



PATIENT

Booker Cowen

PRESENTING CLINICAL SIGNS

History: Grade III/VI heart murmur; no clinical signs. ProBNP: 1341.

SPECIES

Canine

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; 25mm/s, 10mm/mV. The average heart rate is 166bpm with a largely regular rhythm. The rhythm is sinus in origin, with a p for every QRS complex and vice versa. P and QRS morphologies are positive. Isolated VPCs are noted throughout; singles only and largely monomorphic. 14 in a one-minute tracing. No supraventricular premature beats, pauses or other dysrhythmias observed. ECG diagnosis: Normal sinus rhythm with isolated VPCs.

BREED

Boxer

SEX

Male Neutered

ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and Doppler imaging is available.

AGE

12 years

Left ventricle: The LV diameter is normal with adequate myocardial function. LV wall thicknesses are normal.

Left atrium: The left atrium is mildly dilated.

Mitral valve: The mitral valve is diffusely thickened with minimal prolapse into the left atrial lumen. Mild mitral regurgitation.

WEIGHT

79.6lbs

Aortic valve/aorta: The aortic valve is normal in morphology and mobility. Normal aortic outflow velocity; laminar flow. No aortic insufficiency. Uniform echogenicity mass associated with the aortic root; 3.2 x 2.6cm in best viewed cross section. The mass is well encapsulated. No obstruction to blood flow or imposition on cardiac chambers is seen at this time.

INTERPRETED BY

Maggie Machen
Lamy, DVM
DACVIM (Cardiology)

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

Right atrium: Normal RA dimension.

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

Pulmonic 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

2-Dimensional Measurements

Ao diam (cm)	2.5
LA diam (cm)	3.4
LA:Ao (Swe)	1.5
IVS thickness (cm)	1.0
LVID diastole (cm)	4.0
PW thickness (cm)	1.0
LVID systole (cm)	2.2
FS (%)	46

Doppler Measurements

PV Vmax (m/s)	NM
AoV Vmax (m/s)	1.75
MR Vmax (m/s)	NA
TR Vmax (m/s)	NA
TR PG (mmHg)	NA

HOSPITAL NAME

Chase Veterinray
Clinic

REFERRING VET

Dr. Caffarella

INTERPRETATION OF THE FINDINGS

The murmur is due to chronic degenerative valve disease causing mild mitral regurgitation. Mild left atrial enlargement indicates the current risk for complication is low. No concurrent issues such as systolic dysfunction is noted in this study.

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There is also suspect cardiac neoplasia associated with the heart base/aortic root. The most likely tumor type given this location and breed is a chemodectoma; however, other



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more malignant differentials cannot be ruled out. Chemodectomas are often incidental findings as is suspected to be the case here, only causing clinical signs if blood flow is obstructed, pericardial effusion occurs, or a metastatic lesion causing systemic issues. The prognosis with cardiac chemodectomas is fair. The limiting factor is often hemorrhage into the pericardium, impingement of cardiac blood flow secondary to tumor growth, or metastasis to the thorax or abdomen. Chemotherapy and/or radiation therapy can also be discussed with an Oncologist.

Isolated VPCs are noted on the ECG. VPCs are ectopic beats generated from abnormal conductive or fibrotic tissue in the ventricles of the heart muscle, and even frequent single VPCs will often cause no clinical signs in dogs. When sustained however, ventricular tachycardia can lead to symptoms such as lethargy and collapse.

VPCs are a very non-specific finding. They can be primary in origin (arrhythmic disease; a rule out diagnosis), develop 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 this senior boxer with mild structural disease and cardiac neoplasia, either a primary arrhythmia or secondary to the chemodectoma would be suspected. The latter is more likely given the age of the patient. 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.

In addressing arrhythmias in dogs, we must not only consider why they are happening as above, but also whether or not treatment is warranted. Although there are low markers of malignancy, polymorphism is noted, and this breed is at high risk for sudden death. Consider application of a holter monitor prior to determining if therapy is warranted. If a holter is declined, I would err on the side of caution and institute Sotalol therapy in this patient. Discussion with the owner is advised.

RECOMMENDATIONS

- No cardiac medications are clearly indicated at this time.
- Consider holter monitor as discussed. If declined or not possible, consider institution of Sotalol 1-2mg/kg PO q12h.
- Fish oil supplementation is recommended for dogs with arrhythmias (1000-2000mg of omega 3 and 6 once to twice daily).
- Consider full systemic evaluation, consultation with an Oncologist, etc.
- Anesthetic risk is considered mild if needed. Cardiac protective drug choices (opioid/benzodiazepine premedication, propofol or alfaxalone induction, isoflurane gas) are recommended. Pre-oxygenate for 5-10 minutes prior to induction. Monitor for arrhythmias, hypotension, and hypoxia both intra and post-operatively and intervene as necessary. Mild IV fluid restriction is recommended to avoid fluid overload. Avoid heart rate stimulating drugs such as atropine unless clinically indicated.
- Monitor for development of a cough, labored breathing, exercise intolerance or collapse episodes.



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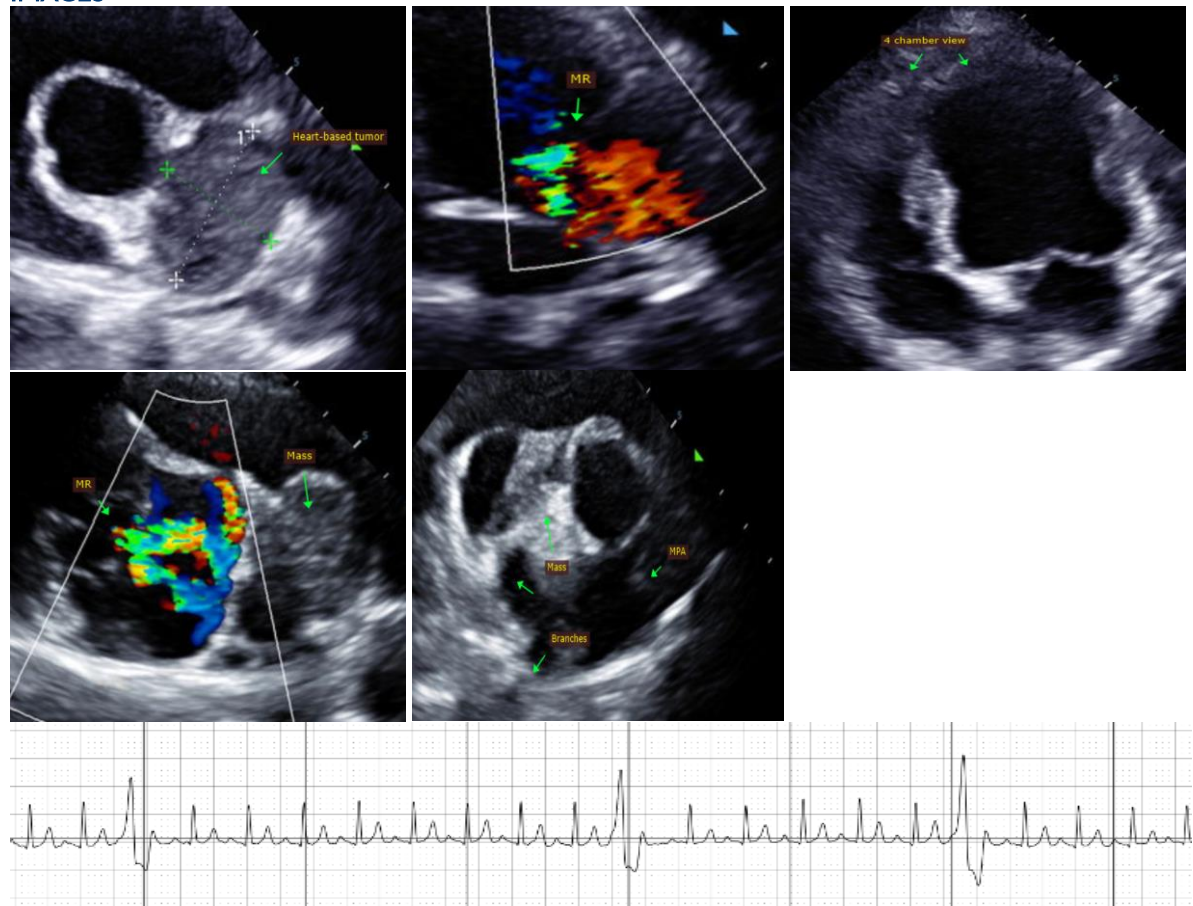
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PLAN

- Recommend conservative monitoring with a recheck echocardiogram 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.

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Echocardiogram performed by: Pamela Harrigan, RDCS
 Pet Animal Ultrasound Service (4paus.com)