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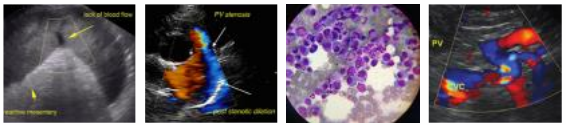

ANIMAL SOUNDS NW
MOBILE VETERINARY ULTRASOUND
IMAGING PERFORMED BY
AnimalSoundsNW.com 541-357-9423

PATIENT
Emrys Stackhouse

SPECIES
Canine

BREED
Great Dane

SEX
Male Intact

AGE
2 months

WEIGHT
32.8lbs

INTERPRETED BY
Maggie Machen Lamy, DVM, DACVIM (Cardiology)

IMAGING PERFORMED BY
Sara Hansen

HOSPITAL NAME
Silver Creek Animal Clinic

REFERRING VET
Dr.Ceremuga

INVOICE
23811

DATE
4/21/22

PRESENTING CLINICAL SIGNS

History: Grade 4/6 holosystolic, murmur heard on both sides of chest. Repeated auscultation at 10 weeks and murmur is unchanged. Puppy is happy, vibrant and otherwise clinically normal.
-Blood Pressure: 104/78-(87); 113/87(96)mmHg.

ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. Mild mitral valve thickening with no obvious prolapse into the left atrial lumen. Mild anterior-directed mitral regurgitation. Mild left atrial dilation. No LV dilation with adequate myocardial function. Severe LV wall and papillary muscle hypertrophy (1.5cm globally). The tricuspid valve appears normal with trivial tricuspid regurgitation. Normal right atrial and ventricular diameter and morphology. The pulmonic valve is normal in morphology and mobility. Normal pulmonic outflow velocity with laminar flow. Mild to moderate pulmonic insufficiency. Markedly thickened aortic valve leaflets. The valve appears tricuspid with severe stenosis; PG >144mmHg. No obvious sub-aortic ridge; however, hypertrophy is suspected to be causing subvalvular component. Mild to moderate aortic regurgitation seen. 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	NM	1.5	1.6	55	87	0.4
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	126	6.5	1.5	14.9	2.46	2.3	1.3
*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)
				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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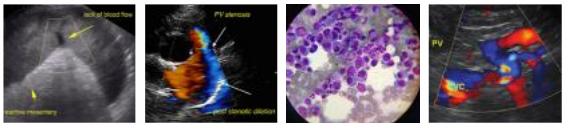

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INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

The cause of the murmur is severe aortic stenosis (AS) causing significantly elevated blood flow velocity through the LVOT/aortic valve. The valve is malformed, with severely thickened cusps and limited mobility. The LV walls are significantly hypertrophied indicating risk for progression in the future. There is also concurrent AI which should also be monitored, as this can result in volume overload long term. The mitral valve appears abnormal with mild mitral regurgitation, which is likely the cause of mild left atrial enlargement. No additional issues are identified; however, it is important to note that small abnormalities are easily missed in juvenile exams.

No surgical intervention is available at this time. Medical management through heart rate control is recommended as below, in hopes of decreasing the obstruction long term. This patient is too young for its initiation and waiting until 4 months of age is recommended. Omega fatty acid supplementation may be of some long term anti-arrhythmic benefit.

Prognosis is poor long-term, with many dogs in the severe category succumbing to malignant arrhythmias by mid-life and others maintaining asymptomatic status long term. My main concern is that this patient has severe LVH at 8 weeks of age. Serial echocardiography is recommended lifelong to assess for progression and risk for complication; however, if the patient's quality of life suffers at any time, euthanasia should be elected. Monitor for development of labored breathing, exercise intolerance or collapse episodes, as AS patients are more predisposed to development of arrhythmias than to CHF. Moderate exercise restriction is advised.

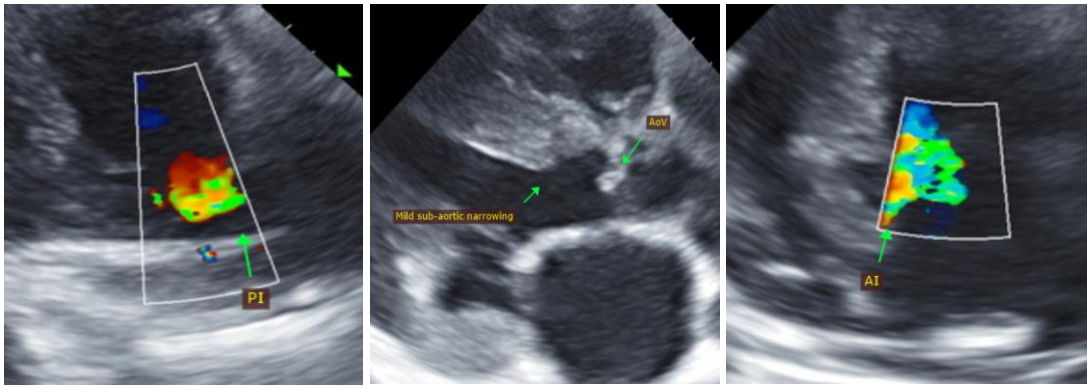
Elective anesthesia is not advised in this patient.

PLAN

Consider referral in this case for lifelong management. If declined, institute atenolol to effect at 4 months of age: 0.5-1.5mg/kg SID-BID (up-titrate to desired effect). Up-titrate as the puppy grows to maturity. Goal is to suppress heart rate <130bpm even with stress/activity.

Recommend recheck echocardiogram in 6 months to screen for progression, sooner if clinical signs arise.

IMAGES



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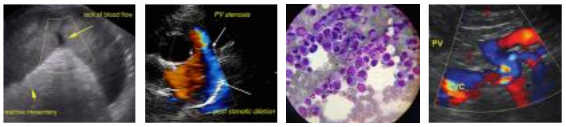

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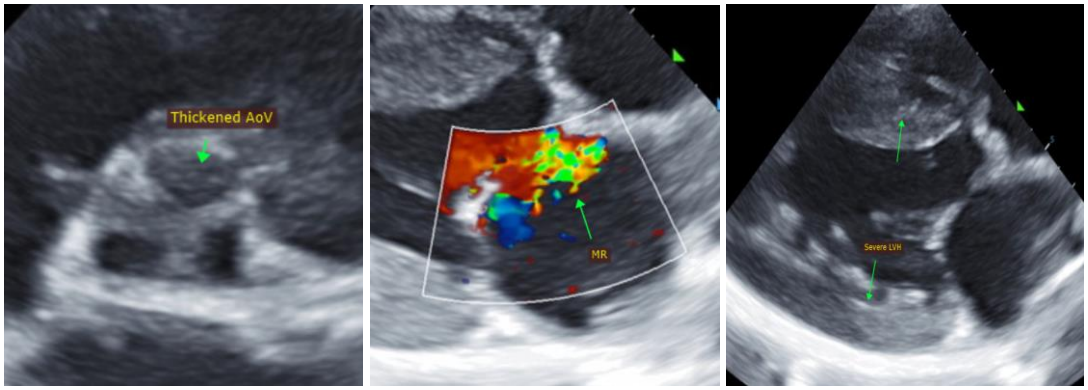

The information and recommendations provided are based on the images presented by the referring veterinarian. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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)
info@sonopath.com