



PATIENT

Baxter Orre

SPECIES

Canine

BREED

Beagle Mix

SEX

Male Neutered

AGE

14 years

WEIGHT

28.5lbs

INTERPRETED BY

Maggie Machen
Lamy, DVM, DACVIM
(Cardiology)

IMAGING PERFORMED BY

Sara Hansen

HOSPITAL NAME

Q Street Animal
Hospital

REFERRING VET

Dr. Hoerauf

INVOICE

23179

DATE

3/18/22

PRESENTING CLINICAL SIGNS

History: Diagnosed with left-sided cardiomegaly and congestive heart failure in December. CBC/Chem was normal. Started on furosemide and enalapril, which helped with coughing. Did not resolve coughing completely. Patient presented today for sudden onset lethargy. Seems to have collapsed outside last night. Patient was conscious, but had to be carried in. On exam, patient is quiet but responsive, has 4-5/6 murmur, gums light pink. HR 150, RR 45. Has irregular arrhythmia.

Abnormal PE/Chem/CBC/UA Results: Normal CBC/Chem in December. No BW run today.

-Current medications: Furosemide 25mg BID, Enalapril 5mg BID.

-Radiographic Findings: Left sided cardiomegaly with left atrial tenting and bronchial splitting. No pulmonary edema when rads were taken initially. When taken a week later, pulmonary edema was noted.

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; 50mm/s, 10mm/mV. The average heart rate is 170bpm (range 111-230bpm). The rhythm is irregularly irregular with no identifiable P waves. Most consistent with atrial fibrillation. Ventricular beats are noted throughout, although rarely are premature. A single couplet is suspected.

ECG diagnosis: Atrial fibrillation. Ventricular ectopy.

ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. Diffuse thickening of mitral valve leaflets with minimal prolapse into the left atrial lumen. Lack of coaptation in systole. Severe mitral regurgitation. Marked left atrial dilation. Decreased MR velocity. Mild LV dilation with adequate myocardial function. The tricuspid valve appears mildly thickened. TR velocity consistent with borderline 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 effusion noted. Small pockets of pleural effusion. 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	4.6	2.7	NM	2.5	42	76	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



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PATIENT	0.77	1.2	12.9	4.9	4.3	2.5
*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)
			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 moderate tricuspid regurgitation. The degree of disease is significant with severe LA dilation. Additionally, severe disease has progressed to 4 chamber dilation and consequently atrial fibrillation (AF) and congestive heart failure. **Pleural effusion is noted which is likely reflective of right-sided congestive heart failure and there is risk for left-sided failure as well.** Mild pulmonary hypertension is noted, which is likely secondary to active congestion. No additional structural issues are identified.

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, leading to CHF. Development of AF and CHF requires lifelong diuretics and management of the structural disease in addition to the arrhythmia.

What is unusual in this case is the heart rate is highly variable with periods as low as 100bpm. Because of this, it would be surprising if the AF alone is what led to collapse episode, unless the patient was sympathetically stimulated, and a rapid heart rate was previously present. There are also ventricular beats throughout that may reflect an intermittent malignant ventricular arrhythmia as well. Based upon what is seen here, it is difficult to know which to treat, if either. The finding of concurrent pleural effusion increases suspicion that periods of tachycardia are truly present, not captured here. **The ideal option in this case would be hospitalization for overnight ECG monitoring at an ER or Multi-Specialty Center.** If this is declined, I would consider more aggressive treatment for CHF as below with close follow up of the arrhythmia, ideally through a holter monitor. Discussion with the owner is advised. If not further worked up, this patient certainly has risk for acute collapse or sudden death going forward.

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 if deemed necessary by further evaluation. Full cardiac support is recommended as below.

Monitor at home for cough, lethargy, inappetance, collapse/fainting episodes or increase in respiratory rate or effort. Monitoring of sleeping breathing rates is recommended to screen for



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recurrent CHF at home. Moderate activity restriction is advised. Omega fatty acid supplementation and mild salt restriction may be of some long-term benefit.

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PLAN

Highly recommend referral for overnight ECG monitoring. If declined, oral medications are recommended as follows: Institute Spironolactone 1-2mg/kg PO q12 hours. Administer Lasix 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 q12 hours. If referral is declined, a recheck ECG is recommended in 5-7 days, sooner if any recurrent syncope is noted. If the heart rate remains variable, a holter monitor is strongly recommended. A renal panel is recommended at this visit as well.

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Monitor renal values every 3-4 months lifelong. Once eating well at home and BP is documented > 130mmHg, institute Benazepril 0.5mg/kg PO Q12h.

AGE

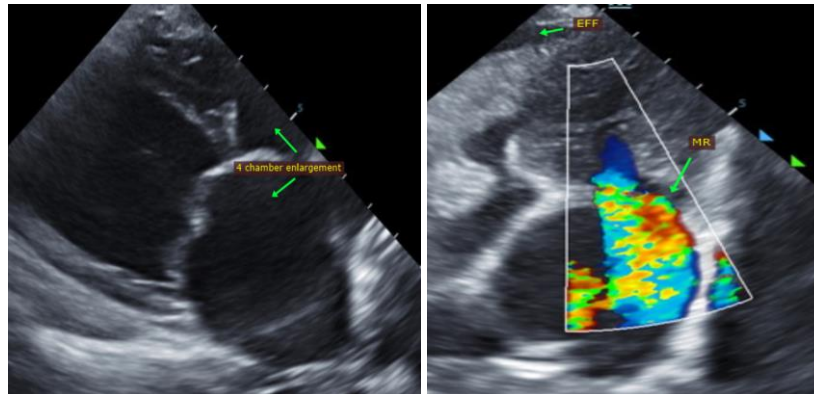
14 years

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

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IMAGES



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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.

REFERRING VET

Dr. Hoerauf

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.

INVOICE

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

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