



PATIENT

Teddy Gramm
Stoudemire

SPECIES

Canine

BREED

French Bulldog

SEX

Male

AGE

2 years

WEIGHT

25.5lbs

INTERPRETED BY

Maggie Machen Lamy,
DVM, DACVIM
(Cardiology)

IMAGING PERFORMED BY

Lindsey Daniel,
DVM

HOSPITAL NAME

Double Churches
Animal Clinic

REFERRING VET

Dr. Boone

INVOICE

20996

DATE

9/13/21

PRESENTING CLINICAL SIGNS

History: Worsening heart murmur, no clinical signs.

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 mitral regurgitation. Normal left atrial dimension. Normal LV diameter with normal myocardial function. The LV wall is normal. The tricuspid valve appears normal with trace tricuspid regurgitation present. Mild right atrial dilation. Mild right ventricular hypertrophy and remodeling indicative of pressure overload. Mild right ventricular dilation. At least moderate elevation of pulmonic outflow velocities at the level of the valve. The pulmonic valve is unable to be visualized; however, the stenosis appears nears that region. Mild post-stenotic dilation of the main pulmonary artery branches; however, visualization is limited. 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	NA	NA	NM	1.3	40	73	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	123	1.5	4.0	11.6	2.0	2.5	1.5
*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)
<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

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

The cause of the murmur is elevated flow velocity through the pulmonary artery consistent with moderate pulmonic stenosis. The outflow tract and valve itself are of limited visibility in this image set and an exact location cannot be determined. That being said, valvular is the most common location. It should be mentioned that this particular breed is predisposed to a coronary artery abnormality that can also lead to this physiology. Regardless, the degree of obstruction is moderate based upon the maximum velocity/pressure gradient across the pulmonic valve and the secondary hypertrophy and remodeling of the right ventricle is mild. Trace tricuspid regurgitation is also noted, likely secondary to pressure overload of the right heart (valve appears normal). No



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other congenital abnormalities were visualized, however small abnormalities are easily missed in congenital cases.

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Assuming the diagnosis is confirmed, 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. A diagnostic angiogram and potentially balloon valvuloplasty can be considered (particularly in the event of development of clinical signs) as the gold standard therapeutic option for this condition and may improve long term outcome. **If the client is interested, referral for evaluation and discussion with a local Cardiologist should be considered.** Whether or not referral/surgery is elected, medical management with atenolol is recommended going forward to decrease heart rate and lessen the obstruction.

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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.

AGE

2 years

Breeding this animal is not advised due to the genetic link of this disease.

WEIGHT

25.5lbs

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 O₂ 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

Consider referral for evaluation/surgical consultation. Institute atenolol 25mg tabs, give ½ tab PO q12. Recheck HR in 5-7 days; target is stressed in hospital rates not to exceed 130bpm.

IMAGING PERFORMED BY

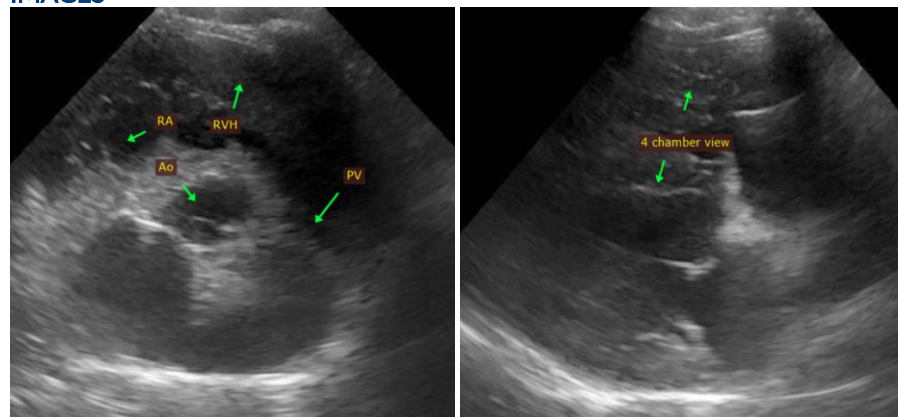
Lindsey Daniel,
DVM

Recommend recheck echocardiogram in 6-12 months to assess for progression, response to medication.

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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.

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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.

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Diplomate of the American College of Veterinary Internal Medicine (Cardiology)
info@sonopath.com

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