IMAGING PERFORMED BY

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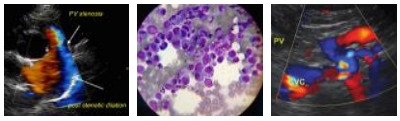

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PATIENT
Daisy Grannas

SPECIES
Canine

BREED
Chihuahua

SEX
Female Spayed

AGE
6.2.10

WEIGHT
3.59lbs

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

HOSPITAL NAME
Northwind Animal Hospital

REFERRING VET
Dr. Cross

INVOICE
28995

DATE
2.15.23

PRESENTING CLINICAL SIGNS

History: Historic grade 4/6 heart murmur. Starting to cough.
-Current medications: None.
-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.

ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. The mitral valve is diffusely thickened with mild prolapse into the left atrial lumen. There is severe eccentric mitral regurgitation present. The MR velocity is decreased. There is marked left atrial enlargement. There is moderate left ventricular dilation. Left ventricular systolic function is hyperdynamic. No significant right atrial and ventricular dilation. Mild thickening of the tricuspid valve with mild TR. Velocity consistent with early pulmonary hypertension. There is normal systolic flow velocity across the aortic valve. The aortic valve appears trileaflet with normal mobility. The main pulmonary artery is normal in diameter. The pulmonic valve is normal in appearance. No AI or PI. Normal RVOT/LVOT velocities. Small volume pericardial effusion. No pleural effusion. No obvious cardiac or extra-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	4.3	3.3	NM	2.8	46	79	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	168	0.7	0.5	1.6	2.5	2.9	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)
**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)
				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 mild tricuspid regurgitation. Marked left atrial enlargement indicates the risk for spontaneous congestive heart failure is elevated. Mild pulmonary hypertension is noted, which is likely secondary with this degree of disease. No additional structural issues are identified.

As an imminent complicating factor there is small volume pericardial effusion present. The two most likely rule outs in a small breed dog with underlying CVD include a LA tear or right-sided CHF. The only way to definitively know the difference is a diagnostic pericardiocentesis; however, in small volume situations like this the risk far outweighs the benefit. Given that the pulmonary pressures are only mildly elevated and the right heart is not significantly dilated, the former is considered more likely. That being said, the patient is only coughing and appears stable making this an atypical presentation. Regardless, full cardiac support is recommended as below. IF the patient becomes unstable, immediate reassessment at an emergency facility is recommended. Activity restriction is advised for the next 1-2 weeks.

Unfortunately, even if we are able to stabilize the situation, the long-term prognosis is poor given the severity of disease, with risk for recurrent spontaneous decompensation, fulminant heart failure, development of arrhythmias and/or sudden death in the future.

Once stabilized, monitoring of sleeping breathing rates is recommended as the best way to screen for CHF at home. 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.

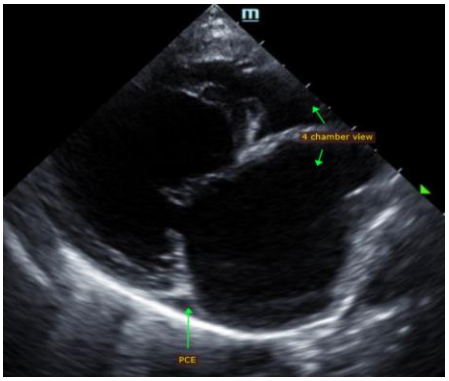
PLAN

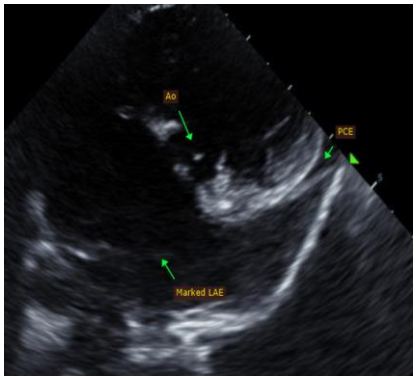
Consider hospitalization if indicated. Oral medications are as follows: Administer Lasix 1-2mg/kg PO q12h. Administer Pimobendan 0.3mg/kg PO q12h. Institute spironolactone 1-2mg/kg PO q12h.

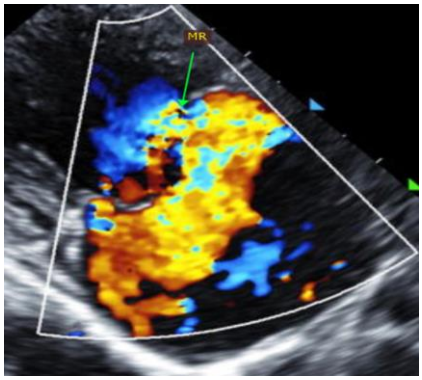
A renal panel, blood pressure are recommended in 1-2 weeks, then every 3- 4 months going forward. Once BP is documented >130mmHg and doing well at home, institute ACEI 0.5mg/kg PO q12h. Consider hydrocodone if needed for QOL.

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.

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