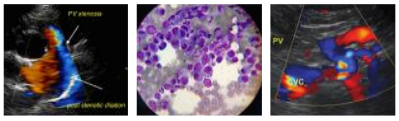
IMAGING PERFORMED BY

IntraPet.com



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

**PATIENT**
Clayton WMARO

**SPECIES**
Ferret

**BREED**
Ferret

**SEX**
Male Neutered

**AGE**
8.8.18

**WEIGHT**
1kg

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

**HOSPITAL NAME**
Washington Metropolitan Area Ferret Outreach

**REFERRING VET**
Dr. Urie

**INVOICE**
27591

**DATE**
11.21.22

## PRESENTING CLINICAL SIGNS

History: Arrhythmia and murmur noted on PE.
-Pertinent abnormal PE/Chem/CBC/UA Results: Moderate cardiomegaly.
-Current medications: None listed.
-Sedation used: Not required to complete full diagnostic ultrasound.
-Pertinent previous ultrasound results: No previous.
-STAT: Not requested.
-Imaging performed by: Stephanie Warga RDCS, RVT.

## ELECTROCARDIOGRAPHIC FINDINGS

A six lead ECG is available at both 25 and 50mm/s; 2mm/mV. The average heart rate is 150bpm, although there are no 2 consecutive sinus beats. The underlying rhythm is sinus in origin, with a p for every QRS complex and vice versa. The P wave morphology is positive with a normal dimension. Normal PR. The QRS morphology is positive with normal dimension. MEA is normal. Isolated VPCs throughout with ventricular bigeminy. No couplets/triplets. No supraventricular ectopic beats, pauses or other dysrhythmias observed.
ECG diagnosis: Ventricular bigeminy.

## ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. Mild diffuse thickening of mitral valve leaflets with no obvious prolapse into the left atrial lumen. Moderate mitral regurgitation with moderate left atrial dilation. Moderate LV dilation with low normal myocardial function. The LV wall dimensions are normal. The tricuspid valve appears normal with no tricuspid regurgitation. Normal right atrial and ventricular diameter and morphology indicating no overt evidence of pulmonary arterial hypertension. The pulmonic and aortic valves are normal in morphology and mobility. Normal aortic outflow velocities with laminar flow. No obvious pulmonic insufficiency. Moderate aortic insufficiency. No pericardial or pleural effusion noted. No obvious cardiac masses.

## CARDIAC CHART

| CARDIAC PARAMETERS | BODY WEIGHT (kg) | HR (BPM) | IVSd (cm) (Moise, Pipers) | LVIDd (cm) (Moise, Pipers) | LVWd (cm) (Moise, Pipers) | FS (%) | EF (%) |
|---|---|---|---|---|---|---|---|
| NORMAL PARAMETER | ------ | 150-240 | 3.5-0.55 | <2 (mean 1.5) | 3.5-0.55 | 35-67 | 80-100 |
| PATIENT | 1.0 | 160 | 0.30 | 1.5 | 0.32 | 39 | 74 |
| **FELINE CARDIAC PARAMETERS** | **LA/AO** (Boon) | **LA/AO HEART BASE (Swe)** (Abbott) | **LA** 2D short axis Base view (cm) (Abbott) | | **LVOT VEL** (m/s) | **RVOT VEL** (m/s) | **E max** **(m/s)** |
| NORMAL | <1.5 | <1.3 | <1.2 | | <1.6 | <1.3 | <0.9 |
| PATIENT | NM | 1.7 | 0.95 | | 1.1y | 0.55 | NM |

Adapted from June Boon,Veterinary Echocardiography,1998
Abbott J & MacLean H JVIM 2006;20: 111-119, Moise et al. Am J Vet Res 47:1476, 1986. Pipers et al. Am J Vet Res 40:882, 1979.

## INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

The presumed diagnosis is chronic degenerative valve disease causing moderate mitral and aortic insufficiency. No specific lesion is noted on the aortic valve, and this is presumed to be either a primary valve degeneration issue, or potentially secondary to systemic hypertension. Regardless, the quantification is moderate and is likely contributing to LV/LA dilation. Moderate left atrial/ventricular enlargement indicates the current risk for imminent complication is low; however, there is certainly risk for progression in the future. No concurrent issues such as pulmonary hypertension are noted in this study.

Given the degree of LA/LV dilation and significant AI, institution of Pimobendan and an ACE-I are indicated. If possible, systemic pressure should be assessed to determine need for additionally vasodilation with amlodipine.

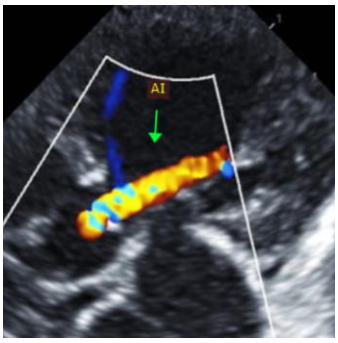
The ECG is consistent with frequent ventricular ectopy (VPCs) which is occurring in a bigeminal pattern (ie every other beat is a VPC). While the frequency is concerning, the markers of malignancy are low with single monomorphic beats. Given the frequency seen here, consider treatment with atenolol as below. VPCs can occur due to heart disease (moderate in this case) or systemic inflammation, stress, etc. and systemic evaluation may be warranted. Monitor for any issues associated with sustained arrhythmias, including collapse/syncopal episodes or extreme lethargy.

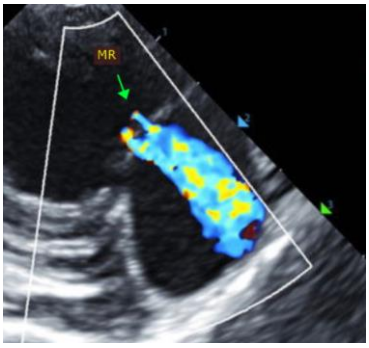
Assessment of progression in the future will help predict long term prognosis, which is guarded at this stage (B2). Monitor for development of a cough, labored breathing, exercise intolerance or collapse episodes.

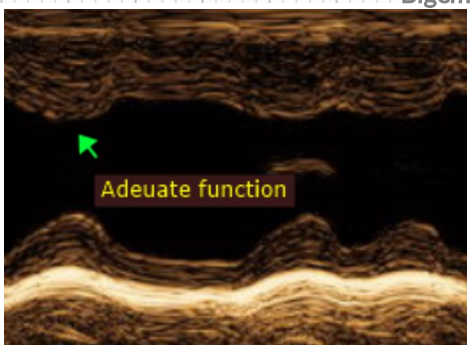
Plan: Consider further systemic evaluation (AUS). BP if possible. Institute ACE-I (0.25mg/kg PO q12h) and Pimobendan (0.5-1.25mg/kg PO q12h). Consider institute Atenolol (3.125-6.125mg/kg PO 24h) and assess response in 2 weeks.

Recommend conservative monitoring with a recheck echocardiogram and ECG in 6 months, sooner if any development of clinical signs.

## IMAGES


**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**