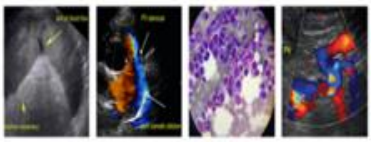
Mass Veterinary Services



SonoPath Clinical Sonography & Telecytology
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1-800-838-4268 info@sonopath.com SonoPath.com

PATIENT
Daisy Sugrue

SPECIES
Canine

BREED
German Shepherd

SEX
Female

AGE
3 years

WEIGHT
54lbs

INTERPRETED BY
Maggie Machen Lamy, DVM DACVIM (Cardiology)

IMAGING PERFORMED BY
Pamela Harrigan, RDCS

HOSPITAL NAME
Mass Veterinary Services

REFERRING VET
Dr. Masloski

INVOICE
28419

DATE
1/18/23

PRESENTING CLINICAL SIGNS

History: Daisy is referred to evaluate a murmur noted since puppyhood. Frequent panting and seems to have difficulty keeping up with other dogs. The owner has noted some labored breathing and exercise intolerance when playing. She is eating well (grain free diet). The owner would like to get Daisy spayed. On exam: NSR, grade III-IV/VI murmur with PMI left apical area, PSS, lung fields clear, mm pink, moist, CRT<2. BP: 170mmHg x 5. *Sedated with propofol for study.

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; 25mm/s, 10mm/mV. The average heart rate is 115bpm (range 100-136bpm). The rhythm is sinus in origin, with a p for every QRS complex and vice versa. P and QRS morphologies are positive. Rare isolated VPCs; monomorphic and singles only. No supraventricular ectopic beats, pauses or other dysrhythmias observed. ECG diagnosis: Normal sinus rhythm with respiratory variation. Isolated VPCs.

ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and Doppler imaging is available.
Left ventricle: The LV diameter is normal with adequate myocardial function. Moderate to severely increased LV wall dimensions. Fibrosis of the endocardium. Hyperechoic hypertrophied papillary muscles.
Left atrium: The left atrium is normal.
Mitral valve: The mitral valve is thickened. No MR. Mild SAM appreciated.
Aortic valve/Aorta: The aortic valve is trileaflet yet mildly thickened. Decreased excursion in systole. Narrowing of the sub-valvular region is consistent with stenosis. Aortic outflow velocity consistent with severe stenosis; moderate aortic insufficiency.
Right ventricle: Normal right ventricular diameter and morphology indicating no overt evidence of pulmonary arterial hypertension.
Right atrium: Normal RA dimension.
Tricuspid valve: The tricuspid valve appears normal with no tricuspid regurgitation.
Pulmonic valve/Pulmonary artery: The pulmonic valve is normal in morphology and mobility. No pulmonic insufficiency. Normal RVOT velocity; laminar flow.
Pericardium/other: No pericardial or pleural effusion noted. No obvious cardiac masses.

2-Dimensional Measurements

Ao diam (cm)	2.2
LA diam (cm)	2.7
LA:Ao (Swe)	1.2
IVS thickness (cm)	1.7
LVID diastole (cm)	2.2
PW thickness (cm)	1.8
LVID systole (cm)	1.1
FS (%)	50

Doppler Measurements

PV Vmax (m/s)	1.3
AoV Vmax (m/s)	6.4
MR Vmax (m/s)	NA
TR Vmax (m/s)	NA
TR PG (mmHg)	NA

INTERPRETATION OF THE FINDINGS

The cause of the murmur is severe subaortic stenosis (SAS) causing severely elevated blood flow velocity through the LVOT. The valve is also mildly thickened; however, the primary issue appears subvalvular. A mild dynamic component is suspected secondary to abnormal MV motion as well. A significant aortic leak is noted, which should be monitored

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going forward. The LV walls are significantly increased in dimension, indicating pressure overload of the left heart with diffuse fibrosis of the muscle. No additional issues are identified.

No surgical intervention is widely available at this time; however, advanced options could be discussed at an academic institution. Medical management through heart rate control is recommended as below, in hopes of decreasing the obstruction long term.
Prognosis is guarded yet highly variable, with many dogs in the severe category succumbing to malignant arrhythmias by mid-life and others maintaining asymptomatic status long term. Serial echocardiography is recommended lifelong to assess for progression and risk for complication.

The finding of isolated VPCs is concerning, and is secondary to LV fibrosis and stress in this patient. What is seen here does not warrant therapy; however, there may be some anti-arrhythmic benefit to atenolol in this case. This patient is at high risk for syncope and sudden death, and immediate reevaluation is advised if any syncope is noted.

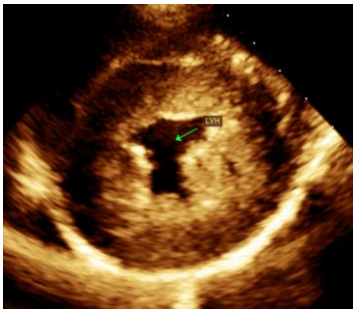
RECOMMENDATIONS

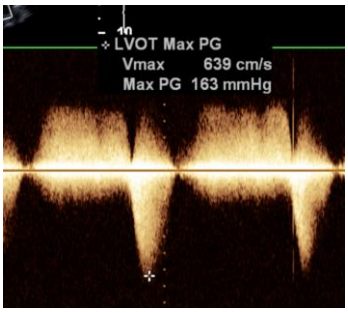
- Institute atenolol to effect: 0.5-1.5mg/kg SID-BID (up-titrate to desired effect). Goal is to suppress heart rate <130bpm even with stress/activity.
- Consider referral as discussed to explore surgical options if desired.
- Omega fatty acid supplementation and mild salt restriction may be of some long term anti-arrhythmic benefit.
- Once Atenolol is initiated, anesthetic risk is moderate if needed. 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.
- Lifelong activity restriction is advised.
- Monitor for development of labored breathing, exercise intolerance or collapse episodes, as SAS patients are **more predisposed to development of arrhythmias** than to CHF.
- Moderate lifelong exercise restriction is advised.

PLAN

- Recommend conservative monitoring with a recheck echocardiogram in 6-12 months, sooner if any development of clinical signs.

IMAGES





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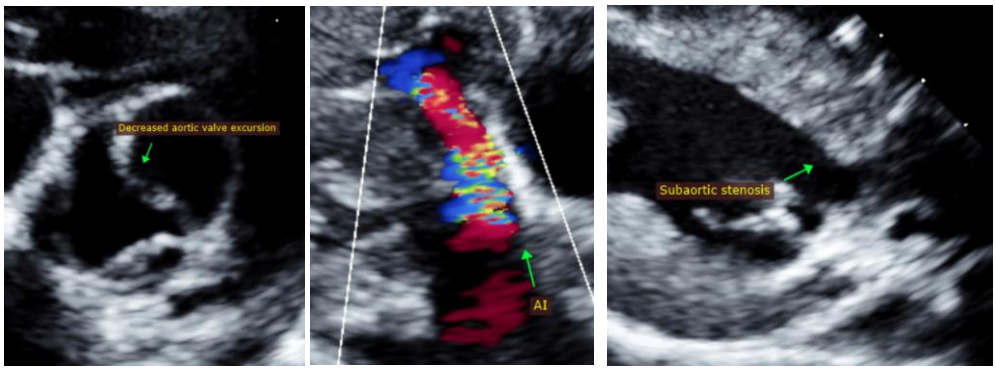

The information and recommendations provided are based on the images presented by the referring veterinarian. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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

Echocardiogram performed by: Pamela Harrigan, RDCS
Pet Animal Ultrasound Service (4paus.com)