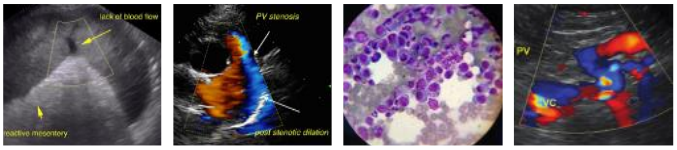
SonoPath
Clinical Sonography & Telecytology
EDUCATIONAL TELECONSULTATION SERVICES™



SonoPath.com
1-800-838-4268 info@sonopath.com

**PATIENT**
Laila Offord

**SPECIES**
Canine

**BREED**
Boxer

**SEX**
Female Spayed

**AGE**
10 years

**WEIGHT**
NP

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

**IMAGING PERFORMED BY**
Kelly Romero

**HOSPITAL NAME**
Midtown Veterinary Medical Center

**REFERRING VET**
Dr. Walhquist

**INVOICE**
25615

**DATE**
8/5/22

## PRESENTING CLINICAL SIGNS

History: Pre-dental echo due to heart murmur and arrhythmia. Grade III/VI systolic heart murmur, with an intermittent arrhythmia. A recent ECG showed one VPC every 2-3 screens. She was also recently diagnosed with hypothyroidism - meds just started.
-Blood pressure average: 197/147, mean 168mmHg.

## ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. Minimal diffuse thickening of mitral valve leaflets with no obvious prolapse into the left atrial lumen. Trace eccentric mitral regurgitation is identified. Normal left atrial dimension. Normal LV diameter with adequate myocardial function. The tricuspid valve appears subjectively normal, with trace tricuspid regurgitation. Normal velocity. The right heart is prominent (subjective). No overt evidence of pulmonary arterial hypertension. The pulmonic and aortic valves are normal in morphology and mobility. No aortic abnormalities identified, however the LVOT velocity is mildly elevated. Normal pulmonic outflow velocities. No aortic or pulmonic insufficiency. No pericardial or pleural effusion noted. No cardiac tumors observed.

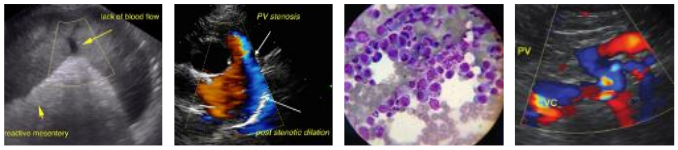
## CARDIAC CHART

| 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 | 5.2 | 2.3 | 1.3 | 1.3 | 59 | 89 | NM |
| **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 | NM | 2.2 | 1.4 | NP | 2.2 | 3.6 | 1.5 |
| *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) |
| **Note: All measurements based upon multi-modal images and methods. An average value is reported.* | | | | 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

## INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Mild abnormalities are identified. The cause of the murmur is mildly increased flow velocity through the LVOT/aortic root. No obvious subaortic ridge or valvular abnormalities are visualized, and in the absence of structural abnormalities this is considered a benign flow abnormality. This type of flow abnormality is exacerbated by volume changes such as anemia or dehydration, and baseline lab work is recommended if not recently performed. Additionally mild mitral regurgitation is identified, which may reflect early valve disease or may be physiologic in




SonoPath.com
1-800-838-4268 info@sonopath.com

**PATIENT**
Laila Offord

**SPECIES**
Canine

**BREED**
Boxer

**SEX**
Female Spayed

**AGE**
10 years

**WEIGHT**
NP

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

**IMAGING PERFORMED BY**
Kelly Romero

**HOSPITAL NAME**
Midtown Veterinary Medical Center

**REFERRING VET**
Dr. Walhquist

**INVOICE**
25615

**DATE**
8/5/22

origin. Finally, the right heart appears prominent, which is of unknown significance (rule out early ARVC versus normal variant). It is reasonable to monitor all findings periodically via recheck echocardiography in the future. All that being said, these findings are mild with no significant structural issues identified.

VPCs are a very non-specific finding. They can be primary in origin (such as ARVC), be secondary to significant cardiac disease (not present in this study) or be extra-cardiac in origin, i.e., due to pain, stress, inflammation, cancer, GI disease, DIC/sepsis, etc. In a 10yo Boxer, there is certainly concern for ARVC (although the most common age of onset 6-8yo, often asymptomatic); however, other extra-cardiac causes should be ruled out. ARVC can occur with or without systolic dysfunction and structural issues, however even normal structure/function should be monitored going forward for any progressive issues. Unfortunately, there is always an elevated risk for collapse and sudden death in any arrhythmic patient, and even on medications this risk unfortunately still persists.

This study does not address the need for treatment/further evaluation of the arrhythmia, and the ECG report should be referenced (sotalol v mexiletine v no therapy v holter).

Fish oil supplementation is recommended for dogs with arrhythmias (1000mg of omega 3 and 6 once to twice daily as tolerated).

Anesthetic recommendations regarding the arrhythmia should be dictated by the ECG report. No structural contraindication for general anesthesia.

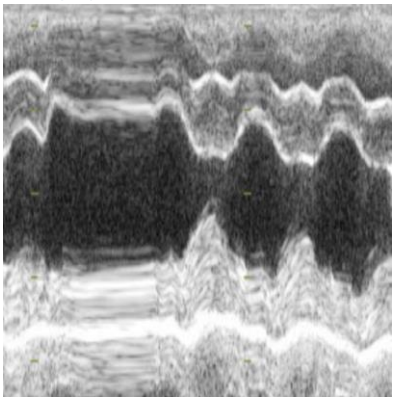
Monitor at home for collapse, exercise intolerance, and/or lethargy.

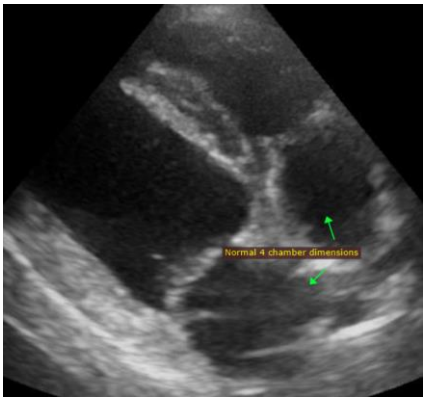
## PLAN:

Address ECG findings/follow up as dictated by the ECG report.

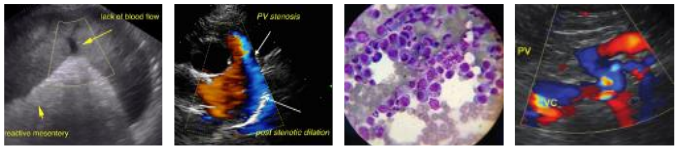
Recheck echocardiogram is recommended in 6-12 months to assess for progression, sooner if any development of associated clinical signs such as collapse.

## IMAGES





SonoPath
Clinical Sonography & Telecytology
EDUCATIONAL TELECONSULTATION SERVICES™




SonoPath.com
1-800-838-4268 info@sonopath.com

**PATIENT**
Laila Offord

**SPECIES**
Canine

**BREED**
Boxer

**SEX**
Female Spayed

**AGE**
10 years

**WEIGHT**
NP

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

**IMAGING PERFORMED BY**
Kelly Romero

**HOSPITAL NAME**
Midtown Veterinary Medical Center

**REFERRING VET**
Dr. Walhquist

**INVOICE**
25615

**DATE**
8/5/22

**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