



**PATIENT PRESENTING CLINICAL SIGNS**

Happy Paulino History: New grade II/VI heart murmur. Echocardiogram prior to anesthesia for spay procedure. BP: 140-150mmHg.

**SPECIES ELECTROCARDIOGRAPHIC FINDINGS** \*Note: Single lead ECGs are evaluated as a rhythm strip. Morphology/MEA cannot be definitively commented on.

Feline A single lead ECG is available; 25mm/s, 20mm/mV. The initial part of the tracing shows a sinus tachycardia with heart rate of 210bpm and a regular rhythm. The second tracing shows a significant decline in heart rate with what is most consistent with respiratory variation (range 107-188bpm). P for every QRS complex and vice versa. P and QRS morphologies are positive. No ectopic beats, pauses or dysrhythmias observed. ECG diagnosis: Normal sinus tachycardia with periods of respiratory sinus arrhythmia.

**BREED**

Siamese

**SEX**

Female Intact

**AGE**

2 years

**WEIGHT**

6.6lbs

**INTERPRETED BY**

Maggie Machen  
Lamy, DVM  
DACVIM (Cardiology)

**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 normal. There is a mildly hyperechoic endocardium consistent with mild fibrosis. The papillary muscles appear normal. The endocardium appears mildly remodeled.

**Left atrium:** The left atrium and auricle are normal. No spontaneous contrast or thrombi seen.

**Mitral valve:** The anterior leaflet of the mitral valve is mildly elongated and thickened. Abnormal anterior motion is seen during systole; however, an LVOTO is only intermittently appreciated. Trace mitral regurgitation.

**Aortic valve/Aorta:** The aortic valve is normal in morphology and mobility. Normal LVOT outflow velocity on Spectral; however, an intermittent LVOTO is appreciated on color flow and 2D imaging. No aortic insufficiency.

**Right ventricle:** Normal right ventricular diameter and morphology indicating no overt evidence of pulmonary arterial hypertension.

**Right atrium:** The right atrium is mildly dilated.

**Tricuspid valve:** The tricuspid valve appears normal with no tricuspid regurgitation.

**Pulmonary 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.

**IMAGING PERFORMED BY**

Pamela Harrigan,  
RDCS

**HOSPITAL NAME**

Wignall Animal  
Hospital

**REFERRING VET**

Dr. DeMarco

**INVOICE**

24065

**DATE**

5/5/22

**2-Dimensional Measurements**

Ao diam (cm)	0.8
LA diam (cm)	1.2
LA:Ao (Swe)	1.5
IVS thickness (cm)	0.5
LVID diastole (cm)	1.4
PW thickness (cm)	0.5
LVID systole (cm)	0.6
FS (%)	60

**Doppler Measurements**

PV Vmax (m/s)	1.0
AoV Vmax (m/s)	1.4
MR Vmax (m/s)	NA
TR Vmax (m/s)	NA
TR PG (mmHg)	NA

**INTERPRETATION OF THE FINDINGS**

The diagnosis and cause of the murmur is mitral valve dysplasia leading to an obstructive LVOT flow pattern and trace MR. What is unusual in this case is the LVOTO is only intermittently appreciated, and there is no LVH. This may be due to dramatic heart rate



**PATIENT**

Happy Paulino

variability which a worsening obstruction with tachycardia. No LA is present, indicating low risk for complication at this time. No additional issues are identified.

**SPECIES**

Feline

With typical mitral valve dysplasia in cats, Atenolol is indicated to decrease the LVOT obstruction and relieve LV pressure overload. Given what is seen here, I would not utilize this drug at this time. Follow up is certainly advised to screen for progression and need for the medication.

**BREED**

Siamese

The ECG is unusual for a cat, with a significant amount of heart rate variability. Rates as high as 200bpm and as low as 107bpm. No obvious premature beats are seen, and this is suspected to reflect normal sinus node variability. In the absence of significant structural disease or clinical signs this is likely benign. Consider ruling out causes of high vagal tone, such as GI or neurologic disease (low suspicion in an asymptomatic patient). Monitoring is advised going forward.

**AGE**

2 years

Long term prognosis is guarded given the age of the patient and highly variable nature of subclinical feline heart disease. Many cats will remain asymptomatic until mid-life or beyond, while others develop CHF within the first years. Close monitoring for progression of LA dilation in the future will help determine long term prognosis.

**WEIGHT**

6.6lbs

**RECOMMENDATIONS**

- No medications are warranted at this time.
- Consider systemic evaluation as discussed, due to RSA.
- Anesthetic risk is considered mildly elevated, however judicious IV fluid rates are advised to avoid fluid overload. Additionally, drugs that stimulate heart rate should be avoided unless clinically necessary (glycopyrrolate, atropine). Avoid vasodilators as this may worsen the obstruction. A reasonable protocol includes opioid/benzodiazepine premedication, propofol induction, isoflurane maintenance.
- Monitor for any clinical evidence of cardiac compromise, including respiratory changes and/or signs of a blood clot event (paralysis, neurologic changes, etc.).

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**PLAN**

- Recommend recheck echocardiogram in 6-12 months to assess for progression/regression, sooner if clinical signs arise in the interim.

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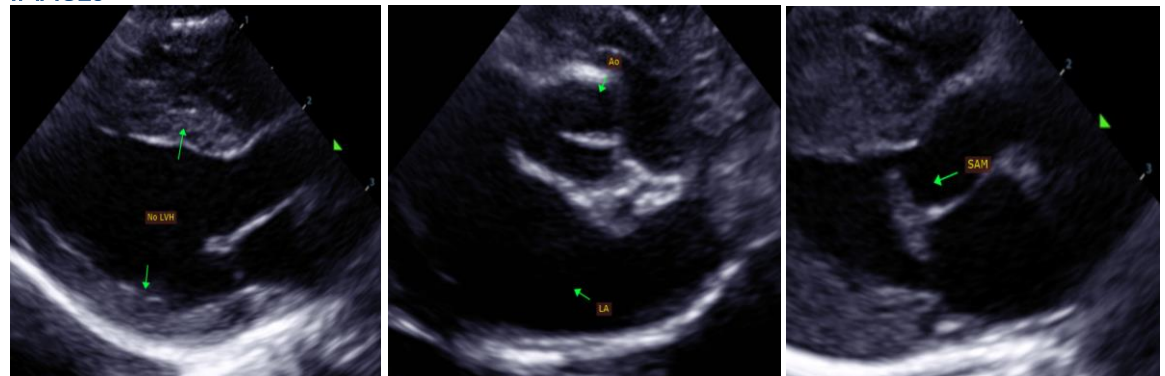
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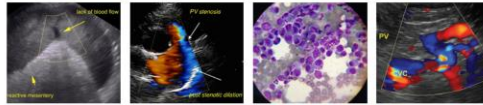
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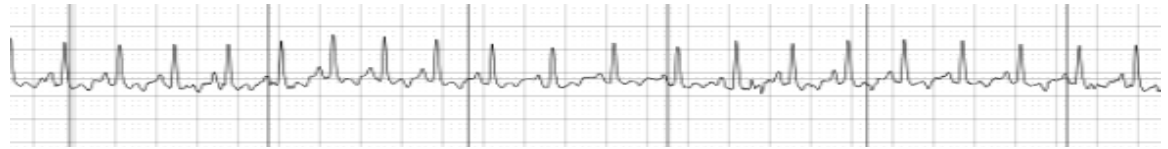
**IMAGES**





**PATIENT**

Happy Paulino



**SPECIES**

Feline

**BREED**

Siamese



**SEX**

Female Intact

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.

**AGE**

2 years

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.

**WEIGHT**

6.6lbs

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