


PATIENT

Freya Dean

SPECIES

Canine

BREED

Lab

SEX

FS

AGE

11 years

WEIGHT

31.3kgs

PRESENTING CLINICAL SIGNS

History: Coughing, tachyarrhythmia and weight loss currently on furosemide 2mg/kg TID, benazepril .3mg/kg SID, mirtazapine 1mg/kg, pimobendan 5mg, 2 am, 1 pm HR 160
 Abnormal PE/Chem/CBC/UA Results: ALT- 328 TP- 49 CHOL- 2.79 Retic: 19.3 rads: broncho-interstitial lung pattern present. Pulmonary vessels appear to be dilated. Heart itself did not appear to be overtly enlarged but there was slight elevation of the trachea

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 230bpm with an irregularly irregular rhythm. No identifiable p waves. No ventricular arrhythmias seen. ECG diagnosis: Rapid atrial fibrillation.

ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. Mild left ventricular dilation with decreased systolic function. Decreased LV wall thickness and increased sphericity. The mitral valve appears mildly thickened with no obvious prolapse into the left atrial lumen. Moderate central mitral regurgitation. The tricuspid valve appears normal. Mild right atrial and ventricular dilation. Mild tricuspid regurgitation. The aortic valve is normal in morphology and mobility. No aortic insufficiency. Normal pulmonic valve. No aortic or pulmonic insufficiency seen. Normal LVOT/RVOT velocities. No pericardial or pleural effusion noted. Ascites seen on subcostal views. No obvious cardiac tumors.

CARDIAC CHART
INTERPRETED BY

 Maggie Machen Lamy,
 DVM DACVIM
 (Cardiology)

IMAGING PERFORMED BY

Kelly Reschny, CVT

HOSPITAL NAME

 Acton Veterinary
 Clinic

REFERRING VET

Dr. Gajadhar

INVOICE

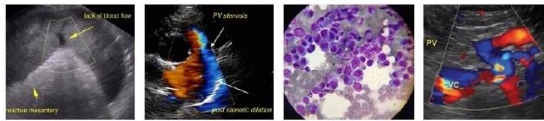
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CANINE CARDIAC PARAMETERS	MR VMAX (m/s)	TR VMAX (m/s)	LA/AO (Boon method)	LA/AO (Heart Base; Swe)	FS (%)	EF (%)	EPSS (cm)
NORMAL PARAMETER	4.5-5.5	<2.7	1.3	<1.6	28-40	40-100	<0.6
PATIENT	4.0	NM	NM	1.83	10	18	0.55
CANINE CARDIAC PARAMETERS	HR (BPM)	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	0.96	1.1	31	4.2	5.5	4.9
*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



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INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Unfortunately, this patient has significant cardiomyopathy and systolic dysfunction. This is causing dilation and overload of all 4 chambers resulting in insufficiency of the mitral and tricuspid valves.

Systolic failure can be primary in nature (DCM) or secondary to taurine deficiency, myocarditis, tachycardia-induced cardiomyopathy, or infiltrative disease such as lymphoma. In a senior Pitbull, primary disease is certainly possible; however, consider testing for primary causes that may be treatable. A troponin (cTnI) level can be submitted to further investigate infiltrative/inflammatory contribution (myocarditis). Additionally, a taurine level may be helpful (screen for malabsorption issue) with **avoidance of grain free, exotic ingredient or boutique brand options going forward.**

Regardless of cause, prognosis is guarded to poor at this stage in the disease process, with an average survival time of <6 months. Patient will always be at risk for recurrent CHF, development of malignant arrhythmias and/or sudden death in the future. The only treatable cause of systolic failure is taurine deficiency, which is uncommon on commercially formulated dog foods (albeit renewed with the recent correlation to grain free diets). If a taurine level is declined, it is also reasonable to simply supplement with taurine on the off chance of a malabsorption issue.

As a complicating factor, the patient has also developed rapid atrial fibrillation (AF) secondary to atrial dilation. Development of the arrhythmia puts the patient at high risk for acute decompensation and development of right-sided congestion (ascites in this case). 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 can lead to clinical signs and CHF as we see in this patient. Once a patient is in AF, this will likely never convert back to sinus rhythm, however they typically do well with simply rate control. The structural disease and development of AF requires lifelong diuretics (due to high risk for decompensation) and management of the structural disease in addition to the arrhythmia as below. Close monitoring going forward is advised.

Monitoring of sleeping respiratory rates will be paramount to screen for recurrent congestive heart failure at home in the future. Cough suppression to improve QOL can also be considered once diuretics are on board for any residual mechanical cough in the face of normal sleeping respiratory rates.

Monitor for development of a cough, labored breathing, exercise intolerance or collapse episodes in the future. Monitoring of sleeping breathing rates at home is recommended to screen for progression to CHF. Omega fatty acid supplementation (1000mg once to twice daily) and mild salt restriction may be of some long-term benefit.



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PLAN:

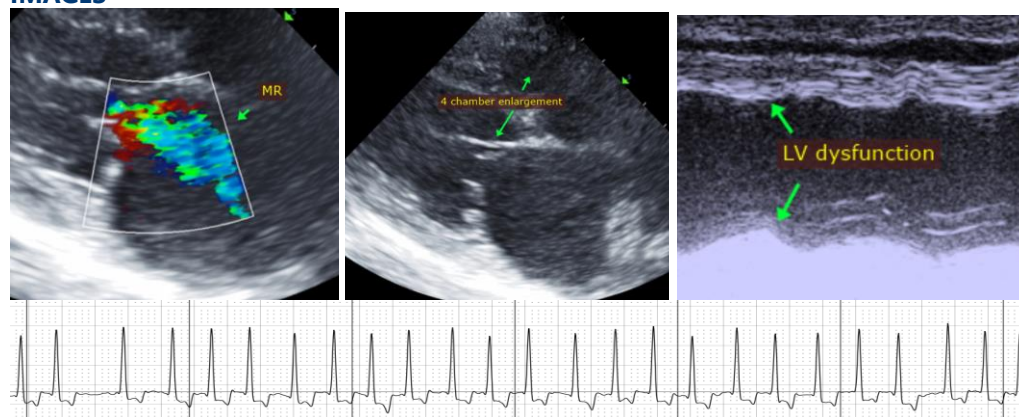
If the patient appears unstable, recommend referral for 24-hour monitoring/supportive care and IV rate control/diuretics. Recommend the following oral medications: Pimobendan 0.3mg/kg PO q12h, Lasix 1-2mg/kg PO q12h; Spironolactone 1-2mg/kg PO q12h; Diltiazem 1-2mg/kg PO q8h. Institute taurine supplement 1000-2000mg PO q12h. Consider diet history, taurine level, cTnI, etc. as discussed.

Recheck BP, heart rate/ECG and renal values in 5-7 days. If BP > 130mmHg and patient is feeling well, institute Benazepril at that time (0.5mg/kg PO q12h). Target HR is 140-160bpm in hospital/stressed. Up-titrate diltiazem to effect. If difficult to control, can also consider digoxin (0.005mg/kg PO q12h with close monitoring of blood dig levels) due to synergistic effect with diltiazem.

Monitor renal values/BP/HR every 3-4 months lifelong.

A recheck echocardiogram is recommended in 4-6 months to screen for progression.

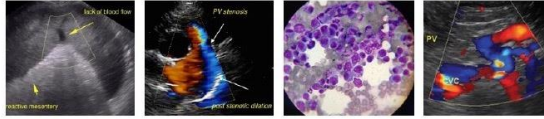
IMAGES



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. 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



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