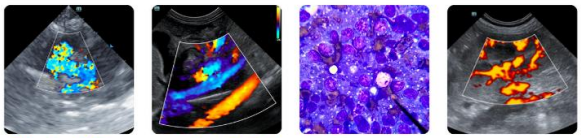


DATE

3.26.26

PATIENT

Loki Palmer

SPECIES

Canine

BREED

Pitbull

SEX

MN

AGE

4.25.16

WEIGHT

80lbs

INTERPRETED BY

Maggie Machen Lamy, DVM, DACVIM (Cardiology)

HOSPITAL NAME

Verhart VH

REFERRING VET

Dr. Betta

INVOICE

47320

CLINICAL BACKGROUND & STUDY DETAILS

History: Presented for progressive worsening of cough mainly during times of exertion. Arrhythmia present but no murmur ausculted. Crackles appreciated on auscultation of lungs.
Pertinent abnormal PE/Chem/CBC/UA Results: AC600 pending as of 3/18. Brief ECG: mild tachycardiac (~190-200bpm) with occ VPCs. Brief fast scan: no pericardial effusion seen.
Current medications: Furosemide 50mg 2 tab PO q12hr, COUGH TABS (GUAIFENESIN 100MG & DEXTROMETHORPHAN 10MG)-Give 1 tablet by mouth about 2 hours prior to bedtime. Can repeat up to every 8-12 hours if needed for persistent cough
Sedation used: Not required to complete full diagnostic ultrasound.
Pertinent previous ultrasound results: No previous.
STAT: Approved.
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 190bpm (range 150-220bpm). No identifiable P waves with an irregularly irregular rhythm, consistent with atrial fibrillation. Isolated VPCs.
ECG diagnosis: Rapid atrial fibrillation with isolated VPCs.

ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. Diffuse thickening of mitral valve leaflets with no prolapse into the left atrial lumen. Severe mitral regurgitation. Normal MR velocity. Severe left atrial dilation. Severe LV dilation with mildly depressed myocardial function. The tricuspid valve appears mildly thickened with mild TR. TR velocity consistent with mild to moderate pulmonary hypertension. Mild to moderate right atrial and ventricular dilation. No obvious RVH. The pulmonic and aortic valves are normal in morphology and mobility. Normal pulmonic and aortic outflow velocities with laminar flow. No obvious aortic or pulmonic insufficiency. No pericardial or pleural effusion seen. No obvious cardiac masses.

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	5.0	3.5	NM	2.2	39	69	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	1.4	0.6	36.3	4.5	5.2	3.1
*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 ***Note: All measurements based upon multi-modal images and methods. An average value is reported.*** 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				
	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)

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Chronic degenerative valve disease causing severe mitral and mild tricuspid regurgitation is identified. The degree of disease is marked with severe LA enlargement and development of arrythmias. Four chamber dilation suggests the risk for complication is elevated. Mild to moderate pulmonary hypertension is noted, which is likely due to active congestion. Mild LV dysfunction is present; however, this degree is likely secondary to CVD in a large breed dog. No additional issues are identified.

Rapid atrial fibrillation (AF) and isolated VPCs are confirmed on the ECG. AF is characterized by disorganized contractions of the atria leading to an irregular heart rhythm. The irregular heart rhythm rarely causes clinical signs in dogs. However, atrial fibrillation also usually causes an increase in the heart rate, and this leads to clinical signs and CHF as we see here. Development of AF and CHF requires lifelong diuretics and management of the structural disease in addition to the arrhythmia. The VPCs are singles only and do not warrant specific therapy.

Unfortunately, dogs with CHF and AF are at high risk for complications such as recurrent congestive heart failure, malignant arrhythmias, left atrial tear and sudden death. Medications and close monitoring will help give the best prognosis possible, however the average survival time with this condition is <6 months.

Goals of therapy include correcting water retention, improving myocardial contractility, afterload reduction, and heart rate control. Full cardiac support including aggressive diuresis is indicated, due to the high risk for decompensation with rapid arrhythmias and severe disease. Medical management is recommended as below with a guarded to poor prognosis. Consider hospitalization if the patient is or becomes unstable. The target heart rate is 140-160bpm in hospital.

Please monitor at home for cough, lethargy, inappetence, collapse/fainting episodes or increase in respiratory rate or effort. Monitoring of sleeping breathing rates is recommended to screen for recurrent CHF at home. Moderate activity restriction is advised. Omega fatty acid supplementation and mild salt restriction may be of some long-term benefit.

PLAN

Consider baseline CXR and hospitalization if needed for IV diuretic/rate control therapy as needed until stable. Oral medications are as follows: Institute Spironolactone 1-2mg/kg PO q12h. Continue Lasix/Furosemide 1-2mg/kg PO q8h for 3-5 days, if doing well at that time decrease to q12h going

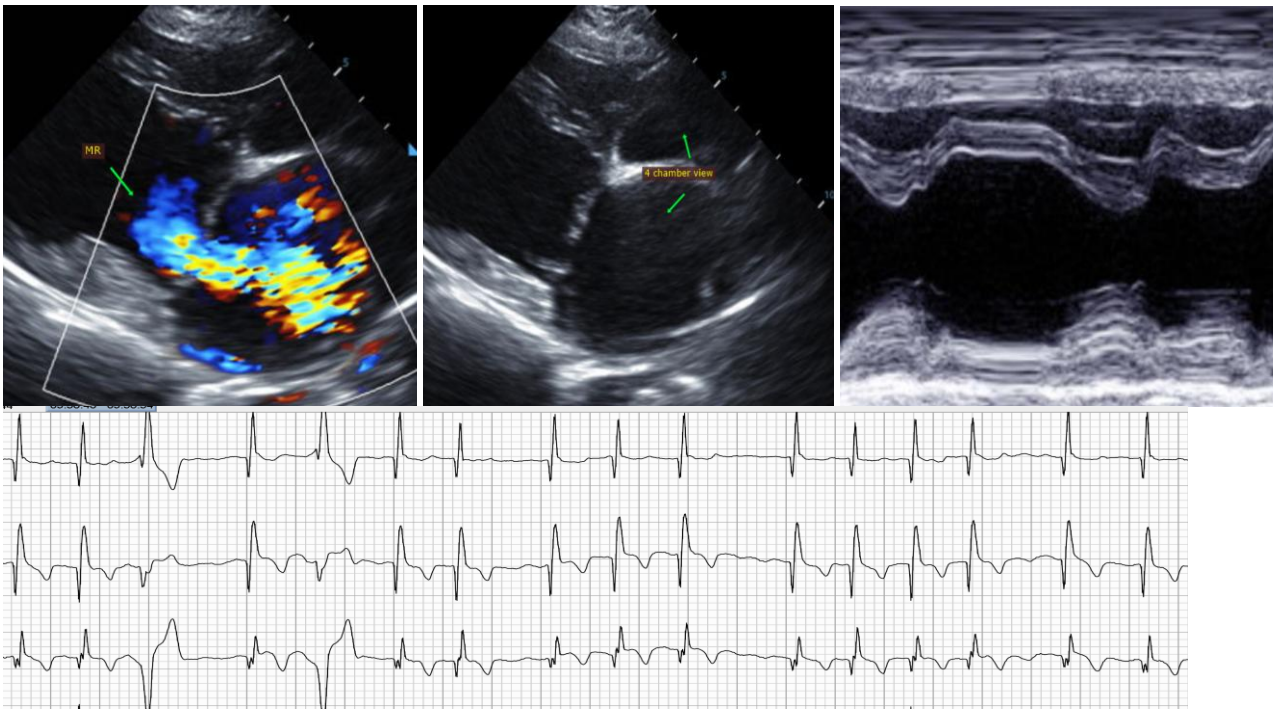
forward. Administer Pimobendan 0.3mg/kg PO q12h. Institute Diltiazem 1-2mg/kg PO q8h. Once eating well at home and BP is documented > 130mmHg, institute Benazepril 0.5mg/kg PO Q12h.

Recheck heart rate in 5-7 days with target being 140-160bpm in hospital (stressed). If persistently >180bpm, institute Digoxin 0.005mg/kg PO q12h.

Screening renal panel and digoxin level in 5-7 days (6-8 hours post-am dose) to ensure tolerance of medications. Monitor renal values every 3-4 months lifelong.

A recheck echocardiogram is recommended in 6 months to screen for progression.

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)

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