwise WNL.
-Sedation: Torb.
-Blood pressure: 150, 152, 142mmHg.

ELECTROCARDIOGRAPHIC FINDINGS

A six lead ECG is available at 50mm/s; 10mm/mV. The average heart rate is 140bpm (range 60-110bpm). The rhythm is sinus in origin, with a p for every QRS complex and vice versa. The P wave morphology is positive with a normal dimension. Normal PR. The QRS morphology is positive with normal dimension. MEA is normal. No ectopic beats, pauses or dysrhythmias observed.
ECG diagnosis: Normal sinus rhythm with significant respiratory variation.

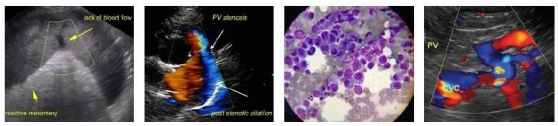
ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. Normal mitral valve leaflets with no prolapse into the left atrial lumen. Trace mitral regurgitation with no left atrial dilation. Borderline LV diameter in both systole and diastole with borderline myocardial function for this signalment. The tricuspid valve appears normal with trace tricuspid regurgitation. Velocity consistent with early pulmonary hypertension. 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	5.6	2.7	NM	1.3	28	50	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	NM	1.7	0.86	16.0	2.4	4.0	2.9
*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)

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



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	50	2.88 (7.1)	6.07 (8.3)	4.46 (7.4)

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

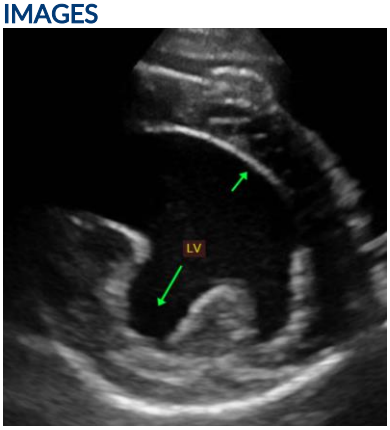
Mild abnormalities are identified. The most significant finding is borderline LV dimensions (LVIDdN 1.77, LVIDdS 1.2) with low normal myocardial function. These may reflect early myocardial disease, or may be a normal variant. Monitoring for progression is advised. Small leaks are noted in the mitral and tricuspid valves, which may reflect early valve disease or may simply be physiologic in origin. There is also evidence of early pulmonary hypertension which is likely secondary to respiratory signs. No additional issues are identified. Consider screening for treatable causes of LV dysfunction, including hypothyroidism or a non-traditional diet. Consider a taurine supplement given the breed predisposition.

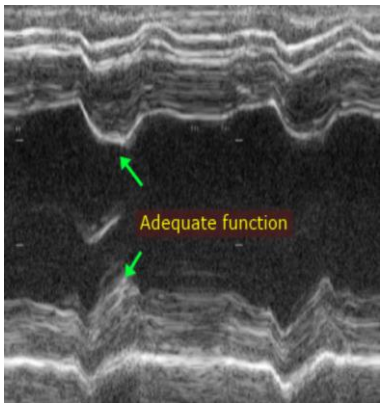
These findings would suggest the respiratory signs are certainly non-cardiac in origin and there is no obvious indication to continue Lasix or Pimobendan therapy. The chest radiographs do not report congestive heart failure and the ECG has evidence of high vagal tone, further supporting this presumption. If symptoms return with discontinuation of the medication, reassessing CXR is recommended. Continued work up for infectious/inflammatory respiratory causes is recommended. Options include Baytril or similar antibiotic, anti-inflammatory prednisone, aggressive hydrocodone, etc. If refractory, may consider TTW/BAL for further information.

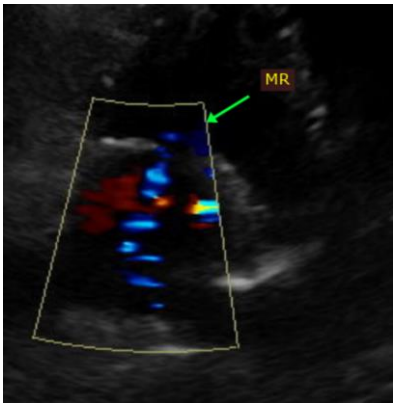
Monitor for development of a heart murmur, cough, labored breathing, exercise intolerance or collapse episodes.

Plan: No obvious indication to continue Lasix or Pimobedan therapy. Consider institute taurine 1000mg PO q12h. Screen for atypical diet, hypothyroidism.
Further respiratory evaluation/treatment may be indicated pending clinical signs.
A recheck echocardiogram is recommended in 6 months, sooner if additional clinical signs or a consistent murmur are identified in the interim.

IMAGES







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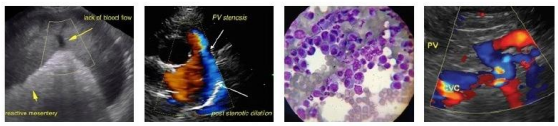

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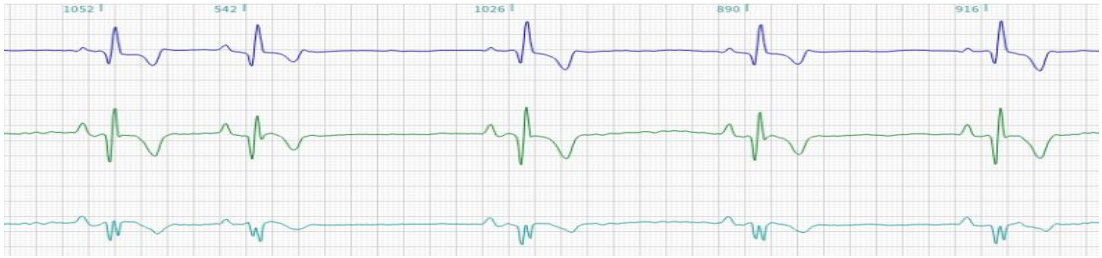

The information and recommendations provided are based on the images presented by the referring veterinarian. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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