

**PATIENT**

Bryan Graybeal

**SPECIES**

Canine

**BREED**

French Bulldog

**SEX**

Male Intact

**AGE**

4 years

**WEIGHT**

31.8lbs

**INTERPRETED BY**

Maggie Machen Lamy,  
DVM, DACVIM  
(Cardiology)

**HOSPITAL NAME**

Pet Wellness Center

**REFERRING VET**

Dr. Twardus

**INVOICE**

20380

**DATE**

8/3/21

**PRESENTING CLINICAL SIGNS**

History: H/O SAS; 7/9/21 exam episodes of tachypnea, worse after exertion. 5/6 washing machine murmur.  
-Pertinent abnormal PE/Chem/CBC/UA Results: Bloodwork WNL.  
-Current medications: Atenolol 12.5mg bid since dx, Clavamox 125mg and 62.5mg BID through 7/19/21, Enrofloxacin 68 mg 1 SID through 7/19/21, Lasix 20mg 1 BID through 7/19/21.  
-Sedation used: Not needed.  
-Pertinent previous ultrasound results (CVCA 2018): IVSd: 1.0. LVPWd: 1.2 LVIDd: 2.44, FS: 47%, LA: 1.7, AV max: 5.8.  
-STAT: Not requested/Declined.

**ECHOCARDIOGRAM FINDINGS**

2D, m-mode, color flow and doppler imaging is available. The mitral valve leaflets are thickened with no obvious prolapse into the left atrial lumen. Mild to moderate central mitral regurgitation noted with severe left atrial dilation. Normal MR velocity. Mildly increased LV diameter (LVIDdN: 2.0, LVIDsN: 1.3) with depressed myocardial function (FS: 18-20%). The left ventricular walls are moderate to severely hypertrophied consistent with pressure overload (1.1cm globally). Prominent/hypertrophied papillary muscles. Severe sub-aortic narrowing is visualized (see below). The aortic valve is apparently normal in form and function. Severe sub-aortic stenosis is present, with an LVOT velocity of >5.0m/s. Mild aortic insufficiency. Prominent coronary arteries can be seen. The tricuspid valve appears subjectively normal, no tricuspid regurgitation. Normal right atrial and ventricular diameter and morphology. The pulmonic valve is normal in morphology and mobility. No pulmonic insufficiency. No pericardial or pleural effusion noted. No cardiac tumors identified.

**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	6.0	NA	NM	2.1	21	43	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	138	5.1	0.92	14.4	3.4	4.2	3.3
*Normal chamber parameters expressed as a mean value				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

## INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Severe sub-aortic stenosis (SAS) persists with evidence of myocardial failure. Previously normal LV internal dimension is significantly increased with a fractional shortening of 20%. The pressure gradient through the stenosis is similar to previous without a change in LV wall dimensions. Most importantly the LA is severely dilated, reflecting high risk for decompensation.

This is somewhat unusual to see in severe SAS cases and likely reflects myocardial failure. The ideal option in this case would be **referral to CVC given a previous relationship and complex end-stage congenital disease**. If this is declined, medical management can be attempted as below; however, prognosis is guarded to poor. Consider possible contributing issues such as grain free diet that may be leading to LV dysfunction. The radiographs are concerning for congestive heart failure and the patient has developed symptoms at home. Continued Lasix therapy is recommended. Pimobendan is controversial given the outflow tract obstruction; however, with myocardial failure this may be useful. Finally, Atenolol is of debatable benefit at this point; however, given a resting heart rate of 140bpm on exam, I would continue at the prescribed dose for now.

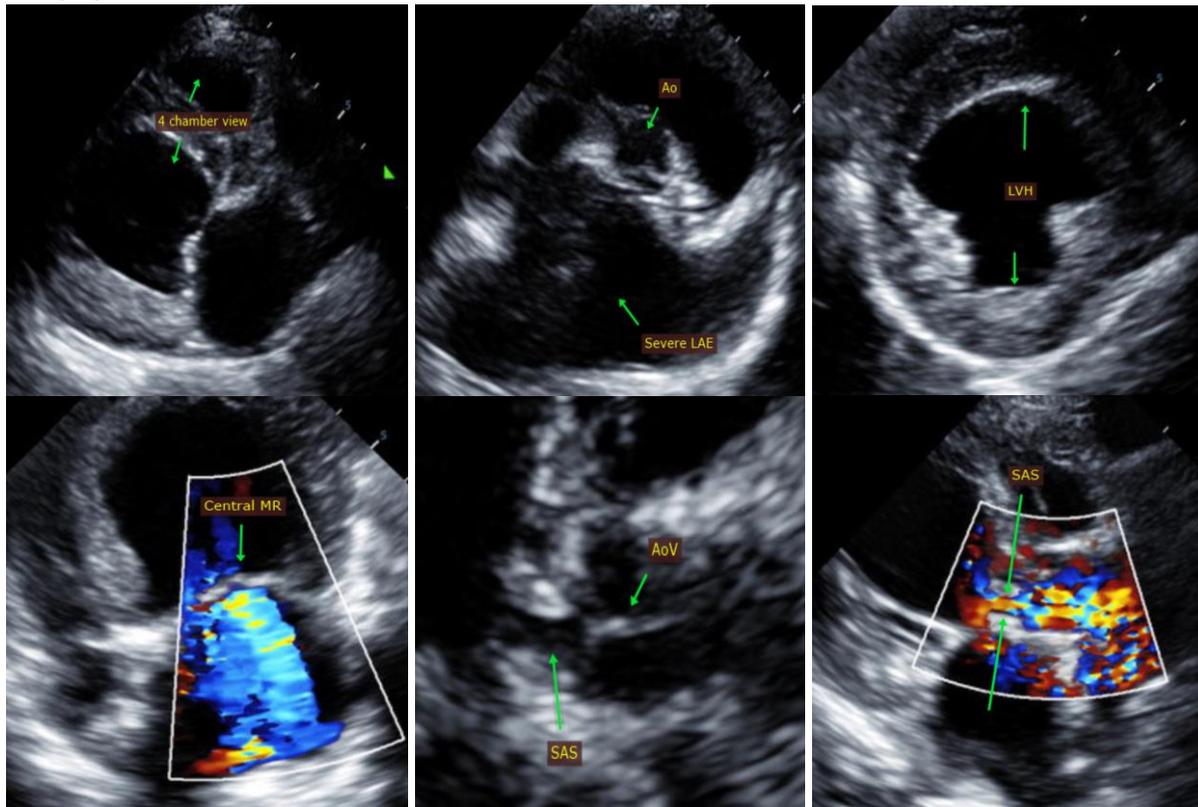
Prognosis is poor and we are attempting medical management of the short-term. The patient will always be at risk for worsening lethargy, collapse, congestive heart failure and/or sudden death going forward. Baseline ECG is recommended. Moderate exercise restriction is advised.

## PLAN

Highly recommend referral for reassessment at CVC. If declined, continue Atenolol as prescribed. Administer Lasix 1-2mg/kg PO q12h. Institute Pimobendan 0.3mg/kg PO q12h. Consider diet history. Supplement taurine 1000mg PO q12h. Reassess clinical status, renal panel and heart rate in 1-2 weeks. If any further decline or bradycardia develops, consider discontinue Atenolol.

Recommend recheck echocardiogram in 6 months to screen for progression.

## 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.

**Maggie Machen Lamy, DVM  
Diplomate of the American College of Veterinary Internal Medicine (Cardiology)**