

**PATIENT**

Pila Graveline

**SPECIES**

Canine

**BREED**

Boxer

**SEX**

Spayed Female

**AGE**

9 Years

**WEIGHT**

78 Pounds

**INTERPRETED BY**

Sara Brethel, DVM,  
DACVIM (Cardiology)

**IMAGING PERFORMED BY**

Sara Hansen

**HOSPITAL NAME**

Edgewood AC

**REFERRING VET**

Dr. Leduc

**INVOICE**

36503

**DATE**

4/9/26

**PRESENTING CLINICAL SIGNS**

History: Coughing for 2 weeks, Heart murmur with tachycardia, no murmur when HR 120  
ABNORMAL Labwork Values: CBC Anemia HCT 28.1, Chem BG 143 SDMA 17, UA USG 1.025 pH 8.0

Marked rods and WBCs Culture pending, T4 normal

For ECHO Only: Blood Pressure: Avg 143

HR/RR/BP: 120/pant/ 143

Is there a Heart Murmur? If so, please grade: gd II-III/VI when tachycardic No murmur when HGR 120

Current Medications: none

Radiographic Findings: Splenomegaly, Cardiomegaly, perihilar effusion with significantly increased interstitium

Abnormal PE/Chem/CBC/UA Results: HX of seizure like episode Tuesday 10-15 seconds. Recovered right away

**ULTRASONOGRAPHIC EXAMINATION OF THE HEART**

<b>CANINE CARDIAC PARAMETERS</b>	<b>MR VMAX</b> (m/s)	<b>TR VMAX</b> (m/s)	<b>LA/AO</b> (M-Mode)	<b>LA/AO</b> (Heart Base; Swe)	<b>FS</b> (%)	<b>EF</b> (%)	<b>EPSS</b> (cm)
<b>NORMAL PARAMETER</b>	4.5-5.5	<2.7	1.3	Up to 1.6	28-40	40-100	<0.6
<b>PATIENT</b>	6.12	3.21	2.57	2.2	19.28	NM	--
<b>CANINE CARDIAC PARAMETERS</b>	<b>HR</b> (BPM)	<b>AV VMAX</b> (m/s)	<b>PV MAX</b> (m/s)	<b>BODY WEIGHT</b> (kg)	<b>LAD</b> LA MAX 4 Chamber	<b>LVIDd</b> Avg; 2D and m-mode short axis (cm)	<b>LVIDs</b> Avg; 2D and m-mode short axis (cm)
<b>NORMAL PARAMETER</b>	50-100	0.7-1.7	0.7-1.6				
<b>PATIENT</b>	NM	~2.0	1.19	35.45	5.18	4.46	3.6

**ECG Interpretation**

Sinus rhythm with occasional negative P waves.

**Cardiac Presentation**

The mitral valve leaflets are normal with moderate mitral regurgitation centrally directed. There is no prolapse of mitral valve leaflets. The left atrial size is severely increased. There is evidence of left ventricular eccentric hypertrophy and systolic function is low/normal to reduced in the face of mitral regurgitation. The right atrium is increased in size with evidence of mild to moderate tricuspid regurgitation. The tricuspid valve leaflets are normal. There is mild evidence of pulmonary



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hypertension on this evaluation. The right ventricle appears to have preserved systolic function subjectively. The aortic and pulmonic valves had normal morphology and the corresponding outflow velocities were within normal limits. There was no evidence of pulmonic or aortic insufficiency. The aorta appears normal. The pulmonary artery and associated branches appear normal. There is no evidence of pleural effusion, pericardial effusion, or intracardiac masses.

**ULTRASONOGRAPHIC FINDINGS**

- Dilated cardiomyopathy phenotype
- Severe left atrial enlargement
- Right atrial enlargement
- Mild pulmonary hypertension

**INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS**

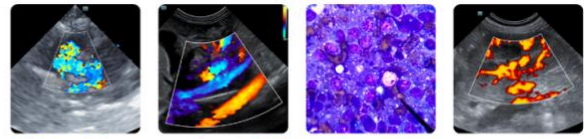
The patient has a DCM phenotype. Given the appearance of the right side of the heart and the patient's signalment, there is concern for underlying arrhythmogenic cardiomyopathy. Other differentials include infectious/inflammatory primary DCM. Heart failure is reported. The images are not available for review. Therefore, diuretic therapy is indicated.

Recommend the following medications: Furosemide, 2.0 mg/kg, twice daily, pimobendan, 0.27 - 0.32 mg/kg, twice daily, and rechecking the patient in 7-10 days with repeat chest radiographs, blood pressure, and blood work. Recommend ensuring blood work is normal prior to initiating diuretic therapy. If the patient continues to collapse or is in distress, recommend emergent evaluation. The cause of the collapse may be secondary to decreased cardiac output, however, an arrhythmia can't be ruled out. Once the heart failure is adequately managed, a Holter monitor is recommended to ensure additional antiarrhythmic therapy is not indicated. A urinary tract infection is also reported.

Recommend treating the patient as needed. At the 7 - 10 day recheck, as long as the patient is clinically doing well, I would recommend starting an ACE inhibitor (enalapril versus benazepril), at a dose of 0.5 mg/kg, once to twice daily, and spironolactone, 2.0 mg/kg, twice daily. 2-3 weeks after starting ACE inhibition, repeat kidney values are recommended. Unfortunately, with congestive heart failure, the patient does have a poor to guarded prognosis.

If the patient is on a non-traditional diet, I would consider switching. It recommended to consider switching to a grain-based commercial dog food diet made by Purina, Science Diet, or Royal Canin (if there is no history of a food allergy) since there is currently an association between cardiac changes (poor pumping function and dilation of the heart) and multiple grain free and limited ingredient diets. Current investigation is still underway, and the definitive causative factor has not been identified. A grain source including corn or barley should be seen on the dog food label. Substitutes for common grain sources such as peas, lentils and even rice have been implicated in cardiac dysfunction. Any diet change should be gradual by adding small amounts to the current diet first and then increasing the ratio of the new food gradually over two weeks to avoid gastrointestinal upset.

The client should start monitoring respiratory rate and effort at home if not already doing so. The resting respiratory rate should be < 35-40 breathes/minute when the patient is resting or sleeping. If



**PATIENT**

the breathing rates are increasing, then chest radiographs are recommended.

Pila Graveline

Recommend obtaining a blood pressure on the patient to ensure it is <160mmHg. If the blood pressure is elevated recommend following ACVIM guidelines for systemic hypertension and treating if indicated.

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Recheck echo is recommended in 4-6 months, sooner if the patient is decompensating. If the patient has two or more collapse episodes within 24 hours, emergent evaluation is recommended.

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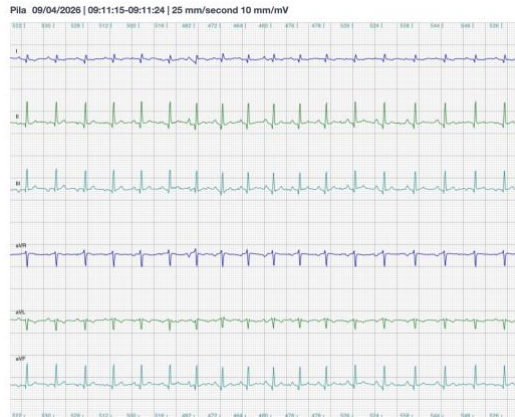
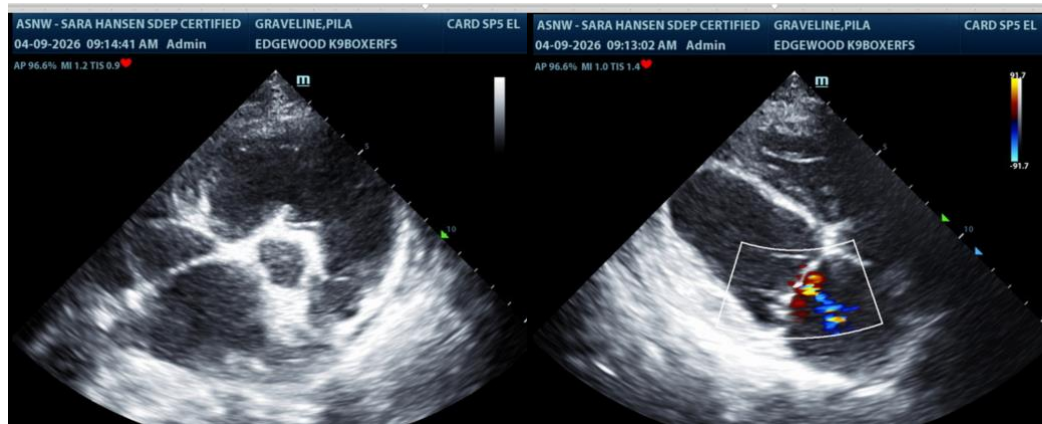
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**The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.**

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.

Sara Brethel DVM, DACVIM (Cardiology)

[info@SonoPath.com](mailto:info@SonoPath.com)



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