



PATIENT

China Noah

SPECIES

Canine

BREED

Maltese

SEX

Female Spayed

AGE

2.23.08

WEIGHT

6.5lbs

INTERPRETED BY

Maggie Machen Lamy,
DVM, DACVIM
(Cardiology)

HOSPITAL NAME

Bel Air Veterinary
Hospital

REFERRING VET

Dr. Schmidt

INVOICE

30623

DATE

5.5.23

PRESENTING CLINICAL SIGNS

History: 3/29/23: Cough has been present for almost 1 month in duration, has worsened over the past 4 days. Grade 4/6 heart murmur, pulse 132. 4/27/23- still coughing, had 2 collapsing episodes. Grade 5/6 murmur, pulse 120.

-Pertinent abnormal PE/Chem/CBC/UA Results: . BUN 44, Creat 1.9, SDMA 20.6, USG 1.023.

-Current medications: Pimobendan 1.25mg ½ BID started 4/27/23, Hydrocodone 5mg ½ q8-12hours PRN, dispensed 3/29/23.

-Sedation used: Not required to complete full diagnostic ultrasound.

-Pertinent previous ultrasound results: No previous.

-STAT: Requested/approved.

-Imaging performed by: Stephanie Warga RDCS, RVT.

RADIOGRAPHIC FINDINGS *NOTE: Images submitted for supplemental information only.

Cardiomegaly with LA enlargement. No obvious evidence of CHF.

ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. The mitral valve is diffusely thickened with prolapse into the left atrial lumen. There is severe eccentric mitral regurgitation present. The MR velocity is normal. There is moderate left atrial enlargement. There is mild left ventricular dilation with increased sphericity. Left ventricular systolic function is hyperdynamic. There is normal systolic flow velocity across the aortic valve. The aortic valve appears trileaflet with normal mobility. The main pulmonary artery is prominent. Mild to moderate right atrial and right ventricular dilation. The tricuspid valve is thickened with moderate tricuspid regurgitation. Velocity is indicative of moderate pulmonary hypertension. Scant pericardial effusion. Small volume pleural effusion. No cardiac masses are seen.

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	5.5	4.2	NM	1.85	52	84	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	184	0.7	0.6	2.9	2.4	3.3	1.6
*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)
<i>*Note: All measurements based upon multi-modal images and methods. An average value is reported.</i>				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 cause of the murmur is chronic degenerative valve disease causing severe mitral and moderate tricuspid regurgitation. Moderate left atrial enlargement indicates the risk for spontaneous congestive heart failure is elevated. There is also concurrent moderate pulmonary arterial hypertension present as dictated by TR and right heart changes.

Pericardial and pleural effusion in a patient with this severe of heart disease is likely due to right-sided congestive heart failure. A left atrial tear would be an alternative rule out; however, this is less likely with concurrent pleural effusion. Regardless, full cardiac support is recommended as below, including Sildenafil therapy. Hospitalization should be considered if the patient is or becomes unstable in the short-term.

It is important to note that PAH develops secondary to a cough and chronic LA dilation, rather than being a primary cause of the cough. The cough itself in this patient with severe heart disease is likely multi-factorial in origin, including mainstem bronchi compression, possible early pulmonary edema, and/or some degree of lower airway disease and pulmonary hypertension. Monitoring of sleeping breathing rates is recommended as the best way to screen for CHF at home and to differentiate this from a mechanical cough. If the cough persists despite cardiac therapy, cough suppression with hydrocodone (up to q4-6 hours) may also be helpful.

Elective anesthesia, steroid or fluid therapy should be avoided lifelong.

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

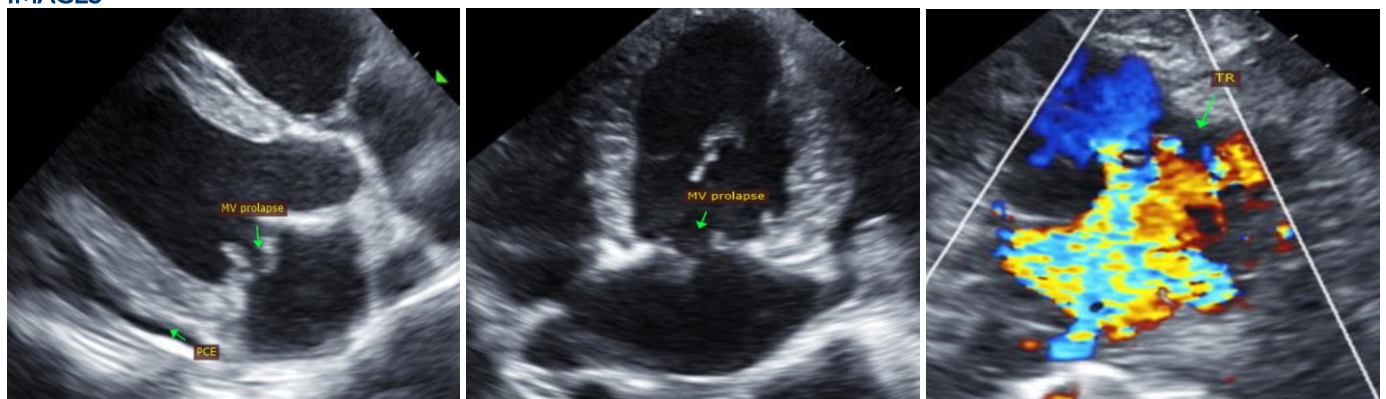
PLAN

Consider hospitalization if the patient appears unstable. Institute Lasix 1-2mg/kg PO q12h. Institute Spironolactone 1-2mg/kg PO q12h. Continue Pimobendan 0.3mg/kg PO q12h. Institute Sildenafil 1-2mg/kg PO q8h. If the cough persists and SRRs are normal, continue hydrocodone with homatropine as a cough suppressant for QOL: 0.5-1ml of 1mg/ml solution PO up to q4-6 hours PRN.

A renal panel and BP are recommended in 1-2 weeks, then every 3-4 months going forward. If BP is >150mmHg, institute ACE-I 0.5mg/kg PO q12h.

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.

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