



## PATIENT

Stanley Curran

## SPECIES

Canine

## BREED

West Highland Terrier

## SEX

Male

## AGE

6 years

## WEIGHT

17.6lbs

## INTERPRETED BY

Maggie Machen Lamy,  
DVM, DACVIM  
(Cardiology)

## IMAGING PERFORMED BY

Jacque Pankatz,  
DVM

## HOSPITAL NAME

Mountain Vista  
Veterinary Hospital

## REFERRING VET

Dr. Pankatz

## INVOICE

31618

## DATE

6/29/23

## PRESENTING CLINICAL SIGNS

History: Heart murmur first detected at 7 weeks of age. Examined by Dr. Lynne O'Sullivan DACVIM cardiology at OVC in 2016 at 14 weeks of age. Diagnosed with severe PS and small muscular VSD with bidirectional shunting PCV 38 TP 6.0 BV was recommended with some risks discussed, and atenolol in the meantime. Owners elected not to pursue surgery and patient was never started on a beta blocker. Stanley has been stable over the years with occasional bouts of exercise intolerance. Exercise intolerance now worsening, especially when stressed. Owner does not wish cardiology referral but agreed to a telemedicine consultation for medical management options at this stage, and prognosis.

-Abnormal PE/Chem/CBC/UA Results: Current PCV/TP 45%/7.4.

## ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. Normal mitral valve leaflets with no obvious prolapse into the left atrial lumen. No obvious mitral regurgitation. Normal left atrial dimension. Normal LV diameter with normal myocardial function. The LV wall appears normal. The tricuspid valve appears mildly thickened with mild insufficiency seen. Elevated TR velocity. Moderate right atrial dilation. Severe right ventricular hypertrophy and remodeling indicative of pressure overload. Moderate right ventricular dilation. Pulmonic outflow velocities are severely elevated at >7m/s. The stenosis is at the level of the valve with a significantly thickened and tethered morphology. Moderate pulmonic insufficiency. There is moderate post-stenotic dilation of the main pulmonary artery. The aortic valve appears to have normal morphology and mobility. The previously diagnosed VSD is difficult to visualize; however, doppler is suggestive of a bidirectional shunt. No pericardial or pleural effusion noted. No tumors.

## 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	NA	5.5	NM	1.3	58	92	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	NM	1.6	7.5	8.0	2.0	2.1	1.1
*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



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## INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Severe pulmonic stenosis persists with marked right heart enlargement. The degree of obstruction is severe based upon the velocity/pressure gradient across the pulmonic valve and the secondary hypertrophy and remodeling of the right ventricle, which is not surprising given the age of the patient. There is RA dilation and mild TR as well, indicating significant pressure overload and the risk for CHF will be elevated going forward. The previously diagnosed bidirectional VSD is apparent on spectral doppler imaging with some left to right flow persisting. No additional issues are identified.

Given that referral has been declined and the patient is developing clinical signs, Atenolol is certainly recommended in this case as below. Mild activity restriction is recommended life-long.

Prognosis is guarded long-term, although a lack of CHF in a 6-year-old dog is certainly a good sign. Patient will always be at risk for development of associated clinical signs (collapse, abdominal distention, cough, labored breathing) and/or sudden death.

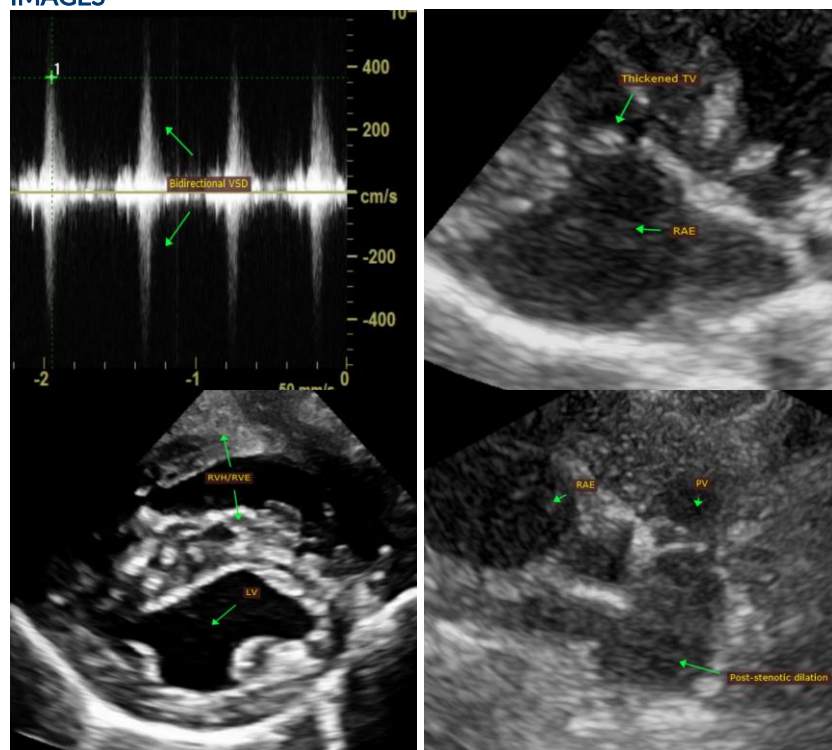
Anesthetic risk is mild to moderate at this time. Pre-oxygenate for 5-10 minutes prior to induction. Avoid heart rate stimulating drugs such as atropine or glycopyrrolate unless absolutely necessary. Avoid vasodilators such as acepromazine. Mild IV fluid restriction is advised.

## PLAN

Institute atenolol to effect: 25mg tabs, ¼ tab PO BID to start (up-titrate to desired effect). Goal is to suppress heart rate <120bpm even with stress/activity.

Recommend recheck echocardiogram in 1 year, sooner if any additional signs arise.

## IMAGES





**PATIENT**

Stanley Curran

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**

West Highland Terrier

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

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