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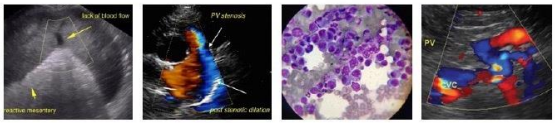

THE FOCAL ZONE
IMAGING PERFORMED BY
289-808-2608 info@thefocalzone.com

PATIENT
Zoe Komarniski

SPECIES
Canine

BREED
Golden Retriever

SEX
FS

AGE
13 years

WEIGHT
29kgs

INTERPRETED BY
Maggie Machen Lamy, DVM DACVIM (Cardiology)

IMAGING PERFORMED BY
Kelly Reschny, CVT

HOSPITAL NAME
Grand River Veterinary Hospital

REFERRING VET
Dr. Dat

INVOICE
30553

DATE
5/3/23

PRESENTING CLINICAL SIGNS
History: Owner reports a decrease in appetite, weight loss, lethargy and occasional dry cough/gagging. Arrhythmia on exam.

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 280bpm (range 230-300bpm). No identifiable p waves with an irregularly irregular rhythm most consistent with atrial fibrillation.
ECG diagnosis: Rapid atrial fibrillation.

ECHOCARDIOGRAM FINDINGS
2D, m-mode, color flow and doppler imaging is available. Mild diffuse thickening of mitral valve leaflets with no prolapse into the left atrial lumen. Moderate to severe eccentric mitral regurgitation with severe left atrial dilation. Normal MR velocity. LV dilation with mildly decreased myocardial function. The tricuspid valve appears normal with mild to moderate tricuspid regurgitation. Normal velocity. Moderate right atrial and ventricular dilation. The pulmonic and aortic valves are normal in morphology and mobility. Normal pulmonic and aortic outflow velocities with laminar flow. No aortic or pulmonic insufficiency. No pericardial or pleural effusion noted. Hepatic vessel dilation with ascites. 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	5.2	2.6	NM	2.0	26	50	0.74
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	300	1.3	0.8	30	4.5	6.1	4.5
*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)
**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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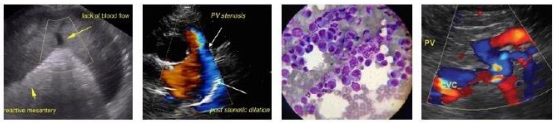

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INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Findings are most consistent with chronic degenerative valve disease causing severe mitral and mild to moderate tricuspid regurgitation and secondary systolic dysfunction. Significant biatrial and ventricular enlargement indicates the risk for spontaneous congestive heart failure is high and hepatic congestion is most consistent with right-sided congestive heart failure.

As a complicating factor, rapid atrial fibrillation (AF) has developed. 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. It is important to note that right-sided failure develops due to the arrythmia while left-sided failure is due to the structural disease.

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 until the patient is stabilized. The target heart rate is 140-160bpm in hospital. Finally, an abdominocentesis should be considered due to inappetence.

Please 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 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 hospitalization for IV diuretic/rate control therapy if needed. Consider abdominocentesis. Institute Spironolactone 1-2mg/kg PO q12 hours. Institute 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 q12 hours. Institute Diltiazem 1-2mg/kg PO q8 hours. 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.

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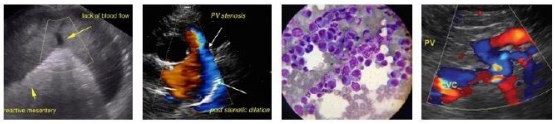

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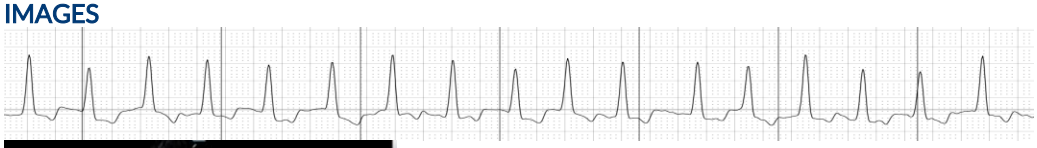
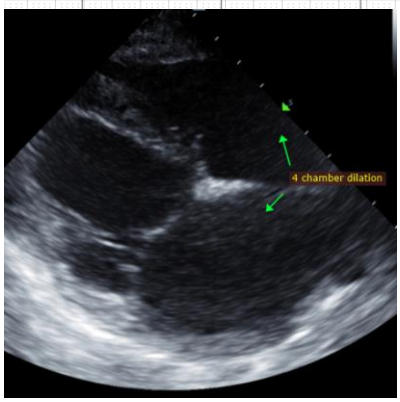
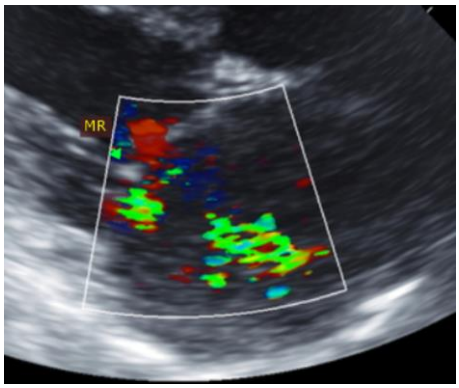
IMAGES







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