

**PATIENT**

Astro Brasted-Maki

**SPECIES**

Canine

**BREED**

Chihuahua Mix

**SEX**

Male Neutered

**AGE**

13 years

**WEIGHT**

7.25lbs

**INTERPRETED BY**

Maggie Machen  
Lamy, DVM, DACVIM  
(Cardiology)

**IMAGING  
PERFORMED BY**

Sara Hansen

**HOSPITAL NAME**

Santa Clara Animal  
Hospital

**REFERRING VET**

Dr. Brasted-Maki

**INVOICE**

26997

**DATE**

10/19/22

**PRESENTING CLINICAL SIGNS**

History: Recheck echo. Persistent grade 4-5/6 systolic heart murmur. Tachycardic with possible arrhythmia. No clear evidence of CHF. Gradually increasing syncopal episodes. Approximately 2-week history of not feeling well, marked PU/PD (presumed secondary to diuretics) not eating well, and losing weight. By 9-20-22, a slight cough had developed, SRR was over 30 a couple of times, and he had two syncopal events within 3 weeks. Rads showed severe cardiomegaly +/- mild increased pulmonary density in the perihilar area. A trial of Furosemide (1 mg/kg BID) seemed to result in clinical improvement - less coughing, breathing better, "feeling better". Enalapril was started approximately 10-4-22, and within 2-3 days appetite plummeted and severe PU/PD started. Stopping all diuretics resulted in some improvement in appetite and PU/PD, but he also started coughing a little and had another syncopal episode. Since restarted Spironolactone, but not Furosemide. SRR is usually slightly under 30, occasionally is slightly over.

-Abnormal PE/Chem/CBC/UA Results: CBC - WNL - Chem: Na slightly low at 141, Cl slightly low at 103; Kidney values WNL but all increased compared to 9-21-22: SDMA increased from 9 to 12, Creat increased from 0.9 to 1.2, BUN increased from 11 to 29 - T4 normal at 1.7 10-6-22: - Urinalysis: SG 1.012, inactive sediments.

-BP: 100/64 83 , 93/ 67 76, 107/74 85, 132/110 119, 127/99 110mmHg.

-Current medications: Vetmedin 1.25mg am, 0.62mg pm; Spironolactone 6.25mg BID.

-Pertinent previous echo findings (6/2020 MML): Severe MR, moderate to severe LAE, mild LVE, mild to moderate TR, mild PAH: 3.16m/s. LA: 2.1, LV: 2.8. Pimobendan and Spironolactone were started at that time.

**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; 50mm/s, 20mm/mV. The average heart rate is 110bpm (range 103-115bpm). The rhythm is sinus in origin, with a p for every QRS complex and vice versa. The P and QRS morphologies are positive. No ectopic beats, pauses or dysrhythmias observed.

ECG diagnosis: Normal sinus rhythm with respiratory variation.

**ECHOCARDIOGRAM FINDINGS**

2D, m-mode, color flow and doppler imaging is available. Diffuse thickening of mitral valve leaflets with prolapse into the left atrial lumen. Severe eccentric mitral regurgitation with severe left atrial dilation. Normal MR velocity. Mildly increased LV diameter with hyperdynamic myocardial function. The tricuspid valve appears mildly thickened with mild to moderate tricuspid regurgitation. Minimal right heart enlargement. 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.



**PATIENT**

**CARDIAC CHART**

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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	NM	NM	2.3	47	80	0.16
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	125	1.3	0.8	3.3	2.3	3.0	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)
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				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)				

**INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS**

Chronic degenerative valve disease persists with evidence of relative stability. Severe mitral and mild to moderate tricuspid regurgitation are unchanged with slight progression in left heart dimensions. Mild pulmonary hypertension was noted previously, which is suspected to persist here. No additional issues are identified. The ECG is unremarkable with a normal sinus rhythm.

The history suggests possible congestive heart failure, which improved with Lasix therapy although diuretics/ACE-I were poorly tolerated. It is difficult to advise on the use of these medications without chest radiographs, as CHF is a radiographic diagnosis that can only be supported by ultrasound. It is worth noting that only slight progression seen here is remarkable, given the timeframe and I would consider this overall significant, yet relatively stable disease. That being said, congestive heart failure can still develop even without significant progression once the volume overload is significant, as is seen here. Additionally, syncope is noted in the prior history as well and this is of unknown relevance to the current situation. In summary, if the patient did better on Lasix, recommend reinstitute a low dose (BID), without use of an ACE-I and assess response.

Once in CHF, long term prognosis is guarded to poor, however most dogs are able to maintain a good QOL on medications for an average of 8-12 months. Patient will always be at risk for

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recurrent CHF, development of arrhythmias/LA tear, syncope and/or sudden death in the future.

**SPECIES**

Canine

Monitoring of sleeping respiratory rates will be paramount to screen for congestive heart failure 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 worsening collapse episodes in the future.

**BREED**

Chihuahua Mix

**PLAN**

Continue Pimobendan and Spironolactone as prescribed. If the patient did better clinically on Lasix, reinstitute 1mg/kg PO q12h and assess response. Do not utilize an ACE-I in this case.

**SEX**

Male Neutered

Monitor renal values and BP in 10-14 days, then every 3-4 months while on diuretics.

**AGE**

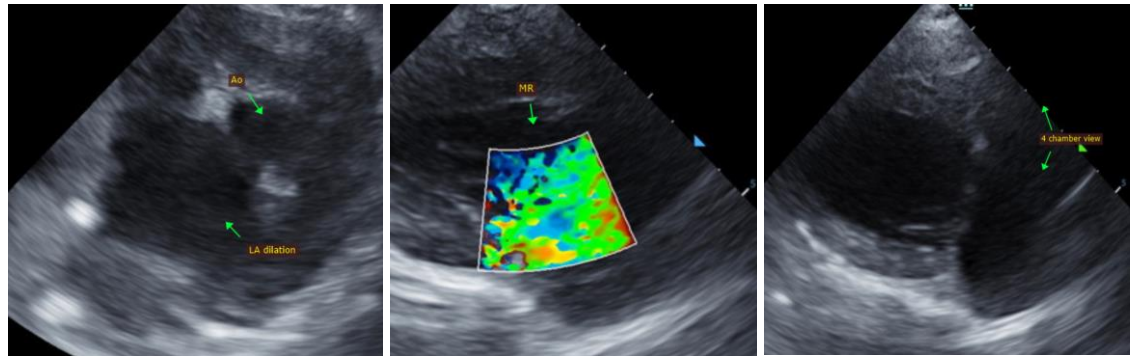
13 years

Recheck: Recommend conservative monitoring with a recheck echocardiogram in 6 months, sooner if any development of associated clinical signs occurs in the interim.

**WEIGHT**

7.25lbs

**IMAGES**



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Maggie Machen Lamy, DVM, DACVIM (Cardiology)

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.

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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.

**REFERRING VET**

Dr. Brasted-Maki

Maggie Machen Lamy, DVM  
Diplomate of the American College of Veterinary Internal Medicine (Cardiology)  
info@sonopath.com

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