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Clinical Sonography & Telecytology
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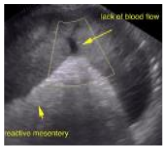
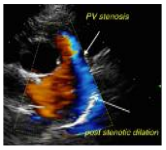
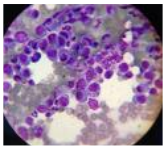
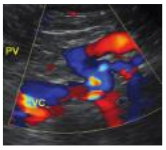

SonoPath.com
1-800-838-4268 info@sonopath.com

PATIENT
Kai Duffey

SPECIES
Canine

BREED
Great Dane

SEX
Male Neutered

AGE
8 years

WEIGHT
120lbs

INTERPRETED BY
Maggie Machen Lamy, DVM, DACVIM (Cardiology)

IMAGING PERFORMED BY
Rachel Runnells, RVT

HOSPITAL NAME
SVS Imaging KC

REFERRING VET
Dr. Chirpich

INVOICE
20827

DATE
8/31/21

PRESENTING CLINICAL SIGNS

History: Weak, no energy. Crackling sound when breathing. Not eating.
-Abnormal PE/Chem/CBC/UA Results: Elevated BNP 1808 (0-900) on August 3rd, rest of labs WNL.
-Radiographs: Show normal VHS.

ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. Severe left ventricular dilation with increased sphericity and decreased systolic function. Decreased LV wall thickness. Severe left atrial enlargement. The mitral valve appears normal in form and function, with no obvious prolapse into the left atrial lumen. Mild central mitral regurgitation secondary to annular stretch. The tricuspid valve appears normal in form and function. Mild right atrial and ventricular dilation. Spherical soft tissue lesion identified in the RV/RVOT; 2.2 x 2.3cm in diameter. The lesion appears adhered to the septal wall/TV apparatus. Mild tricuspid regurgitation. Velocity consistent with mild pulmonary hypertension. The aortic valve is normal in morphology and mobility. No subvalvular ridge present; normal LVOT velocity. No aortic insufficiency. Normal pulmonic valve with no pulmonic insufficiency seen. No pericardial or pleural effusion noted. Scant ascites suspected on subcostal views.

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	5.0	3.0	1.4	2.0	8	10	2.4
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	145	0.7	0.93	54.4	5.7	8.5	7.8
*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)

Note: All measurements based upon multi-modal images and methods. An average value is reported.

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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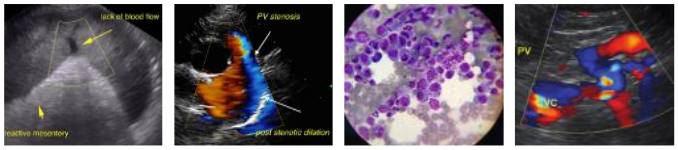

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INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Unfortunately, this patient has end-stage cardiomyopathy and systolic dysfunction. This is causing dilation and overload of the left heart resulting in insufficiency of the mitral valve. The degree of dilation and pump failure is highly concerning for early congestive heart failure with scant ascites noted on subcoastal views. Additionally, the patient has reportedly crackles, which may suggest pulmonary edema. The right heart is also affected with dilation and dysfunction. Finally, a spherical soft tissue lesion is seen within the right ventricle that appears adhered to the septal wall. This is highly unusual to see in dogs and may reflect a tumor, thrombus/embolus or other soft tissue lesion. Given that this is not impeding blood flow or causing outward clinical issues (and in light of severe structural disease), I would not necessarily advise further evaluation at this time. This patient may be at risk for an embolus going forward which may result in acute respiratory distress or sudden death. This should be relayed to the owner.

Systolic failure can be primary in nature (DCM) or secondary to taurine deficiency, myocarditis, tachycardia-induced cardiomyopathy, or infiltrative disease such as lymphoma. In a predisposed breed such as a Great Dane, this is considered genetic primary DCM until proven otherwise. A full diet history is recommended in light of recent FDA findings in BEG diets. While never inappropriate to investigate other causes (i.e., submit a taurine level and/or supplement taurine, submit cTnI, etc.) these are considered unlikely. Taurine-deficient cardiomyopathy is typically the only treatable cause and will usually improve significantly once supplemented. Prognosis is guarded to poor at this stage in the disease process, with an average survival time of <6 months. Most DCM patients in CHF will succumb to either refractory CHF or sudden arrhythmic death at any time, and this risk should be relayed regardless of therapy.

Initiation of full cardiac supportive medications is recommended as below. Cases of systolic failure are at high risk for malignant tachyarrhythmias (such as VT) and sudden death, and a baseline ECG and/or 24-hour holter monitor is recommended.

Omega fatty acid supplementation and mild salt restriction may be of some long-term benefit. Monitor for development of a cough, worsening labored breathing, 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.

PLAN:

Recommend baseline ECG and blood pressure. Consider diet history, taurine level and/or supplement taurine 1000-2000mg q12h. Recommend the following oral medications: Furosemide 1-2mg/kg PO q8h for 3-5 days, decrease to q12h if doing well. Pimobendan 0.3mg/kg PO q12h. Spironolactone 1-2mg/kg PO q12h.

Recheck renal panel, BP and clinical response in 1-2 weeks. Assuming BP >130mmHg, recommend ACE-I Enalapril or Benazepril 30mg PO BID (if hypotensive, postpone initiation until recheck/normotensive).

Recheck echocardiogram in 4-6 months to assess for progression, sooner if clinical issues arise.

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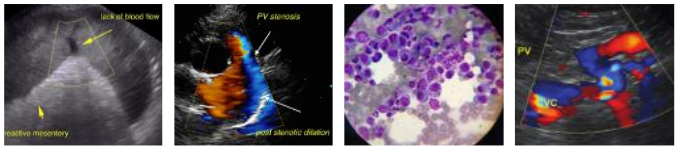

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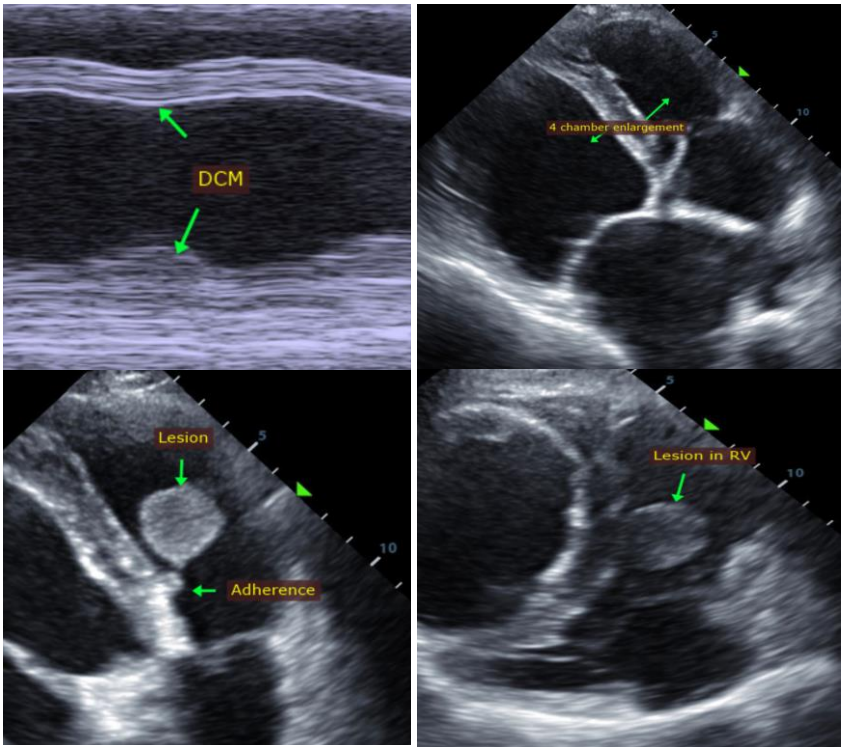
IMAGES



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. 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.

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

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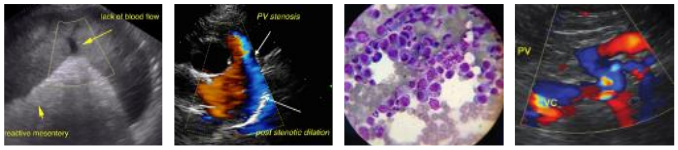

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