SonoPath

Clinical Sonography & Telecytology

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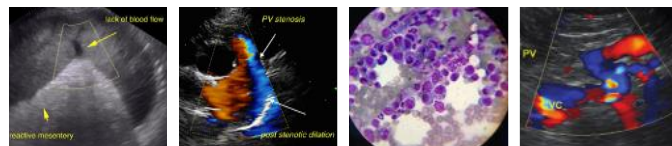


SonoPath.com™
1-800-838-4268 info@sonopath.com

PATIENT
Peanut Morris

SPECIES
Canine

BREED
Bull Terrier

SEX
Female

AGE
1 year

WEIGHT
15.7lbs

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

IMAGING PERFORMED BY
Jacquie Pankatz, DVM

HOSPITAL NAME
Mountain Vista Veterinary Hospital

REFERRING VET
Dr. Pankatz

INVOICE
28256

DATE
1/11/23

PRESENTING CLINICAL SIGNS

History: Syncopal events with activity. Grade 3-4/6 systolic heart murmur. Sporadic increase in respiratory rate during syncope.

RADIOGRAPHIC FINDINGS *NOTE: Images submitted for supplemental cardiac information only.

Mild cardiomegaly. Bulge in the region of the great vessels. No obvious evidence of CHF.

ELECTROCARDIOGRAPHIC FINDINGS *Note: Single lead ECGs are evaluated as a rhythm strip. Morphology/MEA cannot be definitively commented on.

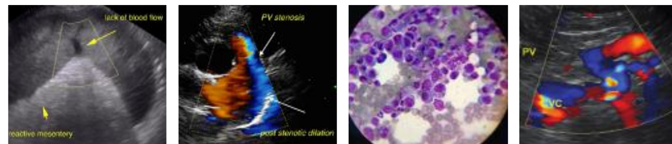
A single lead ECG is available; 50mm/s, 20mm/mV. Dramatic baseline artifact. The average heart rate is 220bpm (range 200-0250bpm). The rhythm is sinus in origin, with a p for every QRS complex and vice versa. The P and QRS morphologies are positive. No ectopic beats, pauses or other dysrhythmias observed.
ECG diagnosis: Sinus tachycardia.

ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. The left ventricular wall is moderately hypertrophied (1.0cm). There is a diffusely hyperechoic endocardium consistent with fibrosis. Papillary muscle hypertrophy. The left atrium is mildly enlarged. The right atrium is normal in size. The right ventricle appears normal. The mitral valve is dysplastic, with an elongated and thickened anterior leaflet that prolapses into the LVOT in systole. There is moderate eccentric mitral regurgitation associated with this abnormal motion. No obvious tricuspid regurgitation seen. Blood flow through the LVOT is severely increased with a fixed profile. Significant subaortic ridge is seen. The aortic valve appears mildly thickened, although trileaflet. No aortic insufficiency. Prominent coronary vessels. Mildly elevated pulmonic velocities with a dynamic profile. 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	1.4	1.4	51	84	0.05
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	6.0	2.5	7.1	1.9	3.2	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)
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)



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Hansson et al, Vet Rad and Ultrasound 2002 Bonagura et al. Echocardiography: principles of interpretation, Vet Clin North Am 15:1177, 1995	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)

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 a 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 a sub-aortic component suspected, due to the appearance of the LVOT. Finally, the aortic valve also appears mildly thickened, likely reflecting a primary valvular issue. There is moderate LV hypertrophy present indicating pressure overload; however, the left atrium is mildly enlarged indicating the risk for complication is currently low. No additional defects are seen; however, it should be mentioned that small defects/shunts are easily missed in congenital echocardiography. **Referral should always be considered**.

The ECG is largely unremarkable with a sinus tachycardia. The rate is significantly elevated; however, this is likely due to stress.

Reported xertional syncope is a hallmark of this disease. This commonly occurs with increased heart rates due to worsening of the obstruction. Lifelong activity restriction is advised

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 moderate LV 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

Consider referral as discussed. 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.

Recommend recheck echocardiogram in 6-12 months to assess response to atenolol, sooner if clinical issues arise.

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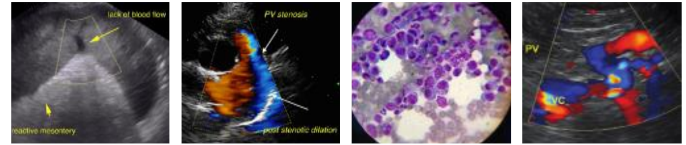

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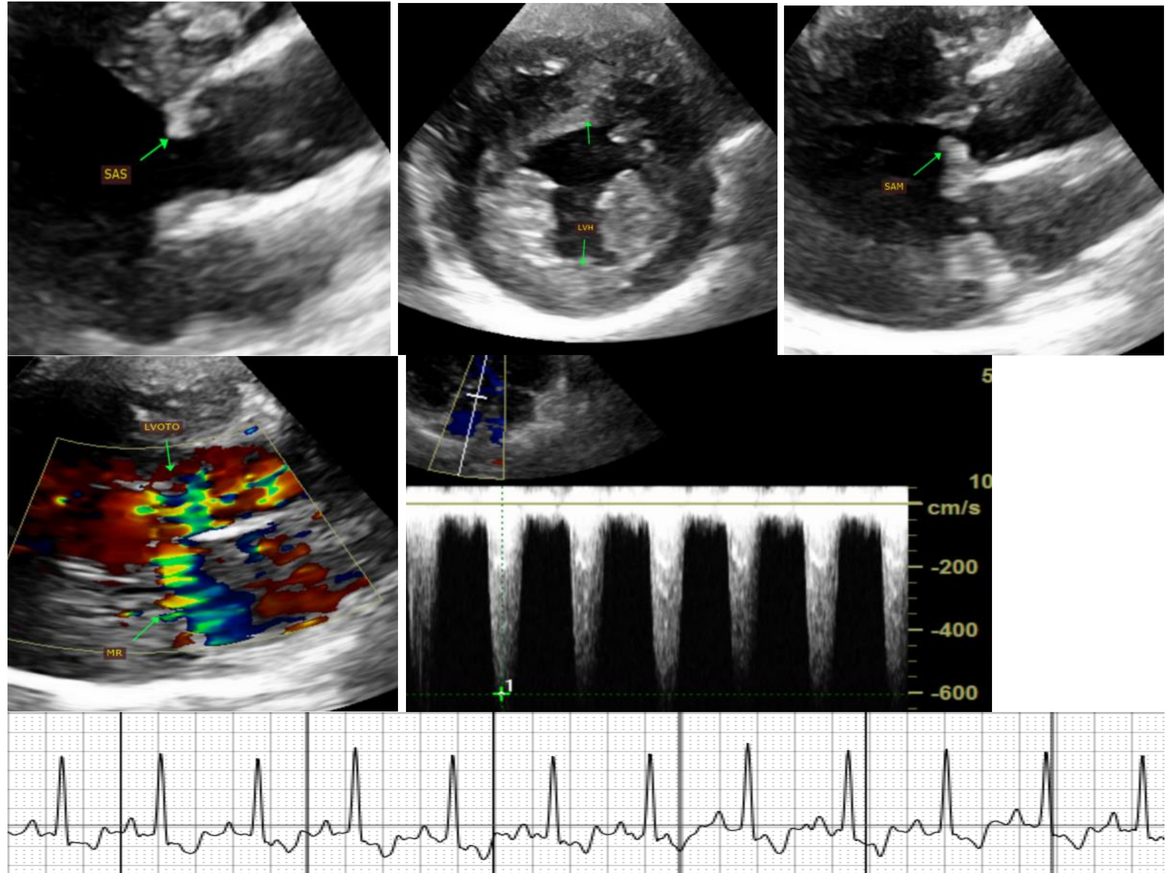
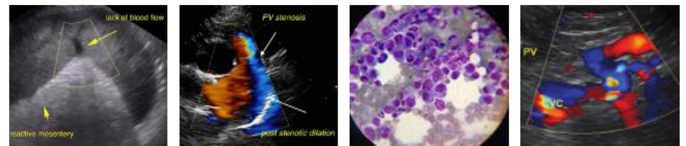
IMAGES



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



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