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Clinical Sonography & Telecytology
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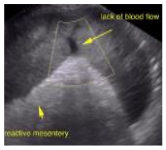
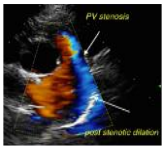
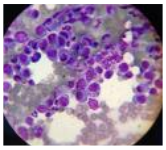
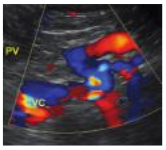

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1-800-838-4268 info@sonopath.com

PATIENT
Peaches Kota

SPECIES
Canine

BREED
Pitbull Mix

SEX
Male Intact

AGE
5 months

WEIGHT
30lbs

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

IMAGING PERFORMED BY
Dana Alterman, RDCS, LVT

HOSPITAL NAME
Eubank Animal Clinic

REFERRING VET
Dr. Harrell

INVOICE
30671

DATE
5/9/23

PRESENTING CLINICAL SIGNS
History: Grade 5/6. Asymptomatic.

ELECTROCARDIOGRAPHIC FINDINGS
A six lead ECG is available at 25mm/s; 10mm/mV. The average heart rate is 120bpm (range 75-142bpm). The rhythm is sinus in origin, with a p for every QRS complex and vice versa. The P wave morphology is positive with a normal dimension. Normal PR. The QRS morphology is positive with normal dimension. MEA is normal. Two single VPCs are identified. No supraventricular premature beats, pauses or other dysrhythmias observed.
ECG diagnosis: Normal sinus rhythm with respiratory variation. Rare isolated VPCs.

ECHOCARDIOGRAM FINDINGS
2D, m-mode, color flow and doppler imaging is available. The left ventricular wall is moderately hypertrophied (1.4cm globally) There is a mildly hyperechoic endocardium consistent with fibrosis. Papillary muscle hypertrophy. The left atrium is normal. The right atrium is normal in size. The right ventricle appears normal. The mitral valve is dysplastic, with a thickened anterior leaflet that prolapses into the LVOT in systole. There is mild eccentric mitral regurgitation associated with this abnormal motion. No tricuspid regurgitation seen. Blood flow through the LVOT is severely increased. Significant subaortic narrowing is seen. The aortic valve appears mildly thickened with decreased excursion. Mild aortic insufficiency. Trace PI. Normal RVOT velocity. Prominent coronary vessels. No obvious shunts. No evidence of cardiac tumors or metastatic lesions on this scan. No pleural or pericardial effusion seen.

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	NA	1.0	1.1	59	92	0.23
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	NM	6.5	1.0	13.6	1.9	2.9	1.2
*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

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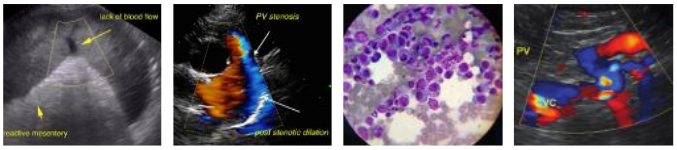

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INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

The cause of the murmur is increased flow velocity through the LVOT and aortic valve. First, there is mitral valve dysplasia with secondary LVOT obstruction and mitral regurgitation present. This is similar to SAM in a cat, with hypertrophy of the LV secondary to pressure overload caused by obstruction to flow. This type of obstruction tends to be heart rate dependent, with a dynamic profile. There is also sub-aortic component that appears severe due to the appearance of the LVOT. Finally, the aortic valve also appears thickened, likely reflecting a primary valvular issue and mild AI. There is significant LV hypertrophy present indicating pressure overload. No additional defects are seen; however, it should be mentioned that small defects/shunts are easily missed in congenital echocardiography. No evidence of volume overload or other secondary changes. Highly recommend referral in this case due to multiple abnormalities appreciated and need for lifelong monitoring.

The ECG is largely normal with a normal sinus rhythm. Isolated VPCs are noted, which are concerning given the high risk for sudden death with this particular disease process. No specific treatment is warranted; however, Atenolol will likely have some benefit on the arrythmia as well. Follow up is recommended.

Lifelong heart rate control with atenolol is recommended, as the dynamic nature of the obstruction will be reduced at lower heart rates. No other medications are indicated at this juncture. Monitor for development of labored breathing, exercise intolerance or collapse episodes, as SAS/AS patients are more predisposed to development of arrhythmias than to CHF. Mild exercise restriction is advised lifelong.

Prognosis is guarded yet highly variable, with many severe AS/SAS patients succumbing by mid-life. My main concern in this case is the young age of the patient with severe hypertrophy already present. Follow up is highly recommended.

Once Atenolol is initiated, anesthetic risk is mild. Avoid heart rate stimulating drugs such as atropine or glycopyrrolate unless clinically indicated. Avoid ketamine and acepromazine due to systemic vascular effects. Mild IV fluid restriction is advised. Recommend prophylactic antibiotics for any orthopedic or dental procedure in the future given predisposition to endocarditis.

PLAN

Recommend referral for lifelong monitoring. Administer titrating dose of atenolol: 25mg tablets; Give ¼ tab once daily. Recheck heart rate in 1-2 weeks with target stressed rate of <140bpm, Increase as needed until target reached. Will need to up-titrate to desired effect as puppy grows.

Recommend recheck echocardiogram and ECG at 1 year of age to assess response to atenolol and screen for small concurrent defects, sooner if clinical issues arise.

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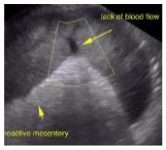
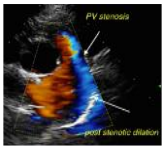
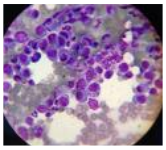
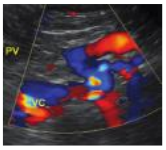

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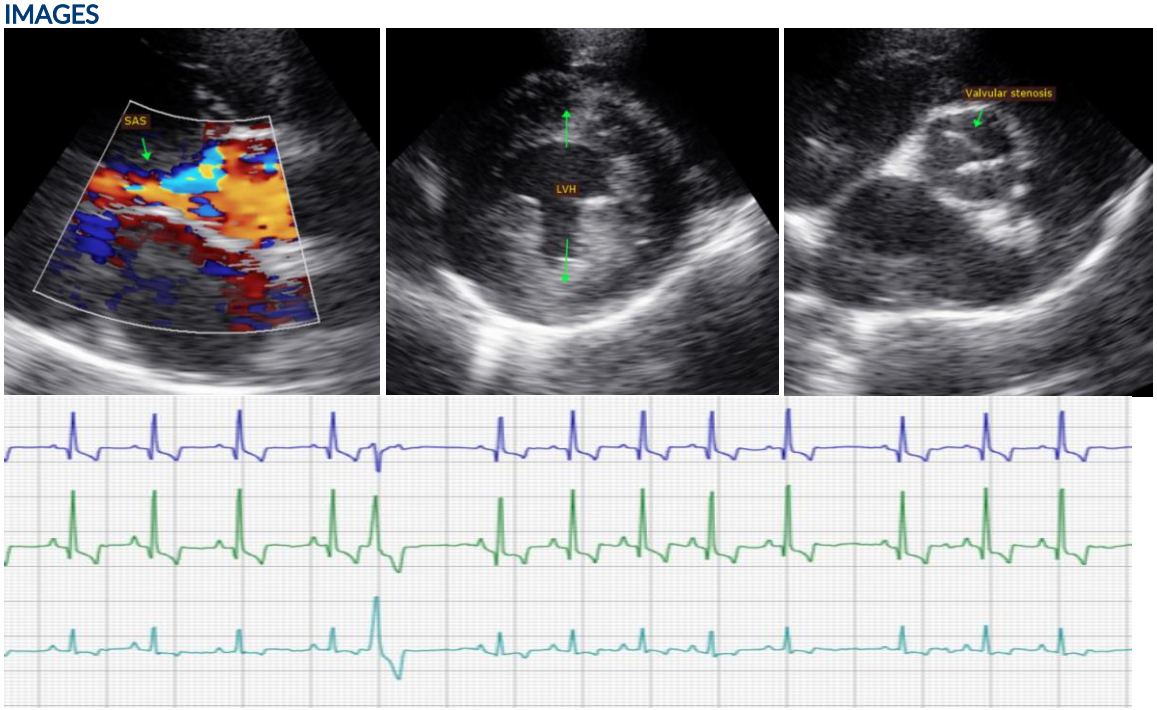
IMAGES



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