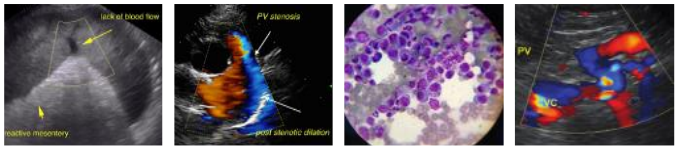
SonoPath
Clinical Sonography & Telecytology
EDUCATIONAL TELECONSULTATION SERVICES™



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

PATIENT
Hercules Aloia

SPECIES
Canine

BREED
ST. Bernard

SEX
Male Neutered

AGE
7 years

WEIGHT
140lbs

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

IMAGING PERFORMED BY
Kelly Romero, DVM

HOSPITAL NAME
FC Veterinary Emergency Hospital

REFERRING VET
Dr. Wells

INVOICE
21075

DATE
9/16/21

PRESENTING CLINICAL SIGNS

History: Collapsed this morning after spending a night in the hospital related to a nasal arteritis bleeding episode. He had not bled during the overnight, but when he was discharged to his daytime vet, he collapsed. Seemed to brighten up, but then when arriving at rDVM, SVT was seen on ECG, so he was sent back to the ER. Hercules has had nasal arteritis for some time but has not undergone treatment for it. He recently finished (3 days ago) a low dose of prednisone for back pain. Not currently on other medications
-Abnormal PE/Chem/CBC/UA Results: Chemistry WNL, mild leukocytosis, no anemia. Blood pressure 115mmHg systolic, no murmur auscultated. Pulses have been strong. ECGs attached when re-admitted to ER. Arrhythmia converted on lidocaine bolus and now on 50mcg/kg/min. HR still 140 but came down from as high as 350bpm.

ELECTROCARDIOGRAPHIC FINDINGS *Note: Single lead ECGs are evaluated as a rhythm strip. Morphology/MEA cannot be definitively commented on.

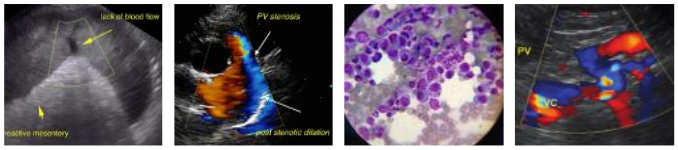
Multiple single lead ECGs are available from an anesthesia monitor; 50mm/s, 10mm/mV. Occasional sinus beats throughout consistent with sinus tachycardia. Frequent ventricular tachycardia identified; heart rate is 280-300bpm. The rhythm varies from sustained VT to couplets and triplets.
ECG diagnosis: Malignant ventricular arrhythmias.

ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. Severe left ventricular dilation with diminished systolic function. Increased sphericity. Minimal left atrial enlargement. The mitral valve appears mildly thickened, with no obvious prolapse into the left atrial lumen. Mild central mitral regurgitation. Decreased LV wall thickness. The tricuspid valve appears normal in form and function. Mild right atrial and ventricular dilation. Trace tricuspid regurgitation. The aortic valve is normal in morphology and mobility. No subvalvular ridge present; normal LVOT velocity. No aortic insufficiency. Normal pulmonic valve with trace pulmonic insufficiency seen. No pericardial or pleural effusion noted. No obvious cardiac tumors.

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	5.3	NM	1.3	1.2	11	20	1.4
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	NM	0.7	0.6	63.5	3.1	5.3	4.7
*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)



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

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Unfortunately, this patient has significant LV dilation and systolic dysfunction. This is causing overload of the left heart resulting in insufficiency of the mitral valve and has resulted in a potentially fatal arrhythmia. An alternative explanation would be VT has led to at least some degree of LV dilation and dysfunction; however, the former is suspected. Regardless, the degree of dilation and pump failure puts the patient for congestive heart failure. Only mild left atrial enlargement is noted, which should be monitored going forward. No additional structural issues are identified.

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 giant breed, this is considered genetic primary DCM until proven otherwise. Prognosis is guarded to poor once arrythmias develop, with an average survival time of <6 months. Many DCM cases will succumb to either refractory CHF or sudden arrhythmic death at any time (typically within 6 months on average), and this risk should be relayed regardless of therapy.

As a complicating factor, ventricular tachycardia (VT) has developed as well. VT is a malignant rapid arrhythmia that can lead to collapse episodes, VF and sudden death. Electing to treat arrhythmias is based upon clinical signs and amount/degree of arrhythmia identified. Unfortunately, there is always an elevated risk for collapse and sudden death in any arrhythmic patient, and even on medications this risk unfortunately still persists.

Fortunately, in this case, the VT has reportedly responded well to institution of Lidocaine. SVT is also mentioned, which is not unexpected as a concurrent problem. Sotalol would certainly be ideal in this case given its superior effect on both ventricular and supraventricular arrythmias. There is some risk in this decision given the patients severity of LV dysfunction. My hope is that at least some component of the dysfunction is due to arrythmia, and this drug will be well tolerated. If there is any decline in the future, reassessing heart rate, blood pressure and LV function is strongly recommended. Mexiletine would be an alternative option and may be necessary in conjunction with Sotalol in the future.

Based upon the severity of disease seen on echo and development of arrhythmias, initiation of cardiac supportive Pimobendan is also recommended as below. There is no obvious indication for Lasix or additional medications at this time given only mild left atrial enlargement. Close monitoring for respiratory signs is advised.

Omega fatty acid supplementation (particularly indicated in arrhythmic dogs) 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.

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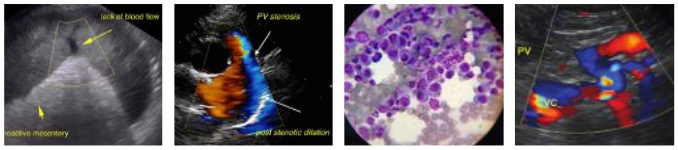

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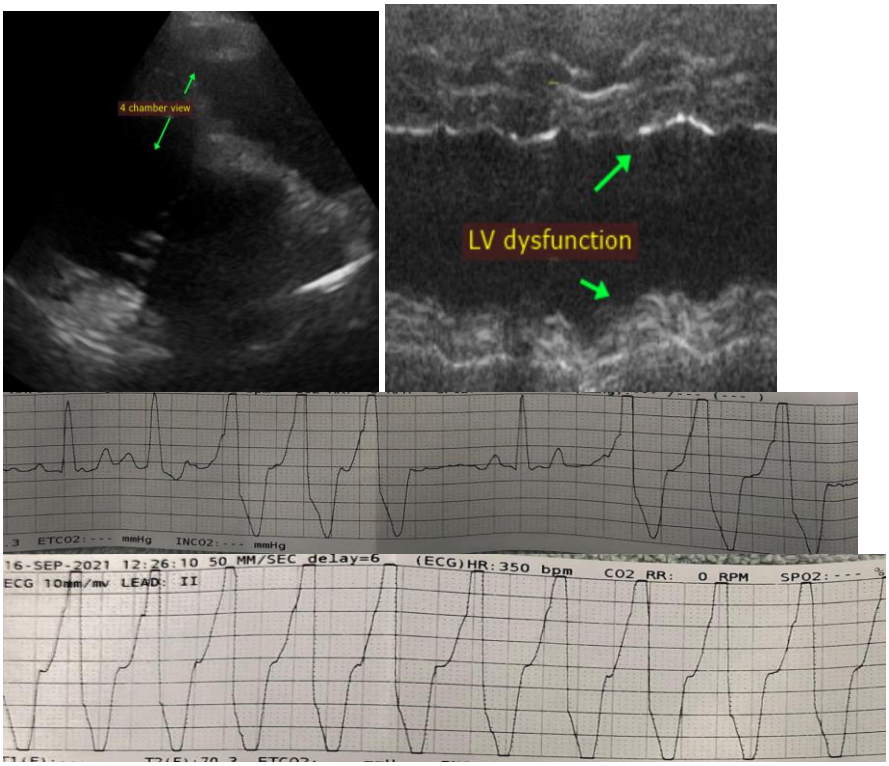
PLAN

Institute Sotalol 1-2mg/kg PO q12h if able. Wean Lidocaine once Sotalol is on board for at least 4 hours. Institute Pimobendan 0.3mg/kg PO q12h.

Once rhythm is well controlled, discharge on these medications and reassess ECG in 1-2 weeks. A holter can also be considered at this time.

Going forward, a recheck ECG and echocardiogram is recommended in 6 months, sooner if clinical issues arise.

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