



**PATIENT**

Arlo Kariofyllis

**SPECIES**

Canine

**BREED**

Curr Mix

**SEX**

Neutered Male

**AGE**

11 Years

**WEIGHT**

75 pounds

**INTERPRETED BY**

Sara Brethel DVM,  
DACVIM (Cardiology)

**IMAGING PERFORMED BY**

Dr. Julia Bakker DVM

**HOSPITAL NAME**

Orange Blossom  
Veterinary Imaging

**REFERRING VET**

Dr. Steven Pepper  
DVM

**INVOICE**

14759

**DATE**

03/31/26

**PRESENTING CLINICAL SIGNS**

Patient has a progressive cough - severe at night. Having difficulty breathing and uncomfortable laying down. Tachycardic HR 128. Radiographs show cardiomegaly and mild pulmonary edema (see attached). No history of heart murmur

**ULTRASONOGRAPHIC EXAMINATION OF THE HEART**

CANINE CARDIAC PARAMETERS	MR VMAX (m/s)	TR VMAX (m/s)	LA/AO (M-Mode)	LA/AO (Heart Base; Swe)	FS (%)	EF (%)	EPSS (cm)
NORMAL PARAMETER	4.5-5.5	<2.7	1.3	Up to 1.6	28-40	40-100	<0.6
PATIENT	4.28	~2.0	2.75	2.33	30.7	--	NM
CANINE CARDIAC PARAMETERS	HR (BPM)	AV VMAX (m/s)	PV MAX (m/s)	BODY WEIGHT (kg)	LAD LA MAX 4 Chamber	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				
PATIENT	NM	1.67	0.74	34.1	6.8	6.35	4.4

**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 increased severely. LV internal dimensions during diastole are increased and systolic function is decreased in the face of mitral regurgitation. The left ventricle is hypodynamic with thinning of the left ventricular walls. There is mild right atrial enlargement with evidence of tricuspid regurgitation. The tricuspid valve leaflets are normal. There is no evidence of pulmonary 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.

**Chest Radiographs**

There is significant cardiogenic pulmonary edema present.

**ULTRASONOGRAPHIC FINDINGS**

- Dilated cardiomyopathy phenotype stage C.
- Severe left atrial enlargement.
- Mild right atrial enlargement.



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## INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

There is evidence of a dilated cardiomyopathy phenotype. Differentials include primary dilated cardiomyopathy (idiopathic), dietary related, infectious, or inflammatory. Sometimes, nontraditional grain free diets can cause decreased pumping function of the heart. There are other diseases such as infectious causes (tick borne), inflammatory conditions, or diseases that affect the body that can also cause this type of appearance to the heart. Other diagnostics to consider include screening for infectious diseases, ensuring blood work is within normal limits, and considering an abdominal ultrasound if the breed is not a classic breed for DCM (i.e.: classic breeds: Doberman, Great Dane, Irish Wolfhounds).

The patient is in active congestive heart failure. Intravenous diuretic therapy is recommended. If possible, a furosemide CRI at a dose of 0.5 mg/kg per hour over the next five to six hours is ideal. Due to the severity of the patient's condition, I would recommend referral for overnight hospitalization and monitoring.

If that can't be performed and the CRI cannot be performed in the hospital, then I would administer 2.0 mg/kg IV furosemide now. Pending patient response, give an additional 2.0 mg/ kg IV prior to discharge, then start 2.0 mg/ kg PO furosemide twice daily. In addition, starting Pimobendan 0.27 to 0.32 mg/kg every eight hours for the next three days and then decreasing to twice daily until otherwise directed.

Recommend ensuring patient's blood work is normal, focusing on kidneys and electrolytes. Also ensuring that the patient's blood pressure is stable. I would encourage investigating into the patient's diet. If the patient is on a non-traditional diet and there is no history of a food allergy, it is 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 the breathing rates are increasing, then chest radiographs are recommended.

When the patient is more stable at serial rechecks, cardiac supplementation can be considered for this patient. If the patient is eating well, recommend starting taurine (30mg/kg PO q12) and L-carnitine (50mg/kg q8) supplementation (brands: Now, Solgar, PetAg, Twinlabs). Fish oil supplementation can also be administered (EPA 40mg/kg + DHA 25mg/kg PO q24). Can consider staging these medications (i.e.: starting one and then a week later starting another) due to the potential for stomach upset.

Recheck exam is recommended in a week for chest radiographs, blood pressure, blood work, again, focusing on kidneys and electrolytes. At that time, if the patient is non-azotemic, clinically doing well in eating, I would recommend starting an ACE inhibitor at a dose of 0.5 mg/kg once to twice daily and spironolactone for aldosterone antagonism at a dose of two mg/kg once daily. Two to three weeks



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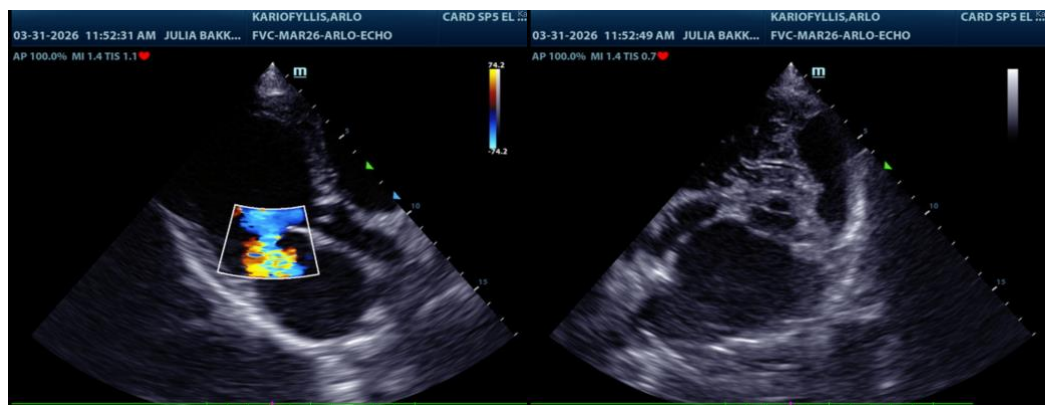
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after starting ACE inhibitors, recheck blood work and blood pressure are recommended. A recheck echo is recommended in four to six months if not moving forward with referral.

Due to the potential for arrhythmias with DCM, a Holter monitor is recommended. If a Holter is unavailable, recommend evaluating the rate and rhythm with an electrocardiogram. Unfortunately, due to the nature of this disease, the patient is at risk of passing away suddenly.

Unfortunately, patients in congestive heart failure with DCM have a poor to guarded prognosis. The median survival times are roughly 6-9 months (with some patients doing better and other patients not doing as well).



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)

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