

**PATIENT**

Turk Costa

**PRESENTING CLINICAL SIGNS**

History: Sudden onset of murmur, grade 4/6. Exercise intolerance.

**SPECIES**

Canine

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

Cardiomegaly without obvious evidence of CHF.

**BREED**

Golden Doodle

**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; 25mm/s, 20mm/mV. The average heart rate is 75bpm (range 40-115bpm). The rhythm is sinus in origin, with a p for every QRS complex and vice versa. Grouped beating is seen throughout; however, no prematurity is appreciated. No obvious AV block; however, baseline artifact impedes interpretation. No premature beats, pauses or other dysrhythmias observed.

**SEX**

Male Neutered

ECG diagnosis: Profound respiratory sinus arrhythmia.

**AGE**

13.6 years

**ECHOCARDIOGRAM FINDINGS**

2D, m-mode, color flow and doppler imaging is available. The mitral valve is diffusely thickened with minimal prolapse into the left atrial lumen. There is moderate to severe eccentric mitral regurgitation present. The MR velocity is normal. There is moderate left atrial enlargement; however, a horizontal component is appreciated with septal bowing. There is a borderline left ventricular dimension with adequate function. Mild right atrial and ventricular dilation (subjective). 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. Trace PI. No pericardial/pleural effusion or cardiac masses are seen.

**WEIGHT**

72.2lbs

**INTERPRETED BY**

Maggie Machen Lamy,  
DVM, DACVIM  
(Cardiology)

**CARDIAC CHART**

**IMAGING PERFORMED BY**

J. Pankatz, DVM

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	3.0	NM	1.7	41	72	0.1
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	1.8	1.3	32.7	4.0	4.7	2.8
*Normal chamber parameters expressed as a mean value (SD)				3	1.27 (5.3)	2.46 (2.46)	1.36 (5.5)
<b>BODY WEIGHT DEPENDENT PARAMETERS</b>				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

**HOSPITAL NAME**

Mountain Vista  
Veterinary Hospital

**REFERRING VET**

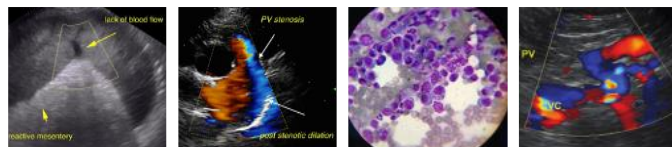
Dr. Pankatz

**INVOICE**

27204

**DATE**

11/1/22



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**INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS**

Chronic degenerative valve disease causing moderate to severe mitral and mild tricuspid regurgitation. The LA is dilated horizontally, which is somewhat unusual; however, the overall enlargement is moderate to severe. The LV is borderline in dimension with adequate function. Mild pulmonary hypertension is noted, which is likely secondary to chronic LA pressure elevation. No additional concurrent issues such as systolic dysfunction are documented.

The ECG shows a bradycardia with significant heart rate variation. This may suggest high vagal tone (assuming the patient was not sedated); however, an appropriate response to stress/activity is strongly recommended. If there is any question on the response, an atropine challenge should be administered (0.04mg/kg IV or IM and assess response), as bradycardia can cause the reported clinical signs.

Given the unusual appearance of the left atrium, the risk for spontaneous congestive heart failure may be elevated and cardiac supportive medications are indicated as below. A weak diuretic (spironolactone) is included given high risk for decompensation in the future even with no reported symptoms. Assessment of progression in the future will help predict long term outcome, however prognosis is guarded at this stage (late B2). Unfortunately, the patient will always be at risk for recurrent CHF, development of arrhythmias/LA tear, syncope and/or sudden death in the future.

Close monitoring for development of associated clinical signs (development of a cough, labored breathing, exercise intolerance or worsening collapse episodes) is recommended. Monitoring of sleeping breathing rates is recommended as the best way to screen for CHF at home.

Elective anesthesia is not advised, as there is high risk for complication. If necessary, cardiac protective drug choices (opioid/benzodiazepine premedication, propofol or alfaxalone induction, iso or sevoflurane gas) are recommended. Pre-oxygenate for 5-10 minutes prior to induction and recover in O2 cage. Monitor for arrhythmias, hypotension, and hypoxia both intra and post-operatively and intervene as necessary. Moderate IV fluid restriction is recommended to avoid fluid overload. Avoid heart rate stimulating drugs such as atropine unless clinically indicated.

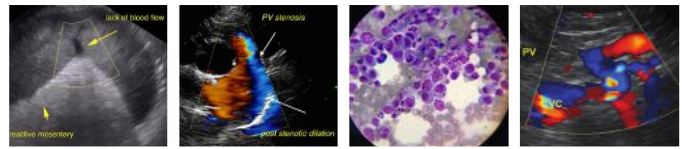
Omega fatty acid supplementation and mild salt restriction may also be of some long-term benefit.

**PLAN**

A screening BP is recommended. Consider further heart rate evaluation as discussed. Administer Pimobendan 0.3mg/kg PO q12h. Administer ACE-I (benazepril or enalapril) 0.5mg/kg PO q12h. Administer spironolactone 1-2mg/kg PO q12h. If patients' clinical malaise does not improve, repeat CXR are strongly recommended.

Monitor renal values in 1-2 weeks, then every 3-4 months lifelong to ensure tolerance of medications.

A recheck echocardiogram is recommended in 4-6 months to screen for progression, sooner if clinical signs arise.



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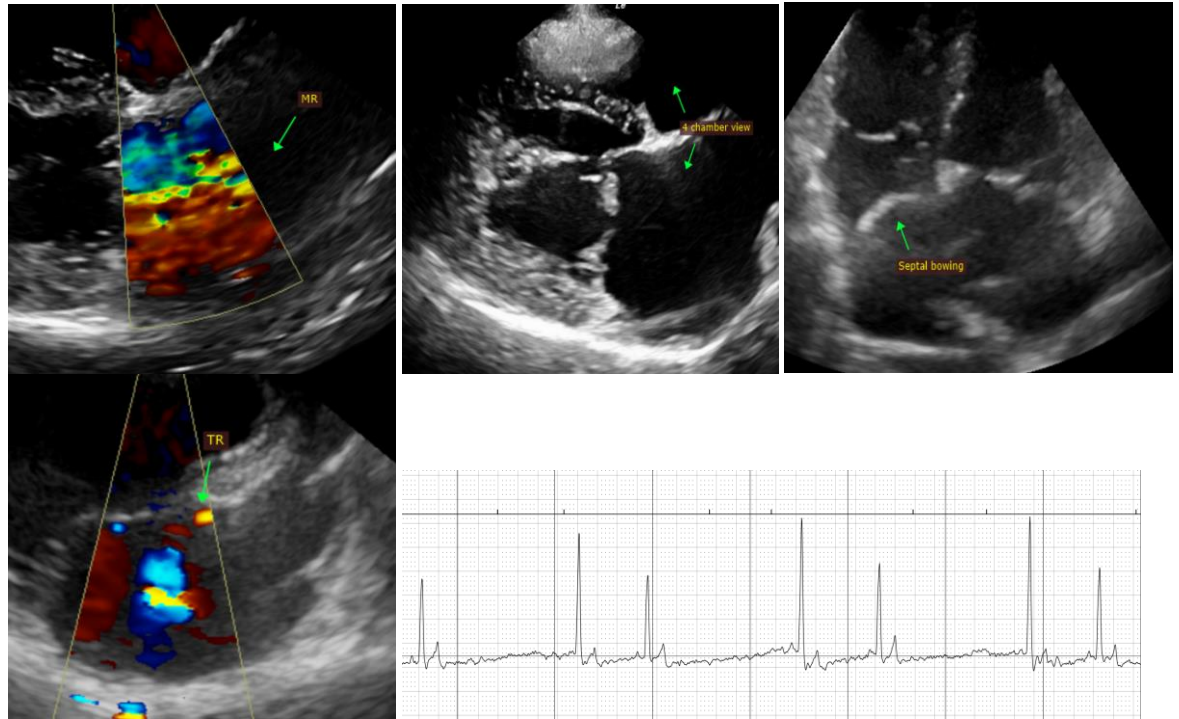
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**IMAGES**



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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