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Clinical Sonography & Telecytology
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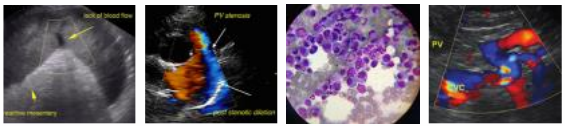

ANIMAL SOUNDS NW
MOBILE VETERINARY ULTRASOUND
IMAGING PERFORMED BY
AnimalSoundsNW.com 541-357-9423

**PATIENT**
Nisa Ward

**SPECIES**
Canine

**BREED**
Miniature Schnauzer

**SEX**
Female Spayed

**AGE**
11 years

**WEIGHT**
21.5lbs

**INTERPRETED BY**
Maggie Machen Lamy, DVM, DACVIM (Cardiology)

**IMAGING PERFORMED BY**
Jenna Walsh, CVT

**HOSPITAL NAME**
Q Street Animal Hospital

**REFERRING VET**
Dr. Cone

**INVOICE**
25067

**DATE**
6/29/22

## PRESENTING CLINICAL SIGNS

History: Two episodes of collapse within the past few months (last one 6/24/22). Collapsed suddenly and remained unresponsive for 15-20 seconds. Lethargic the rest of the day, Grade 3/6 heart murmur,

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

A single lead ECG is available; 50mm/s, 20mm/mV. The average heart rate is 176bpm with a largely regular rhythm. The rhythm is sinus in origin, with a p for every QRS complex and vice versa. The P and QRS morphologies are positive. No ectopic beats, pauses or dysrhythmias observed.
ECG diagnosis: Normal sinus tachycardia.

## ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. Diffuse nodular thickening of mitral valve leaflets with minimal prolapse into the left atrial lumen. Severe eccentric mitral regurgitation with severe left atrial enlargement. MR velocity is normal. Mild LV dilation with hyperdynamic myocardial function and evidence of volume overload. The tricuspid valve appears mildly thickened with septal prolapse and moderate tricuspid regurgitation. Velocity consistent with early pulmonary hypertension. Mild right heart enlargement (subjective). The pulmonic and aortic valves appear normal in appearance and mobility. Normal pulmonic and mildly elevated aortic outflow velocities. No aortic or pulmonic insufficiency noted. No pericardial or pleural effusion seen.

## CARDIAC CHART

| CANINE CARDIAC PARAMETERS | MR VMAX (m/s) | TR VMAX (m/s) | LA/AO (Boon method) | LA/AO (Heart Base; Swe) | FS (%) | EF (%) | EPSS (cm) |
|---|---|---|---|---|---|---|---|
| NORMAL PARAMETER | 4.5-5.5 | <2.7 | 1.3 | <1.6 | 28-40 | 40-100 | <0.6 |
| PATIENT | 6.0 | 3.1 | 1.97 | 2.1 | 45 | 77 | 0.3 |
| **CANINE CARDIAC PARAMETERS** | **HR** (BPM) | **AV VMAX** (m/s) | **PV MAX** (m/s) | **BODY WEIGHT** (kg) | **LA** 2D short axis Base view (cm) | **LVIDd** Avg; 2D and m-mode short axis (cm) | **LVIDs** Avg; 2D and m-mode short axis (cm) |
| NORMAL PARAMETER | 50-100 | 0.7-1.7 | 0.7-1.6 | BELOW | BELOW | BELOW | BELOW |
| PATIENT | 156 | 2.1 | 0.9 | 9.8 | 2.7 | 3.8 | 2.1 |
| *Normal chamber parameters expressed as a mean value (SD) | | | | 3 | 1.27 (5.3) | 2.46 (2.46) | 1.36 (5.5) |
| **BODY WEIGHT DEPENDENT PARAMETERS** | | | | 5 | 1.40 (4.5) | 2.74 (5.2) | 1.60 (4.7) |
| | | | | 10 | 1.50 (3.8) | 3.27 (3.5) | 2.06 (3.1) |
| | | | | 15 | 1.83 (2.0) | 3.71 (2.4) | 2.43 (2.1) |
| | | | | 20 | 2.02 (1.9) | 4.14 (2.2) | 2.80 (2.0) |
| | | | | 25 | 2.18 (2.4) | 4.48 (2.9) | 3.10 (2.5) |
| | | | | 30 | 2.33 (3.3) | 4.83 (3.9) | 3.39 (3.4) |
| | | | | 35 | 2.48 (4.3) | 5.17 (5.0) | 3.69 (4.5) |
| | | | | 40 | 2.62 (5.2) | 5.48 (6.1) | 3.96 (5.4) |
| | | | | 50 | 2.88 (7.1) | 6.07 (8.3) | 4.46 (7.4) |

Adapted from June Boon, Veterinary Echocardiography, 1998
Rishniw M and Hollis NE, J Vet Intern Med 2000; 14:429-435
Hansson et al, Vet Rad and Ultrasound 2002
Bonagura et al. Echocardiography: principles of interpretation, Vet Clin North Am 15:1177, 1995

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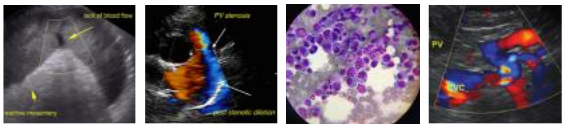

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## INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Chronic degenerative valve disease causing severe mitral and moderate tricuspid regurgitation. Severe left atrial and ventricular enlargement indicates there is an elevated risk for spontaneous congestive heart failure. Mild pulmonary hypertension is noted, which is likely due to chronic left atrial pressure elevation. No comorbidities are seen such as systolic dysfunction and the ECG is unremarkable.

Episodes in this patient are most likely cardiogenic in origin; however, an atypical seizure cannot be ruled out, particularly given the extended length. Possible cardiogenic causes include poor forward blood flow leading to hypoxia, early CHF, pulmonary hypertension (only mild identified), an arrhythmia (ECG normal) and/or blood pressure swings (baseline blood pressure recommended). A vagal event, neurologic causes, or other systemic issues are also possible. Regardless, given this severity of disease on echo life-long support is recommended including diuretic therapy. Long term prognosis is guarded to poor, with risk for progression to CHF, development of malignant arrhythmias and/or sudden death in the future. Should syncope persist despite medications, a holter monitor and/or additional diagnostics may be warranted to rule out other contributing causes.

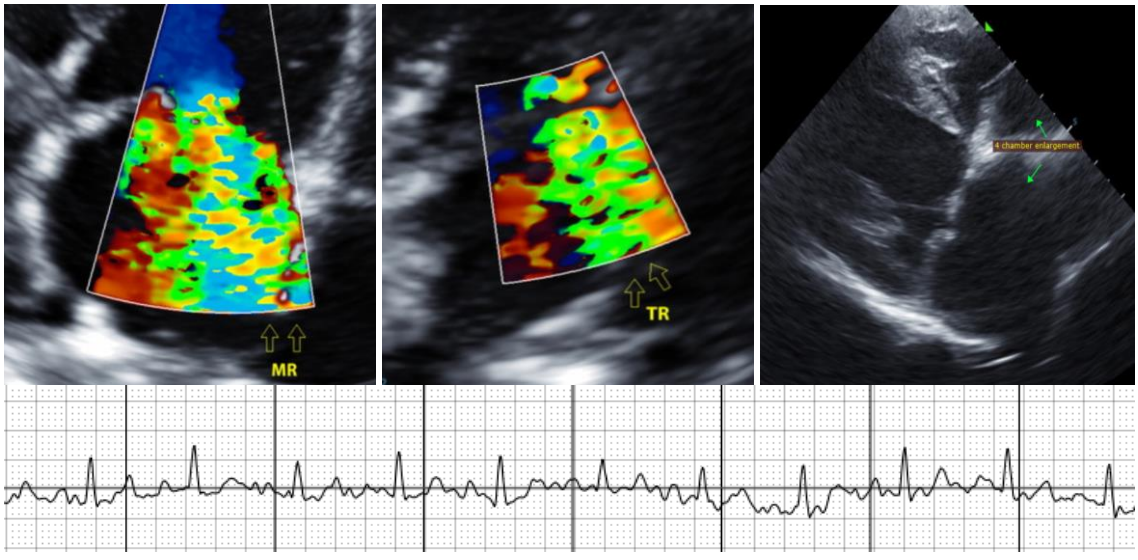
Monitoring of sleeping respiratory rates will be paramount to screen for congestive heart failure at home. Omega fatty acid supplementation and mild salt restriction may also be of some long-term benefit. Monitor for development of a cough, labored breathing, exercise intolerance or worsening collapse episodes in the future. Elective anesthesia is not advised.

## PLAN

Baseline BP is recommended. Administer Pimobendan 0.3mg/kg PO q12h. Institute spironolactone 1-2mg/kg PO q12h. Institute ACEI 0.5mg/kg PO q12h. Institute Lasix 1mg/kg PO q12h. Monitor SRRs at home. Monitor renal values and BP in 10-14 days, then every 3-4 months while on diuretics. If syncope persists, a holter monitor and/or further evaluation is advised.

Recommend conservative monitoring with a recheck echocardiogram in 6 months, sooner if any

## IMAGES



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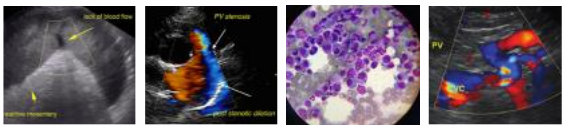

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**The information and recommendations provided are based on the images presented by the referring veterinarian. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.**

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.

**Maggie Machen Lamy, DVM**
**Diplomate of the American College of Veterinary Internal Medicine (Cardiology)**
info@sonopath.com