



PATIENT
Ewok Theriault

PRESENTING CLINICAL SIGNS

History: Ewok was noted to have a heart murmur when she was scheduled to be spayed. She is eating well, and her activity level remains normal. On exam: NSR, grade III/VI parasternal murmur, PSS, lung fields clear, compressible thorax, BP: 120mmHg x 4. *No sedation for study.

SPECIES
Feline

ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and Doppler imaging is available.

BREED
DSH

Left ventricle: The LV diameter is normal with adequate myocardial function. The LV wall thicknesses are not significantly increased. Systolic septal flattening. There is a mildly hyperechoic endocardium consistent with mild fibrosis. The papillary muscles appear normal. The endocardium appears mildly remodeled.

SEX
Female Intact

Left atrium: The left atrium is borderline for this body size. No obvious spontaneous contrast or thrombi seen.

AGE
1 year

Mitral valve: The anterior leaflet of the mitral valve is elongated and mildly thickened. Significant systolic anterior motion is seen. Moderate eccentric mitral regurgitation is identified secondary to abnormal motion.

WEIGHT
6.25lbs

Aortic valve/Aorta: The aortic valve is normal in morphology and mobility. Mild to moderately elevated aortic outflow velocity. No aortic insufficiency.

Right ventricle: The RV walls are moderately hypertrophied with mild chamber dilation.

Right atrium: The right atrium is mildly dilated.

Tricuspid valve: The tricuspid valve appears normal with trace tricuspid regurgitation. Elevated velocity.

INTERPRETED BY
Maggie Machen
Lamy, DVM
DACVIM (Cardiology)

Pulmonic valve/Pulmonary artery: Severe elevation of flow velocity through the RVOT/infundibulum. A fibrous ridge is seen, consistent with stenosis. The PV leaflets appear mildly thickened. Mild post-stenotic dilation of the main pulmonary artery and peripheral branches. No significant pulmonic insufficiency.

Pericardium/other: No pericardial or pleural effusion noted. No obvious cardiac masses.

Heart rhythm: ECG reveals a sinus rhythm with an average HR of 180bpm.

2-Dimensional Measurements

Ao diam (cm)	0.7
LA diam (cm)	1.0
LA:Ao (Swe)	1.4
IVS thickness (cm)	0.4
LVID diastole (cm)	1.2
PW thickness (cm)	0.45
LVID systole (cm)	0.6
FS (%)	50

Doppler Measurements

PV Vmax (m/s)	5.6
AoV Vmax (m/s)	3.2
MR Vmax (m/s)	NA
TR Vmax (m/s)	3.1
TR PG (mmHg)	38

IMAGING PERFORMED BY
Pamela Harrigan,
RDCS

HOSPITAL NAME
Mass Veterinary Services

REFERRING VET
Dr. Masloski

INVOICE
23112

DATE
3/15/22

INTERPRETATION OF THE FINDINGS

The cause of the murmur is two-fold. First, there is severe stenosis through the RVOT/infundibular region. Fibrous tissue can be seen leading to the narrow outflow tract. This is a sub-valvular stenosis exacerbated by RV hypertrophy. A fibrosis ridge is seen; however, doppler suggests a dynamic component as well. The pulmonic valve is mildly thickened; however, this appears to be a lesser issue. There is significant RV hypertrophy and remodeling of the right ventricle present, with mild RA dilation and trace TR. Additionally, the mitral valve is abnormal consistent with dysplasia. This is causing a mild LVOT obstruction and secondary MR. Mild LA enlargement is noted, which should be monitored going forward. No obvious additional issues are identified.



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PS as a whole is uncommon in cats, and recommendations/prediction are based upon longevity studies in dogs. Severe stenosis in any location carries a high risk for complications lifelong, with many small animals developing exertional syncope, right-sided CHF, blood clot events and/or sudden death by mid-life. Given the location of stenosis, no surgical intervention will likely be beneficial. That being said, due to the complexity of the findings **consider referral to a local Cardiologist to ensure all options are exhausted.** Regardless, medical management with atenolol will hopefully improve both right and left-sided findings by decreasing heart rate and lessening both obstructions and is recommended as below.

Prognosis is guarded long term given the amount of RV changes at such a young age, with high risk for progression to right-sided CHF, syncope, malignant arrhythmias and/or sudden death lifelong.

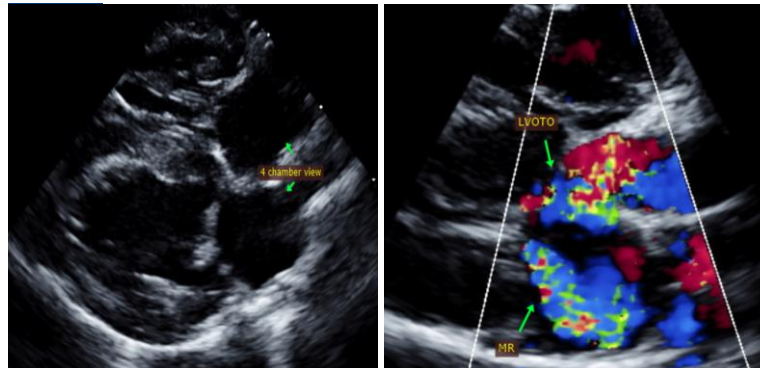
RECOMMENDATIONS

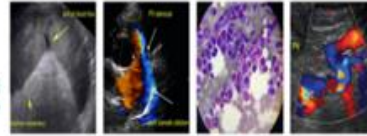
- Administer titrating dose of atenolol: 25mg tablets; Give ¼ tab once daily in the evening. Recheck heart rate in 1-2 weeks with target stressed rate of 140-160bpm 12-24 hours post-administration. Increase as needed until target reached.
- Consider referral as discussed.
- If needed, anesthetic risk is considered moderately elevated, and judicious IV fluid rates are advised avoid fluid overload. Pre-oxygenate for 5 minutes prior to induction and recover in O2 if possible. Drugs that stimulate heart rate should be avoided unless clinically necessary (glycopyrrolate, atropine). A reasonable protocol includes opioid/benzodiazepine premedication, propofol induction, isoflurane maintenance.
- Monitor heart rate, BP, ECG carefully and intervene as necessary.
- Monitor for any clinical evidence of cardiac compromise, including respiratory changes, abdominal distention, syncope, and/or signs of a blood clot event (paralysis, neurologic changes, etc.). Mild lifelong exercise restriction is advised.

PLAN

- Recommend recheck echocardiogram in 6-12 months to monitor rate of progression, sooner if clinical signs arise.

IMAGES





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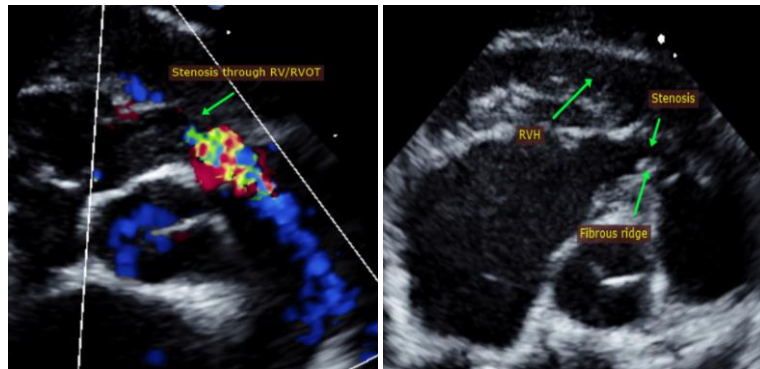
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The information and recommendations provided are based on the images presented by the referring veterinarian. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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.

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Echocardiogram performed by:

Pamela Harrigan, RDCS
Pet Animal Ultrasound Service (4paus.com)