



**PATIENT**

Pixie Taavola

**PRESENTING CLINICAL SIGNS**

History: Presented in early February for seizure-like episodes, lethargy, and weight loss. AUS showed moderate amount of ascites with hepatic congestion. Cardiomegaly suspected on brief assessment. -Current medications: Vetmedin and Furosemide.

**SPECIES**

Canine

**ECHOCARDIOGRAM FINDINGS**

2D, m-mode, color flow and doppler imaging is available. Severe left ventricular dilation with diminished systolic function. Increased EPSS and increased sphericity. Decreased LV wall thickness. Severe left atrial enlargement. The mitral valve appears mildly thickened, with no obvious prolapse into the left atrial lumen. Moderate eccentric mitral regurgitation. Normal velocity. The tricuspid valve appears mildly thickened. Mild to moderate right atrial and ventricular dilation. Moderate tricuspid regurgitation. Velocity consistent with early pulmonary hypertension. The aortic valve is normal with normal outflow velocity. No AI. Normal pulmonic valve with normal outflow velocity. Mild to moderate PI. No pericardial or pleural effusion noted. No obvious cardiac tumors.

**BREED**

Cavalier

**SEX**

Female Spayed

**CARDIAC CHART**

**AGE**

7 years

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	4.8	3.1	2.5	2.1	14	24	1.0
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	0.6	0.4	6.2	3.0	3.5	3.0
*Normal chamber parameters expressed as a mean value (SD)				3	1.27 (5.3)	2.46 (2.46)	1.36 (5.5)
<b>BODY WEIGHT DEPENDENT PARAMETERS</b>				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

**INTERPRETED BY**

Maggie Machen Lamy, DVM, DACVIM (Cardiology)

**IMAGING PERFORMED BY**

Kim Liedberg

**HOSPITAL NAME**

SVS Imaging WI

**REFERRING VET**

Dr. Banceu

**INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS**

Unfortunately, this patient has end-stage cardiomyopathy and systolic dysfunction. This is causing dilation and volume overload of both the left and right heart and severe biatrial dilation. Moderate MR and TR are identified, with mild pulmonary hypertension. No additional issues are seen.

**INVOICE**

28949

Systolic failure can be primary in nature (DCM) or secondary to taurine deficiency, hypothyroidism, myocarditis, tachycardia-induced cardiomyopathy, or infiltrative disease such as

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lymphoma. In a 7 year old Cavalier, primary disease is considered unlikely and highly unusual. Diet history should be obtained due to the recent correlation between grain free/boutique/exotic diets and cardiomyopathy (with a diet change and/or supplementation if indicated). Thyroid status can be assessed, a cTnI submitted, etc., however prognosis at this stage is unchanged.

**SPECIES**

Canine

Given the severity of disease seen here and reported ascites on abdominal ultrasound, the diagnosis is likely CHF. No dyspnea is reported; however, should the patient become unstable, highly recommend hospitalization for oxygen support and IV therapy. Even if the response to medications is good, this patient will always be at high risk for recurrent CHF, development of syncope, malignant arrhythmias and/or sudden death going forward. The prognosis is poor at this stage in the disease process, with an average survival time of <6 months.

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Omega fatty acid supplementation and mild salt restriction may be of some long-term benefit. Moderate activity restriction is advised. Monitor for development of a cough, worsening labored breathing, abdominal distention, exercise intolerance or collapse episodes in the future. Monitoring of sleeping breathing rates at home is recommended to assess response to medications and recurrence of CHF in the future.

**AGE**

7 years

**PLAN:**

Consider diet history/thyroid status, etc. If patient appears unstable or tachypneic, consider referral for 24-hour supportive care. A baseline ECG and BP are recommended. Recommend the following oral medications: Institute aldosterone antagonist Spironolactone 1-2mg/kg PO q12h. Continue furosemide 1-2mg/kg PO q12h. Continue Pimobendan 0.3mg/kg PO q12h. Institute taurine supplement 1000mg PO q12h.

**WEIGHT**

13.6lbs

Recommend recheck renal panel and blood pressure in 1-2 weeks to ensure tolerance to medications. If BP >130mmHg and doing well at home, institute ACEI 0.5mg/kg PO q12h at that time.

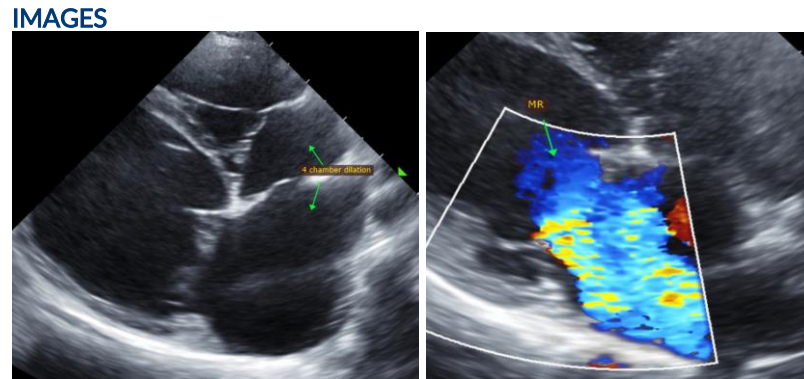
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Recheck echocardiogram in 6 months, sooner if problems arise in the interim.

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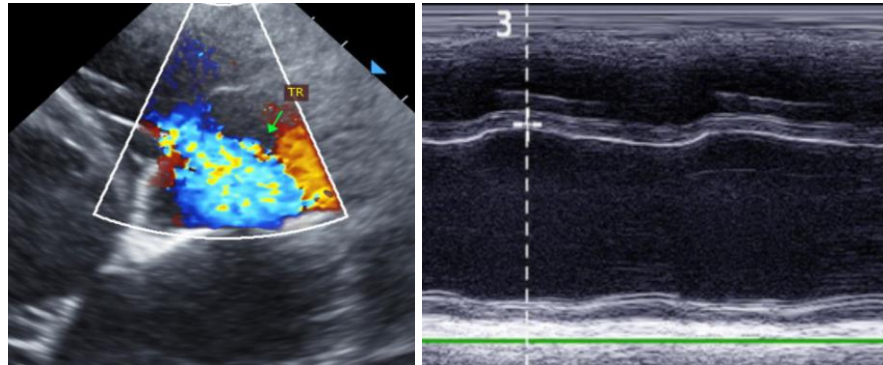
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The information and recommendations provided are based on the images presented by the referring veterinarian. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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.

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