



PATIENT

Grizzly Bates

SPECIES

Canine

BREED

Goldendoodle

SEX

Male Neutered

AGE

1.7.15

WEIGHT

78.2lbs

INTERPRETED BY

Maggie Machen Lamy,
DVM, DACVIM
(Cardiology)

HOSPITAL NAME

DocSide Veterinary
Medicatl Center

REFERRING VET

Dr. Tierney

INVOICE

22960

DATE

3.7.22

PRESENTING CLINICAL SIGNS

History: Presented for limping. Grade 1-2/6 heart murmur. Assess prior to anesthesia.

-Pertinent abnormal PE/Chem/CBC/UA Results: All labs WNL on 1/7/22.

-Current medications: Rimadyl for pain control. Fluoxetine for anxiety.

-Blood pressure: 140, 140, 138, 138, 138mmHg.

-Sedation used: Gabapentin and Trazodone 2 hours before echo.

-Pertinent previous ultrasound results: No previous.

-STAT: Not requested

-Imaging performed by: Stephanie Pearce RDCS, RVT.

ELECTROCARDIOGRAPHIC FINDINGS

A six lead ECG is available at both 25 and 50mm/s; 2mm/mV. The average heart rate is 150bpm. 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 are seen throughout; some interpolated beats, some fusion beats. Occasional couplets, brief salvo of VT, heart rate: 300bpm. Polymorphism noted. No supraventricular premature beats, pauses or other dysrhythmias observed.

ECG diagnosis: Normal sinus rhythm with malignant ventricular arrhythmias.

ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. Mild mitral valve leaflet thickening with no obvious prolapse into the left atrial lumen. No mitral regurgitation is identified. Normal left atrial dimension. Normal LV diameter with normal myocardial function. The tricuspid valve appears subjectively normal. No TR. The right heart is normal. No overt evidence of pulmonary arterial hypertension. The pulmonic and aortic valves are normal in morphology and mobility. No aortic abnormalities identified; however, the aortic outflow velocity is mildly increased. Normal pulmonic outflow velocities. No aortic insufficiency. No 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	NA	NA	NM	1.3	47	79	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	184	2.3	1.6	35.5	2.8	4.3	2.3
*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)
<i>*Note: All measurements based upon multi-modal images and methods. An average value is reported.</i>				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

Overtly normal cardiac structure and function are identified. No significant valve leaks are noted, and the systolic function is intact. The murmur is due to an elevated aortic outflow velocity, which is a benign finding. No obvious intra or extra-cardiac tumors are visualized; however, it is important to note that small masses are easily missed in absence of effusion. Suspicion is low; however, advanced imaging such as a thoracic CT scan can be considered.

The ECG does confirm the arrhythmia is due to frequent ventricular premature contractions (VPCs) and a brief run of VT. 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 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 this dog without structural disease, all additional causes should be considered. An abdominal ultrasound to monitor for any underlying abnormalities, in addition to full lab work, tick titers, cardiac troponin level, etc. can be considered. 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.

Based upon the amount of arrhythmia seen on this recording, including polymorphism and a brief run of VT, Sotalol is recommended as below. The goal is to significantly decrease the frequency of VPC's going forward. Ideally, a holter monitor would be applied once the medication is initiated to fully understand control.

Fish oil supplementation is recommended for dogs with arrhythmias (1000-2000mg of omega 3 and 6 once to twice daily). Fish oil supplementation is recommended for dogs with arrhythmias (1000-2000mg of omega 3 and 6 once to twice daily).

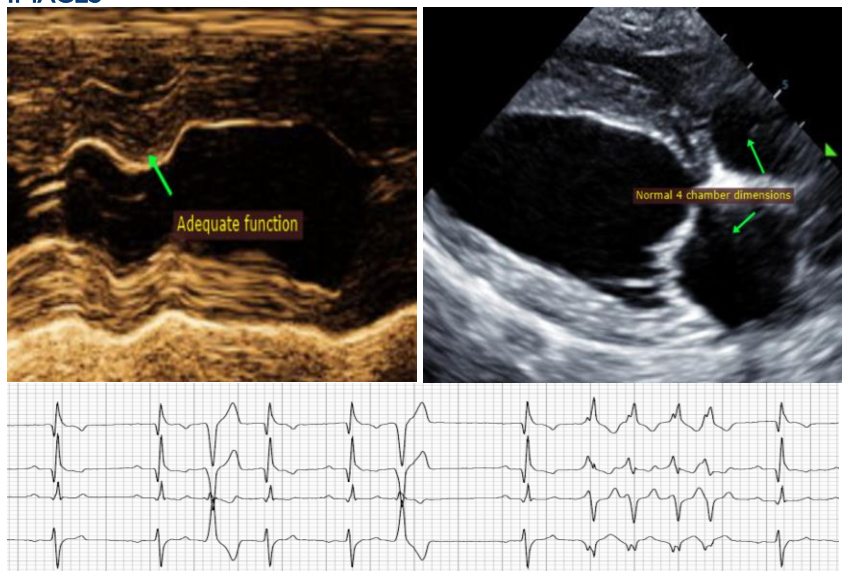
Elective anesthesia is not advised prior to further work up/sotalol therapy and arrhythmic control. Once controlled, anesthetic risk is considered moderately elevated. Avoid ketamine, telazol, dexdomitor (or other alpha-2 agonists) and acepromazine. Recommend having lidocaine CRI available for use in the event of worsening ventricular arrhythmias under anesthesia (CRI 50–75mcg/kg/min).

PLAN

Institute Sotalol 1-2mg/kg PO q12h. Recheck BP, ECG or ideally a holter monitor in 2 weeks to assess response and need for additional therapy. Full systemic evaluation is advised.

Recommend a recheck ECG and 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.

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