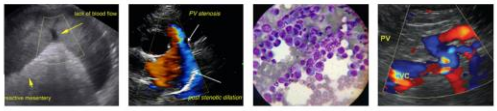
Mass Veterinary Specialty Services
1-413-734-1292



SonoPath
Clinical Sonography & Telecytology
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PATIENT
Yoshi Hendricks

SPECIES
Canine

BREED
Spaniel Mix

SEX
Male Neutered

AGE
8 years

WEIGHT
25.3lbs

INTERPRETED BY
Maggie Machen Lamy, DVM DACVIM (Cardiology)

IMAGING PERFORMED BY
Pamela Harrigan, RDCS

HOSPITAL NAME
Mass Veterinary Specialty Services

REFERRING VET
Dr. Masloski

INVOICE
20734

DATE
8/25/21

PRESENTING CLINICAL SIGNS

History: Yoshi was diagnosed and treated for heartworm in 2019. He had an echocardiogram in January 2020 which revealed an equivocally increased aortic outflow velocity with heartworms noted in his pulmonary artery. He had the 3-injection treatment in December 2020. He was noted to have a murmur in May 2019 with a gallop rhythm in June of this year. He pants when nervous. His activity level remains normal. CV/RESP: NSR, grade III/VI murmur noted best on right thorax, PSS, lung fields clear. BP: 210mmHg x 5. No medications. *No sedation.

ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and Doppler imaging is available.
Left ventricle: The LV diameter is normal with adequate myocardial function. LV wall thicknesses are normal.
Left atrium: The left atrium is normal.
Mitral valve: The mitral valve is mildly diffusely thickened with no prolapse into the left atrial lumen. No mitral regurgitation.
Aortic valve/aorta: The aortic valve is mildly elevated. Normal aortic outflow velocity; laminar flow. No aortic insufficiency.
Right ventricle: Mild RV hypertrophy.
Right atrium: Normal RA dimension.
Tricuspid valve: The tricuspid valve appears normal with mild tricuspid regurgitation; Velocity consistent with mild to moderate pulmonary hypertension.
Pulmonic valve/pulmonary artery: The pulmonic valve is normal in morphology and mobility. No pulmonic insufficiency. MPA and branches are mildly dilated. Normal RVOT velocity; laminar flow.
Pericardium/other: No pericardial or pleural effusion noted. No obvious cardiac masses
Heart rhythm: ECG reveals a sinus rhythm with an average HR of 150bpm.

2-Dimensional Measurements

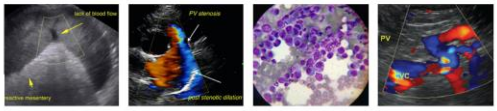
Ao diam (cm)	1.9
LA diam (cm)	1.9
LA:Ao (Swe)	1.0
IVS thickness (cm)	0.86
LVID diastole (cm)	2.8
PW thickness (cm)	0.92
LVID systole (cm)	1.2
FS (%)	57

Doppler Measurements

PV Vmax (m/s)	1.3
AoV Vmax (m/s)	1.8
MR Vmax (m/s)	NA
TR Vmax (m/s)	3.5
TR PG (mmHg)	49

INTERPRETATION OF THE FINDINGS

The murmur remains benign in origin with mildly elevated aortic outflow velocities as was previously noted. There is, however, mild TR (unlikely to be ausculted on exam, although not impossible). The TR velocity and MPA dilation are suggestive of mild to moderate pulmonary hypertension, likely secondary to the prior heartworm disease. The right atrium is normal, and no additional issues are noted in this study.



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Even with changes seen here, no cardiac medications are obviously indicated at this time as the patient is reportedly asymptomatic. The best approach to managing PAH is adequate cough control should it arise in the further. Monitor for signs of progressive pulmonary hypertension, including exertional dyspnea or syncope. At any point, a Sildenafil trial can be instituted if desired to assess response (i.e., exercise intolerance, change in breathing, etc.). If there is no clinical improvement however, there is no need to continue the medication at that time given a lack of significant changes.

Prognosis is guarded going forward and monitoring for progression is advised. Ensuring the heartworm status is negative and remains so going forward is clearly of great importance as well.

The reported blood pressure is elevated, and should be reassessed for accuracy particularly given no reported clinical signs of severe hypertension (retinal changes, etc) or evidence of LVH on echo. Ideally obtain serial measurements in a controlled, low stress environment and continue until 3 consecutive readings plateau within 5mmHg of variability. If persistently >180mmHg despite a relatively calm demeanor, recommend institution of amlodipine to effect. Additionally if deemed accurate, screening for predisposing underlying causes of SHT is recommended (Cushings, PLN, adrenal tumor, etc), as primary disease is relatively uncommon and a rule out diagnosis.

RECOMMENDATIONS

- No cardiac medications are clearly indicated.
- If desired, institute Sildenafil trial 1-2mg/kg PO q12h for 2 weeks and assess response.
- Monitor for signs progressive PAH (exertional dyspnea/collapse).
- Reason of the blood pressure as discussed.
- Omega fatty acid supplementation and mild salt restriction may be of some long-term benefit.
- Anesthetic risk is considered mild if needed. Cardiac protective drug choices (opioid/benzodiazepine premedication, propofol or alfaxalone induction, isoflurane gas) are recommended. Pre-oxygenate for 5-10 minutes prior to induction. Monitor for arrhythmias, hypotension, and hypoxia both intra and post-operatively and intervene as necessary. Mild IV fluid restriction is recommended to avoid fluid overload. Avoid heart rate stimulating drugs such as atropine unless clinically indicated.
- Monitor for development of a cough, labored breathing, exercise intolerance or collapse episodes.

PLAN

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

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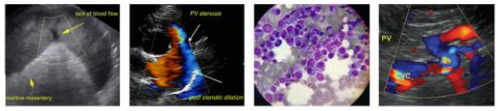

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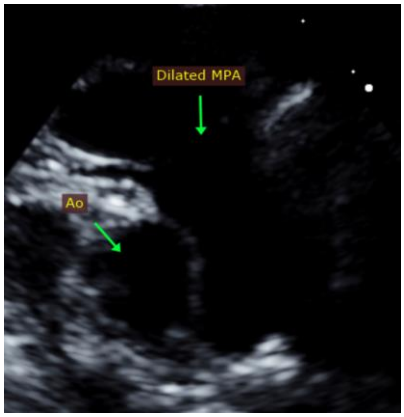
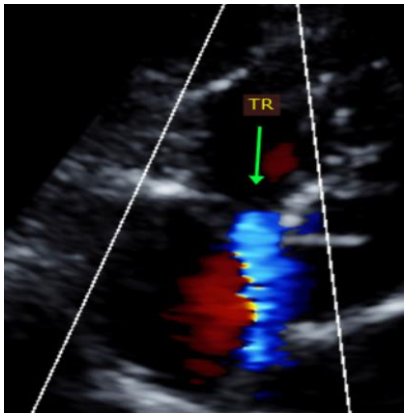
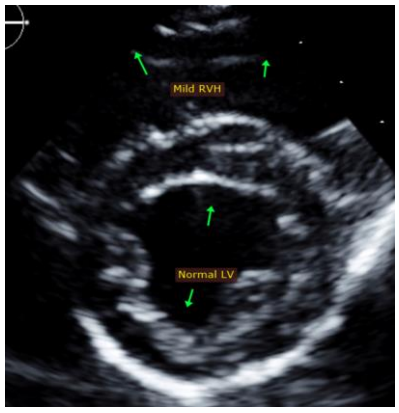
IMAGES







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

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