



Portable Animal Western Sonography, Inc.

IMAGING PERFORMED BY

pawsonography@gmail.com 530-786-8340

**PATIENT**

Summer Brown

**SPECIES**

Canine

**BREED**

Golden Retriever

**SEX**

Female Spayed

**AGE**

7 years

**WEIGHT**

97lbs

**INTERPRETED BY**

Maggie Machen Lamy,  
DVM, DACVIM  
(Cardiology)

**IMAGING PERFORMED BY**

Loetitia St-Jacques,  
LVT/RVT

**HOSPITAL NAME**

Barnes Veterinary  
Services

**REFERRING VET**

Dr. Barnes

**INVOICE**

31435

**DATE**

6/19/23

**PRESENTING CLINICAL SIGNS**

History: Recently adopted from breeder after having emergency pyometra surgery. Grade 1-2 systolic heart murmur auscultated. Discernible arrhythmia. Not used to high elevation (Lake Tahoe). Eating less than normal, drinking well, no vomiting.

**ELECTROCARDIOGRAPHIC FINDINGS**

A six lead ECG is available at 505mm/s; 10mm/mV. The average heart rate is 80bpm (range 60-100bpm). 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. The mitral valve is mildly thickened with abnormal closure. Slight abnormal systolic motion can be seen. Trace/mild mitral regurgitation. Normal left atrial dimension. Normal LV diameter with low adequate myocardial function. The LV wall thickness is normal. The subaortic region is slightly narrowed consistent stenosis. The tricuspid valve appears mildly thickened with no tricuspid regurgitation. 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 outflow velocity. Mild increase in aortic outflow velocity. Trace aortic insufficiency. No pulmonic insufficiency. No pericardial or pleural effusion noted. No obvious cardiac tumors 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	NM	NA	NM	1.4	32	61	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	90	3.1	1.2	44.0	3.3	4.3	2.9
*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)
<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



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**INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS**

The cause of the murmur is a combination of mild subaortic stenosis (SAS) and mild mitral valve dysplasia. Regardless, the peak gradient seen here is consistent with a mild stenosis (36mmHg) and the LV is not significantly hypertrophied. A small leak is seen in the aortic valve, and lifelong BP monitoring is advised. No additional issues are identified. The ECG is unremarkable with a respiratory sinus arrhythmia.

The prognosis is good in this adult dog with mild disease overall. Monitoring annually is recommend to ensure no additional issues develop with age.

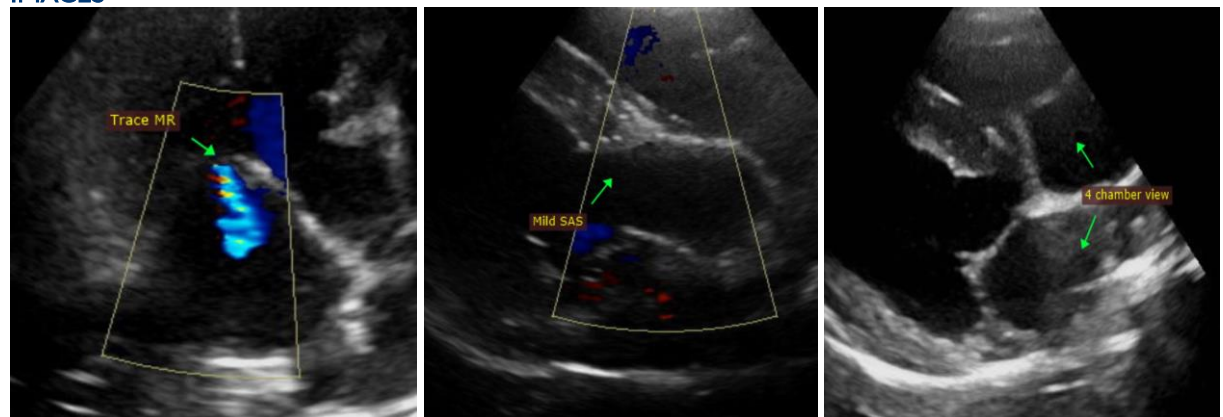
Monitor for development of labored breathing, exercise intolerance or collapse episodes, as SAS patients are more predisposed to development of arrhythmias than to CHF. Mild exercise restriction is advised. Omega fatty acid supplementation (1000mg 1-2x daily) is of some long-term benefit for dogs predisposed to arrhythmias.

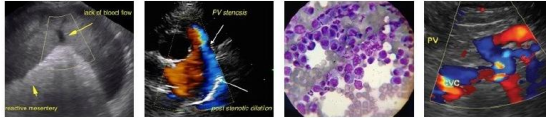
No medications are indicated.

If needed, anesthetic risk is mildly elevated. Premedicate with a vagolytic if persistently low HR. Avoid ketamine and acepromazine due to peripheral vascular effects. Mild IV fluid restriction is advised. Recommend prophylactic antibiotics prior to and during any orthopedic or dental procedure in the future given predisposition to endocarditis.

Recommend recheck echocardiogram annually, sooner if clinical signs arise.

**IMAGES**





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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.

**SPECIES**

Canine

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.

**BREED**

Golden Retriever

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

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