



**PATIENT**

Roscoe Stigall

**SPECIES**

Canine

**BREED**

Pomeranian

**SEX**

Male Intact

**AGE**

8 years

**WEIGHT**

8lbs

**INTERPRETED BY**

Maggie Machen  
 Lamy, DVM, DACVIM  
 (Cardiology)

**IMAGING PERFORMED BY**

Sara Hansen

**HOSPITAL NAME**

Edgewood Animal  
 Clinic

**REFERRING VET**

Dr. Kimball

**PRESENTING CLINICAL SIGNS**

History: Chronic heart murmur. Asymptomatic. BP: 176mmHg.  
 -Sedation: Torb.

**ECHOCARDIOGRAM FINDINGS**

2D, m-mode, color flow and doppler imaging is available. Continuous flow detected with color Doppler in the pulmonary artery in the region of the ductus arteriosus. The region is not well interrogated; however, L-R flow is suspected. Moderate volume overload of the left heart with adequate systolic function. Increased LV sphericity. Moderate LA dilation. Trivial central MR. No obvious TR. Mildly elevated pulmonic outflow velocities; no pulmonic insufficiency. MPA and branch dilation. The PV appears normal. Mildly elevated aortic outflow velocities with no AI. No pericardial or pleural effusion noted. No obvious cardiac masses.

**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	NA	NM	1.7	36	66	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	110	2.2	2.2	3.6	2.4	3.6	2.3
*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)
Adapted from June Boon, Veterinary Echocardiography, 1998				10	1.50 (3.8)	3.27 (3.5)	2.06 (3.1)
Rishniw M and Hollis NE, J Vet Intern Med 2000; 14:429-435				15	1.83 (2.0)	3.71 (2.4)	2.43 (2.1)
Hansson et al, Vet Rad and Ultrasound 2002				20	2.02 (1.9)	4.14 (2.2)	2.80 (2.0)
Bonagura et al. Echocardiography: principles of interpretation, Vet Clin North Am 15:1177, 1995				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 a patent ductus arteriosus (PDA). This is a congenital condition where a blood vessel present in the fetus remains open after birth. When patent, this allows blood to recirculate through the lungs inappropriately and volume overloads the left heart chambers as is seen here. There is also trivial MR, however these are clinically insignificant at this time. No additional issues are identified.

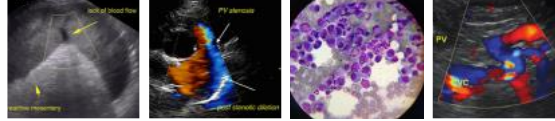
Given moderate LA/LV dilation, this patient is at risk for progression to CHF, arrhythmias, PDA

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reversal due to development of pulmonary hypertension, exertional syncope, and/or sudden death at home in the future. Monitor sleeping respiratory rates at home to screen for progression to CHF.

**SPECIES**

Canine

Gold standard therapy is surgical closure of the vessel. This can be done interventionally or through a thoracotomy, and consultation with a local Cardiologist is recommended if sought (**highly recommended**). Success rates for the procedure are generally high, particularly given the asymptomatic status and a good chance for a normal life if closed appropriately. Regardless of whether or not surgery is elected, cardiac support with Pimobendan is recommended for long term benefit. If surgery is not an option, prognosis is guarded to poor long term and close monitoring is advised.

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Omega fatty acid supplementation and mild salt restriction may be of some long-term benefit. Monitoring of sleeping breathing rates is recommended as the best way to screen for progression to CHF at home. Mild activity restriction is advised. Monitor at home for breathing changes, worsening cough, fainting episodes, exertional dyspnea.

**AGE**

8 years

Anesthetic risk is considered moderately elevated if needed. If closure is a possibility, this should be investigated prior to proceeding. If closure is declined, institute Pimobendan at least 3-5 days prior. Cardiac protective drug choices (opioid/benzodiazepine premedication, propofol or alfaxalone induction, isoflurane gas) are recommended. Pre-oxygenate for 5-10 minutes prior to induction. Monitor for arrhythmias, hypotension, and hypoxia both intra and post-operatively and intervene as necessary. Mild IV fluid restriction is recommended to avoid fluid overload. Avoid heart rate stimulating drugs such as atropine unless clinically indicated.

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Lamy, DVM, DACVIM  
(Cardiology)

**PLAN**

Institute Pimobendan 0.3mg/kg PO q12h. Recommend referral to a local Cardiologist for surgical consultation. If not an option, reassess structure and function every 6 months lifelong to assess need for additional medications, sooner if clinical signs arise (progressive cough, labored breathing, syncope).

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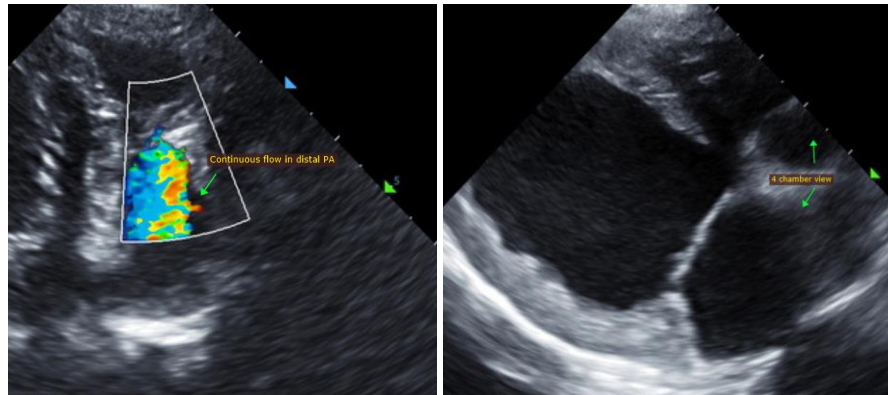
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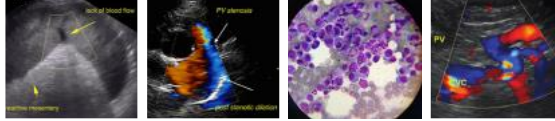
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**IMAGES**





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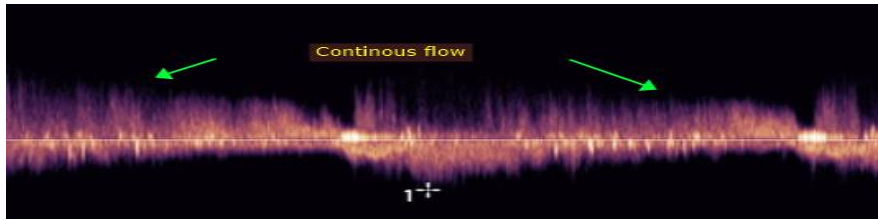
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The information and recommendations provided are based on the images presented by the referring veterinarian. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

Thank you for this referral. 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  
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