



**PATIENT**

Sam Dodd

**SPECIES**

Canine

**BREED**

Beagle

**SEX**

Male Neutered

**AGE**

12 years

**WEIGHT**

31lbs

**INTERPRETED BY**

Maggie Machen Lamy,  
DVM, DACVIM  
(Cardiology)

**IMAGING PERFORMED BY**

Sarah Pender, CVT

**HOSPITAL NAME**

SVS Imaging QC

**REFERRING VET**

Dr. Dodd

**INVOICE**

26161

**DATE**

9/1/22

**PRESENTING CLINICAL SIGNS**

History: Has been on medications for CHF since June 2019; has been on benazepril since 2015; was diagnosed elsewhere with heart disease. Recently diagnosed with pneumonia. Treated with antibiotics. Improved. Current symptoms - none, doing well.

-Current medications: Pimobendan compounded, 3.75mg tablets, 1 in the morning and 2.5 in the evening, Furosemide 30mg twice daily, Benazepril 5mg twice daily

**ECHOCARDIOGRAM FINDINGS**

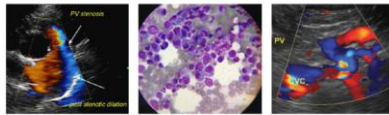
2D, m-mode, color flow and doppler imaging is available. The mitral valve is mildly thickened with no obvious prolapse into the left atrial lumen. Trace mitral regurgitation. Normal left atrial dimension. Normal LV diameter with normal myocardial function. The LV wall is normal. The tricuspid valve appears mildly thickened with mild to moderate tricuspid regurgitation. Elevated TR velocity. Moderate right atrial dilation. Moderate right ventricular hypertrophy and remodeling indicative of pressure overload. Septal flattening in systole. Mild right ventricular dilation. Moderate elevation of pulmonic outflow velocities at the level of the valve. The PV leaflets are elongated and tethered. Mild post-stenotic dilation of the main pulmonary artery. Mild pulmonic insufficiency. The aortic valve appears to have normal morphology and mobility. No AI. No obvious cardiac shunts are visualized. No pericardial or pleural effusion noted.

**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	3.8	NM	1.4	65	94	0.3
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	78	1.6	4.0	14.1	2.3	2.1	0.7
*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)

**INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS**

The cause of the murmur is elevated flow velocity through the pulmonary artery consistent with moderate pulmonic stenosis. No sub or supra valvular components were identified at this time, making a purely valvular stenosis most likely. The degree of obstruction is moderate based upon the maximum velocity/pressure gradient across the pulmonic valve and the secondary

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hypertrophy and remodeling of the right ventricle is moderate. A significant tricuspid leak is also noted. It is unclear if this reflects a concurrent congenital tricuspid valve issue or age-related degeneration. Regardless, the velocity is elevated secondary to pulmonic stenosis. No other congenital abnormalities were visualized, and the left heart is essentially normal with a small mitral leak.

**SPECIES**

Canine

Given these findings, **CHF is ruled out as the cause for any clinical signs.** There is no obvious indication to continue Lasix, Benazepril or Pimobendan in this patient. If respiratory signs recur in the future and/or the patient experiences any syncope, Sildenafil may be trialed to assess for improvement. It is important to note that diagnosis of pulmonary hypertension is impossible in a case with current pulmonic stenosis and the treatment would be purely clinical based.

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Moderate PS cases fall within a grey zone. There are many patients that will not experience clinical signs (syncope, right-sided congestive heart failure) throughout their lifetime, however risk for progression to clinical signs will always remain. Given the age of the patient, no treatment is warranted at this time. The resting heart rate is low, and Atenolol is likely unnecessary.

**AGE**

12 years

Monitor for development of associated clinical signs (collapse, abdominal distention, cough, labored breathing). Mild exercise restriction is advised. Omega fatty acid supplementation may have some long-term benefit, given these cases are predisposed to development of arrhythmias going forward.

**WEIGHT**

31lbs

Anesthetic risk is mild to moderate at this time. Avoid heart rate stimulating drugs such as atropine or glycopyrrolate unless absolutely necessary. Avoid vasodilators such as acepromazine. Mild IV fluid restriction is advised. Cardiac protective drug choices (opioid/benzodiazepine premedication, propofol or alfaxalone induction, isoflurane gas) are recommended. Pre-oxygenate for 5-10 minutes prior to induction and recover in O<sub>2</sub> if possible. Monitor for arrhythmias, hypotension, and hypoxia both intra and post-operatively and intervene as necessary.

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DVM, DACVIM  
(Cardiology)

**PLAN**

Discontinue triple therapy. If respiratory signs arise in the future, Hydrocodone and/or additional respiratory therapy should be considered. If exertional syncope is identified, consider a trial of Sildenafil or potentially institution of Atenolol.

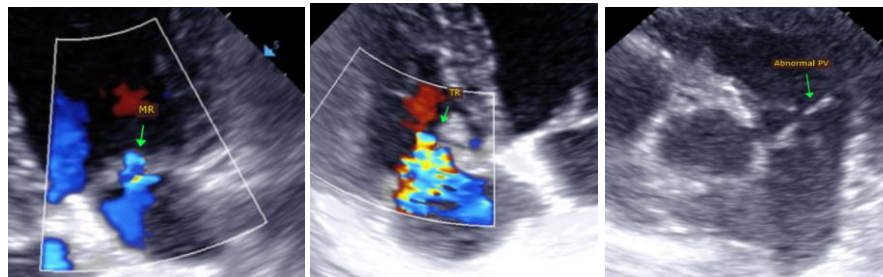
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Recommend recheck echocardiogram in 6 months, sooner if any clinical signs arise.

**IMAGES****REFERRING VET**

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svsmobileimaging.com 309-737-3070



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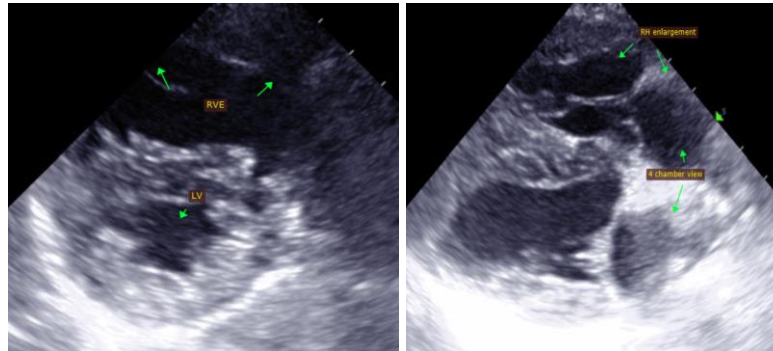
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The information and recommendations provided are based on the images presented by the referring veterinarian. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

Thank you for this referral. 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)  
info@sonopath.com