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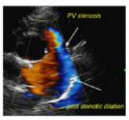
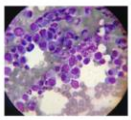
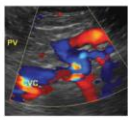

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PATIENT

Isla Dorgan

SPECIES

Canine

BREED

French Bulldog

SEX

Female Intact

AGE

7.8 years

WEIGHT

26.4lbs

INTERPRETED BY

Maggie Machen Lamy, DVM, DACVIM (Cardiology)

IMAGING PERFORMED BY

Kim Liedberg

HOSPITAL NAME

SVS Imaging WI

REFERRING VET

Dr. Clinton

INVOICE

26038

DATE

8/25/22

PRESENTING CLINICAL SIGNS

History: Grade 3/6 heart murmur was noted with cough on exam for spay.

ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. Mild mitral valve thickening with minimal prolapse into the left atrial lumen. Mild eccentric mitral regurgitation. Minimal left atrial dilation. No LV dilation with adequate myocardial function. Mild LV wall hypertrophy. The endocardium appears fibrotic. The papillary muscles are hyperechoic and mildly hypertrophied. The tricuspid valve appears mildly thickened with mild tricuspid regurgitation is seen. Mild right heart enlargement. TR velocity consistent with moderate pulmonary hypertension. Mild MPA enlargement. The pulmonic valve is normal in morphology and mobility. Normal pulmonic outflow velocity with laminar flow. No obvious pulmonic insufficiency. The aortic valve appears trileaflet with significant thickening and decreased mobility; PG >100mmHg. No obvious sub-aortic ridge. Mild to moderate aortic regurgitation seen. Small uniform echogenicity mass seen adjacent to the aortic root (1.7 x 1.5cm). 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	6.5	4.0	1.5	1.3	35	67	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	160	5.3	1.2	12.0	2.5	2.5	1.6
*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)
				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 severe aortic stenosis (AS) causing significantly elevated blood flow velocity through the LVOT and aortic valve. There is also a mild to moderate leak in diastole. This is a congenital malformation of the aortic valve, leading to decreased excursion in systole. The LV walls are mildly increased in dimension indicating relative stability, however there is great concern for lifelong progression. There is also a significant amount of LV fibrosis present, which is what ultimately predisposes these cases to development of malignant arrhythmias. Mild MR and TR are also noted, which are hemodynamically insignificant at this time. Of concern, the

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pulmonary pressures appear moderately elevated, which reflect pulmonary hypertension developing secondary to primary respiratory disease. Finally, a small soft tissue lesion is seen adjacent to the aorta, which is most consistent with a chemodectoma. No additional issues are identified.

Medical management of aortic stenosis through heart rate control is recommended as below, in hopes of decreasing the obstruction long term. In a patient with syncope or labored breathing Sildenafil is not clearly warranted; however, treatment for the cough is certainly recommended. Consider baseline CXR, hydrocodone, a course of Baytril, etc. Omega fatty acid supplementation may be of some long term benefit. Finally, the chemodectoma appears to be the least of this patients concern, and simple monitoring is advised.

Prognosis overall is guarded long-term. Serial echocardiography is recommended lifelong to assess for progression and risk for complication. 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 lifelong exercise restriction is advised.

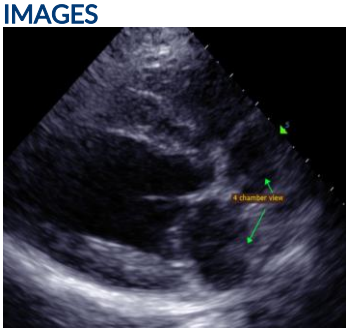
Due to the complexity of issues, anesthetic risk is significantly elevated. Risk: benefit ratio should be considered. Consider consultation with and/or referral to a facility with an anesthesiologist. Should you elect to proceed, cardiac protective drug choices (opioid/benzodiazepine premedication, propofol or alfaxalone induction, iso or sevoflurane gas) are recommended. Pre-oxygenate for 5-10 minutes prior to induction and recover in O2 cage. Monitor for arrhythmias, hypotension, and hypoxia both intra and post-operatively and intervene as necessary. Moderate IV fluid restriction is recommended to avoid fluid overload, while considering comorbidities, hydration status, BP, etc. Avoid heart rate stimulating drugs such as atropine unless clinically indicated.

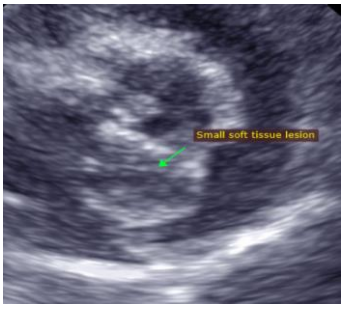
PLAN

Institute atenolol to effect: Initiate 6.25mg PO q12-24h and up-titrate to desired effect. Goal is to suppress heart rate <130bpm even with stress/activity. Consider treatment for cough as discussed.

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

IMAGES





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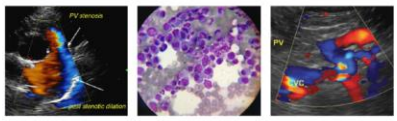

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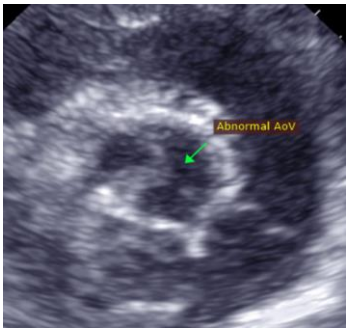

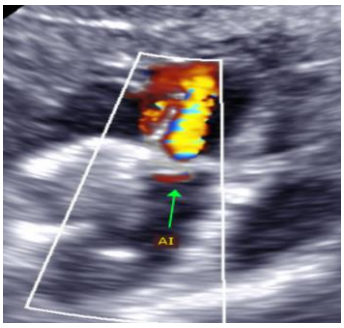

The information and recommendations provided are based on the images presented by the referring veterinarian. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

Thank you for this referral. 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