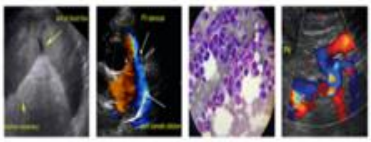
Mass Veterinary Services



SonoPath
Clinical Sonography & Telecytology
EDUCATIONAL TELECONSULTATION SERVICES™
1-800-838-4268 info@sonopath.com SonoPath.com

PATIENT
Yami Baker

SPECIES
Canine

BREED
Mix

SEX
Female Spayed

AGE
12 years

WEIGHT
27.4lbs

INTERPRETED BY
Maggie Machen Lamy, DVM DACVIM (Cardiology)

IMAGING PERFORMED BY
Pamela Harrigan, RDCS

HOSPITAL NAME
Mass Veterinary Services

REFERRING VET
Dr. Masloski

INVOICE
23882

DATE
4/26/22

PRESENTING CLINICAL SIGNS

History: Yami was noted to have an arrhythmia in January. A heart murmur was noted in November 2021. She was started on diltiazem. Chest films take mid-January revealed cardiomegaly with an interstitial pattern in her right caudal lung lobe. Yami was started on Lasix at that time. She has been off diltiazem for the past week since she became very lethargic and kept falling over. She was coughing non-stop prior to Lasix but much less now. She has also had a few collapsing episodes if she is playing too hard or coughing too much (last collapse episode was two weeks ago). Yami is eating well; however, she occasionally has labored respirations at rest. On exam today: transient arrhythmia, grade III/VI murmur with PMI left apical area, PSS, lung fields harsh on inspiration, abdominal component to respiration. Medications: 1) Diltiazem 60mg 1/2 tab three times a day---not taking 2) Lasix/furosemide 12.5mg 1.5 tabs twice a day 3) Carprofen/rimadyl 25mg 1 tab twice a day.

ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and Doppler imaging is available.
Left ventricle: LV diameter is mildly increased with adequate overall myocardial function. The LV contraction appears nonuniform with regions of hyperkinesis contrasting regions of hypokinesis. The apical region appears significantly thinned in appearance and hypokinetic, most consistent with an infarct. No LV hypertrophy is appreciated.
Left atrium: The left atrium is moderately dilated.
Mitral valve: Mild thickening of mitral valve leaflets with no prolapse into the left atrial lumen. Moderate eccentric mitral regurgitation with a normal velocity.
Aortic valve/Aorta: The aortic valve appears thickened with decreased excursion in systole. Velocity through the valve is mild to moderately elevated; max PG: 45mmHg. Moderate aortic insufficiency.
Right ventricle: Mild RV enlargement.
Right atrium: Mild right atrial dilation.
Tricuspid valve: The tricuspid valve appears mildly thickened, with moderate tricuspid regurgitation. Velocity consistent with moderate pulmonary hypertension.
Pulmonic valve/Pulmonary artery: The pulmonic valve is normal in morphology and mobility. The MPA appears prominent. Normal pulmonic outflow velocities with laminar flow. No PI.
Pericardium/other: Scant pericardial and small volume pleural effusion noted. No obvious cardiac masses.
Heart rhythm: ECG reveals a sinus rhythm with an average HR of 160bpm.

2-Dimensional Measurements

Ao diam (cm)	1.8
LA diam (cm)	3.9
LA:Ao (Swe)	2.2
IVS thickness (cm)	0.9
LVID diastole (cm)	4.3
PW thickness (cm)	0.9
LVID systole (cm)	2.8
FS (%)	35

Doppler Measurements

PV Vmax (m/s)	0.5
AoV Vmax (m/s)	3.3
MR Vmax (m/s)	5.2
TR Vmax (m/s)	3.8
TR PG (mmHg)	60

INTERPRETATION OF THE FINDINGS

Interesting case. The murmur is due to a combination of issues. First is chronic degenerative valve disease causing moderate mitral and tricuspid regurgitation.

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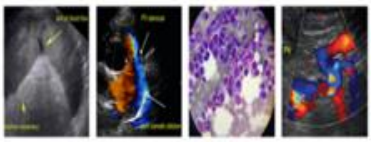

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Additionally, there is an aortic valve abnormality leading to aortic stenosis. The finding of aortic stenosis in a senior dog without a historical heart murmur poses discussion. The likely possibility is this dog had lifelong congenital aortic stenosis that was for whatever reason not appreciable on exam. The second option is this is an acquired stenosis which is exceedingly rare in small animals. Regardless, the degree of stenosis falls in the moderate category without significant LV hypertrophy or secondary changes noted. More concerning is the left ventricular contraction is irregular with regions of hyperkinesis contrasting hypokinesis. This is most consistent with a previously infarcted region within the apex which may occur with chronic disease such as AS. The overall cardiac output; however, appears sufficient. There is also moderate aortic insufficiency present which may lead to worsening volume overload of the left ventricular over time. The left atrial dimension is moderately dilated, indicating risk for complication going forward. Finally, the TR velocity is elevated with mild right heart enlargement, consistent with moderate pulmonary hypertension. No additional issues are identified.

These findings are likely enough to explain both a historical arrhythmia and development of pleural effusion. That being said, it is important to note that with this many issues going on it is almost impossible to understand what the primary cause of syncope is in this case. If these episodes persists despite therapy, further evaluation is advised such as a holter monitor given the historical arrythmia. No arrhythmia is appreciated on the screening ECG in hospital, making it difficult to know if Diltiazem is warranted. Recommend institute the medications as below and consider reassessment/holter monitor in the future.

The combination of aortic stenosis and mitral valve disease leads to difficulty in medicating. Pimobendan is generally speaking contraindicated with a stenosis; however, given the appearance of the LV and development of syncopal episodes, this is likely a reasonable choice in this case. Additionally, Lasix is recommended going forward given the finding of pleural effusion at this time. Hydrocodone can be used for any significant cough, as this is likely multifactorial in origin in a senior animal. Finally, Sildenafil may be beneficial given the history of collapse episodes.

Prognosis is guarded given the complexity and severity of the issues. This patient is certainly at risk for congestive heart failure, development of maglinant arrythmias and/or sudden death in the future. **Thoracocentesis should be performed if the patient appears unstable or dyspneic in hospital.**

RECOMMENDATIONS

- Recommend low dose Pimobendan 2.5mg PO q12h.
- Recommend Lasix 1-2mg/kg PO q12h.
- Consider thoracocentesis if the patient appears dyspneic in hospital.
- Institute Spironolactone 1-2mg/kg PO q12h.
- Pending a BP assessment >130mmHg, institute ACE-I 0.5mg/kg PO q12h.
- Institute Sildenafil 1-2mg/kg PO q12h.
- Do not utilize Diltiazem at this time.
- Utilize Hydrocodone if needed.
- Omega fatty acid supplementation and mild salt restriction may be of some long-term benefit.
- Elective anesthesia is not advised in this case.

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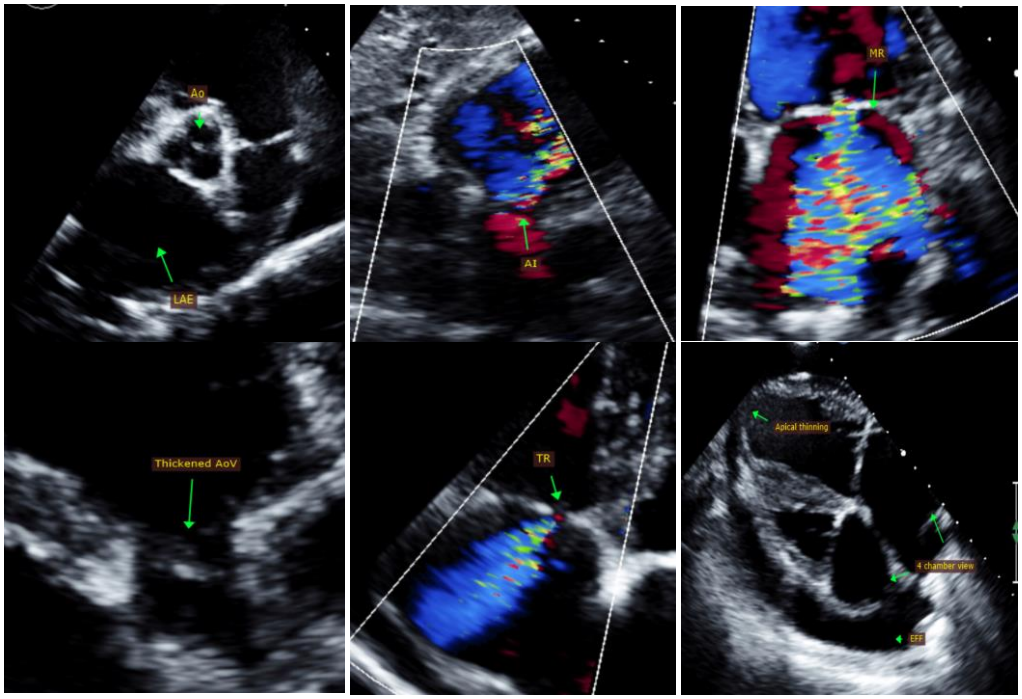
- Monitor for development of a cough, labored breathing, exercise intolerance or collapse episodes.

PLAN

- Recheck BP, ECG and fluid status in 5-7 days, sooner if any progression is noted at home.
- Consider a holter monitor, particularly should the syncopal episode persist.
- Recommend conservative monitoring with a recheck echocardiogram in 6 months, sooner if any development of clinical signs.

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)