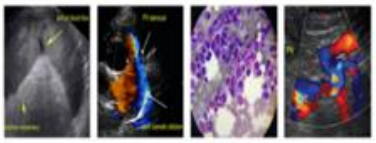
Mass Veterinary Services



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

PATIENT
Twyla Bunce

SPECIES
Feline

BREED
DSH

SEX
Female Intact

AGE
7 months

WEIGHT
7lbs

INTERPRETED BY
Maggie Machen Lamy, DVM DACVIM (Cardiology)

IMAGING PERFORMED BY
Pamela Harrigan, RDCS

HOSPITAL NAME
Mass Veterinary Services

REFERRING VET
Dr. Masloski

INVOICE
27228

DATE
11/2/22

PRESENTING CLINICAL SIGNS

History: Twyla is referred to evaluate a heart murmur. She is presently doing well at home with no concerns. Good appetite and playful. On exam: NSR, grade III/VI parasternal murmur, PSS, lung fields clear, compressible thorax, mm pink moist, CRT<2. BP: 120mmHg x 5. *Sedated with propofol for study.

ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and Doppler imaging is available.
Left ventricle: The LV diameter is normal with adequate myocardial function. The LV wall thicknesses are mildly increased globally. There is a mildly hyperechoic endocardium. The papillary muscles are normal. The endocardium appears mildly remodeled.
Left atrium: The left atrium is mildly enlarged for this body size. No obvious spontaneous contrast or thrombi seen.
Mitral valve: The mitral valve is elongated with abnormal motion in systole. Moderate eccentric MR.
Aortic valve/Aorta: The aortic valve is normal in morphology and mobility. Elevated aortic outflow velocity with a dynamic profile. No aortic insufficiency.
Right ventricle: The RV walls are mild to moderately hypertrophied. Exuberant fibrotic tissue is noted within the mid-RV, creating a significant stenosis through the region; max velocity through region is 3.7m/s (suspected to be an underestimation based upon TR velocity). Findings are most consistent with double chamber right ventricle/tunnel stenosis.
Right atrium: The right atrium is moderately dilated.
Tricuspid valve: The tricuspid valve appears mildly thickened and elongated, consistent with dysplasia Moderate tricuspid regurgitation seen. Severely elevated velocity secondary to the stenosis.
Pulmonic valve/Pulmonary artery: The pulmonic valve appears normal. No 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 140bpm.

2-Dimensional Measurements

Ao diam (cm)	0.8
LA diam (cm)	1.1
LA:Ao (Swe)	1.4
IVS thickness (cm)	0.6
LVID diastole (cm)	1.2
PW thickness (cm)	0.6
LVID systole (cm)	0.45
FS (%)	63

Doppler Measurements

PV Vmax (m/s)	3.7
AoV Vmax (m/s)	2.8
MR Vmax (m/s)	NM
TR Vmax (m/s)	4.7
TR PG (mmHg)	90

INTERPRETATION OF THE FINDINGS

Complex congenital cardiac disease is present. First, there is significant stenosis of the mid-RV most consistent with a double chamber right ventricle (DCRV) causing a tunnel stenosis through the region. The velocity through the stenosis is significantly elevated and is creating both RA enlargement and RVH. The tricuspid valve is also mildly dysplastic with moderate regurgitation. Additionally, left-sided disease is present with a dysplastic mitral valve causing an LVOT obstruction. This is resulting in mild LV thickening, moderate MR and mild left atrial enlargement. No obvious additional issues are identified.

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Regarding a DCRV, this as a whole is uncommon in small animals. A genetic origin suggests the breeding line should be reassessed (if applicable), particularly if additional offspring are found to have the abnormality. These cases carry a high risk for complications lifelong, with many patients developing exertional syncope, right-sided CHF, blood clot events and/or sudden death by mid-life. A diagnostic angiogram could be considered as the gold standard diagnostic tool, to confirm the diagnosis and further evaluate if any interventional options may be beneficial; however, in a kitten surgery is likely not a possibility regardless. Additionally, concurrent left-sided disease is present with mitral valve dysplasia that may limit outcome. As a more suitable approach, medical management with Atenolol may be helpful in the future to decrease both obstructions and is recommended as below.

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

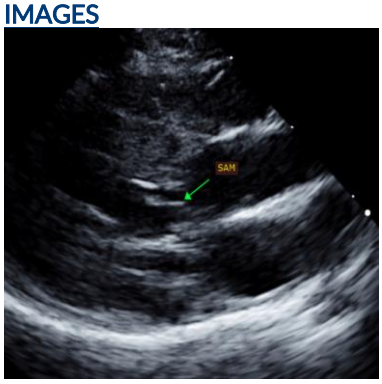
RECOMMENDATIONS

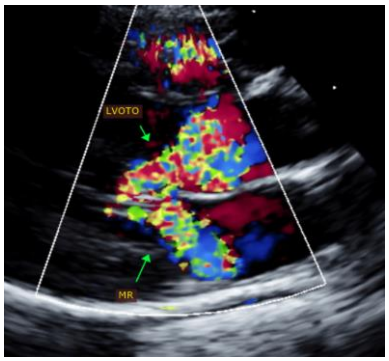
- Administer titrating dose of atenolol: 25mg tablets; Give ¼ tab once daily in the evening. Recheck heart rate in 1-2 weeks with target stressed rate of 140-160bpm 12-24 hours post-administration. Increase as needed until target reached.
- If surgery/advanced imaging would be considered, consider referral as discussed.
- If needed, anesthetic risk is considered 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.

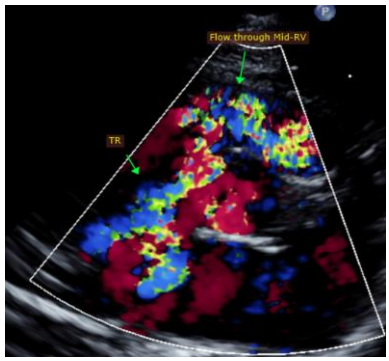
PLAN

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

IMAGES







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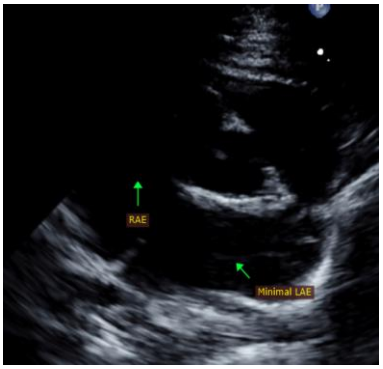

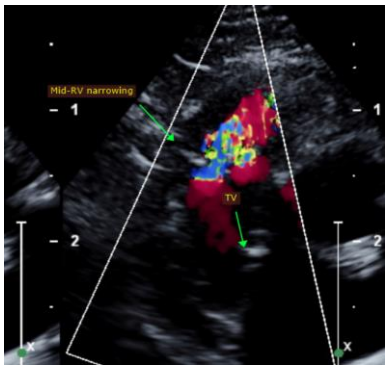

The information and recommendations provided are based on the images presented by the referring veterinarian. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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)