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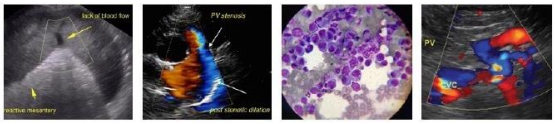


THE FOCAL ZONE
IMAGING PERFORMED BY
289-808-2608 info@thefocalzone.com

PATIENT
Elliot Shirk

SPECIES
Canine

BREED
Great Dane

SEX
Male Intact

AGE
5 years

WEIGHT
174.2lbs

INTERPRETED BY
Maggie Machen Lamy, DVM DACVIM (Cardiology)

IMAGING PERFORMED BY
Kelly Reschny, RVT

HOSPITAL NAME
Graham Animal Hospital

REFERRING VET
Dr. Sprenger

INVOICE
23131

DATE
3/16/22

PRESENTING CLINICAL SIGNS

History: Presented for a neuter and gastropexy and grade 2-3 systolic murmur was noted. No clinical signs noted. Presurgical bloodwork was normal. BP: 141/113 MAP 126, 241/136 MAP 148, 242/136 MAP 159mmHg. HR 84, RR 82.

ECHOCARDIOGRAM FINDINGS

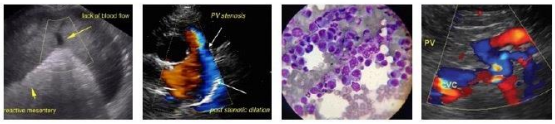
2D, m-mode, color flow and doppler imaging is available. Mitral valve is mildly thickened with no obvious prolapse into the left atrial lumen. Trace central mitral regurgitation. Normal velocity. Normal left atrial dimension. Normal LV diameter with adequate myocardial function for this breed. The LV wall thickness is normal. The tricuspid valve appears normal in form and function with trace TR. No right atrial dilation. Mild right ventricular prominence with mild hypertrophy. Mild to moderate elevation of pulmonic outflow velocities at the level of the valve. The PV appears thickened, with no post-stenotic dilatation. Trace pulmonic insufficiency. The aortic valve appears to have normal morphology and mobility. Normal LVOT velocity. 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	4.4	2.8	NM	1.1	29	50	0.5
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	120	1.3	3.4	79.0	3.6	6.3	4.5
*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)
**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)
Adapted from June Boon, Veterinary Echocardiography, 1998				25	2.18 (2.4)	4.48 (2.9)	3.10 (2.5)
Rishniw M and Hollis NE, J Vet Intern Med 2000; 14:429-435				30	2.33 (3.3)	4.83 (3.9)	3.39 (3.4)
Hansson et al, Vet Rad and Ultrasound 2002				35	2.48 (4.3)	5.17 (5.0)	3.69 (4.5)
Bonagura et al. Echocardiography: principles of interpretation, Vet Clin North Am 15:1177, 1995				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

Elevated flow velocity through the pulmonic valve is noted, consistent with congenital valvular pulmonic stenosis. The degree of obstruction is mild based upon the velocity/pressure gradient across the pulmonic valve and minimal secondary hypertrophy and remodeling of the right ventricle (mild PG is <50mmHg). Small mitral and tricuspid leaks are also noted which may reflect early valve disease; follow up is advised. Finally,



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systolic function is adequate for this breed with no evidence of significant cardiomyopathy.

The reported blood pressures are too variable to interpret. Ideally obtain serial measurements in a controlled, low stress environment and continue until the readings plateau within 5mmHg of variability for 3+ readings.

Mild PS cases typically do not impact a patient clinically, and most are able to live a normal life free of complications. That being said, risk for progression to clinical signs will always remain and periodic monitoring is advised.

Given mild disease and a middle-aged dog, I would not recommend surgical intervention in this case. Medical management with atenolol is often recommended in moderate or severe cases, with mild often not requiring therapy. Given that this case is free of symptoms and mild in severity, it is reasonable to simply monitor going forward rather than instituting lifelong medications. Referral to a local cardiologist should be considered to discuss advanced imaging and potential medical and surgical options if the client is interested.

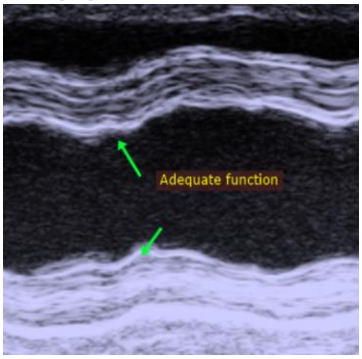
Breeding this animal is not advised due to the genetic link of this disease.

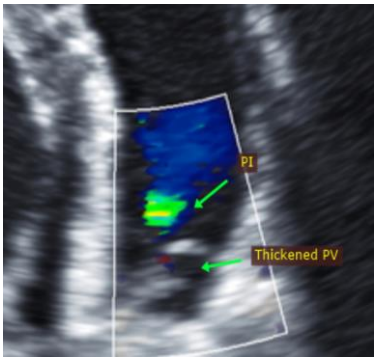
Anesthetic risk is considered mildly elevated. **Avoid heart rate stimulating drugs such as atropine or glycopyrrolate.** Avoid excessive vasodilation/hypotension. Pre-oxygenate for 5-10 minutes prior to induction. A reasonable protocol would be as follows: premedicate with opioid/benzodiazepine, propofol or alfaxalone induction, isoflurane maintenance. Monitor ECG, BP as is standard. Monitor for hypoxia in recovery; utilize O2 chamber if needed. Mild IV fluid restriction is advised.

Monitor for development of associated clinical signs (exertional collapse, abdominal distention, cough, labored breathing). Omega fatty acid supplementation may have some long-term benefit, given that these cases are predisposed to development of arrhythmias going forward. Breeding is not advised as this condition is genetically linked.

Recommend recheck echocardiogram in 12 months to assess for progression, sooner if clinical signs arise in the interim.

IMAGES





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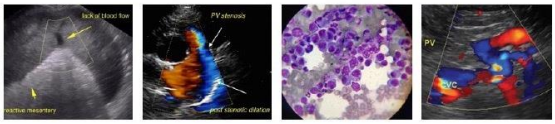

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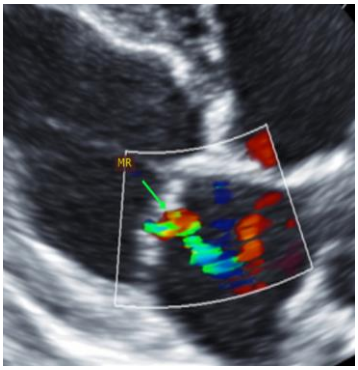

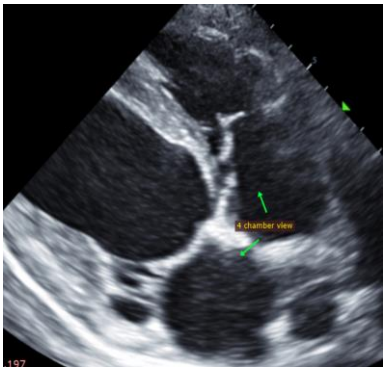

The information and recommendations provided are based on the images presented by the referring veterinarian. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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
Diplomate of the American College of Veterinary Internal Medicine (Cardiology)
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