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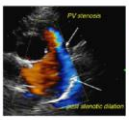
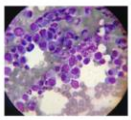
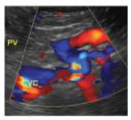

SonoPath
Clinical Sonography & Telecytology
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PATIENT
Willow McPherson

SPECIES
Canine

BREED
Boxer

SEX
Female Spayed

AGE
8 years

WEIGHT
72.6lbs

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

IMAGING PERFORMED BY
Tom McNeill

HOSPITAL NAME
SVS Imaging CT

REFERRING VET
Dr. Stengel

INVOICE
23588

DATE
4/11/22

PRESENTING CLINICAL SIGNS
History: Recheck echo. Presented on 4/4/22 for intermittent episodes of dyspnea. Started on Pimobendan 10mg (1 tab AM, 1/2-tab PM), enalapril 10mg SID, furosemide 40mg BID.
-Abnormal PE/Chem/CBC/UA Results: Elevated ProBNP (5487).
-Pertinent previous echo findings (7/2021 MML): Mild LV dysfunction, FS: 25%. LV: 4.1/3.1. Normal LA.
-Holter (8/2021 MML): Showed brief VT and Sotalol initiated.

RADIOGRAPHIC FINDINGS *NOTE: Images submitted for supplemental cardiac information only.
Mild cardiomegaly. No obvious evidence of CHF.

ELECTROCARDIOGRAPHIC FINDINGS *Note: Single lead ECGs are evaluated as a rhythm strip. Morphology/MEA cannot be definitively commented on.
A single lead ECG is available; 25mm/s, 10mm/mV. The average heart rate is 125bpm with a largely regular rhythm. The rhythm is sinus in origin, with a p for every QRS complex and vice versa. The P and QRS morphologies are positive. A single VPC is noted. No supraventricular premature beats, pauses or other dysrhythmias observed.
ECG diagnosis: Normal sinus rhythm with a single VPC.

ECHOCARDIOGRAM FINDINGS
2D, m-mode, color flow and doppler imaging is available. The mitral valve is mildly thickened with no obvious prolapse into the left atrial lumen. Mild mitral regurgitation is identified. Mild to moderate left atrial dilation. Mild LV dilation with moderately depressed myocardial function. The tricuspid valve appears normal, and there is no obvious tricuspid regurgitation. The right heart appears normal (subjective). No overt evidence of pulmonary arterial hypertension. The pulmonic and aortic valves are normal in morphology and mobility. No aortic abnormalities identified, with a normal aortic outflow velocity. Laminar flow. Normal pulmonic outflow velocities. No aortic or pulmonic insufficiency. No pericardial or pleural effusion noted. No cardiac tumors observed.

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			NM	1.6	18	30	1.1
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	110	1.2	0.9	32.9	2.9	5.0	4.1
*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 **Note: All measurements based upon multi-modal images and methods. An average value is reported.*				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)

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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	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)

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Unfortunately, compared to the prior study there is progression in LV dysfunction. Previously borderline fractional shortening (25%) has worsened to 18-20%. While Sotalol can impact this to some degree, this degree of change is considered a primary problem. Additionally, the LA and LV are both progressively dilated, putting the patient in the moderate category. The right heart appears normal, and no additional issues are identified.

The ECG shows adequate ventricular arrythmia control with only a single VPC identified. It should be noted that a holter is the gold standard screening tool in these cases and should be repeated, particularly should any syncope be noted in the future.

Intermittent labored breathing is unlikely to reflect CHF, particularly given the included chest radiographs. Unless the symptom dramatically improved with addition of diuretic therapy, this can likely be discontinued. Pimobendan and Enalapril are reasonable to continue, pending blood pressure assessment (if the patient is hypotensive, Enalapril should also be discontinued). Sotalol is not listed in the history; however, it is assumed the patient is still on this medication which should certainly be continued.

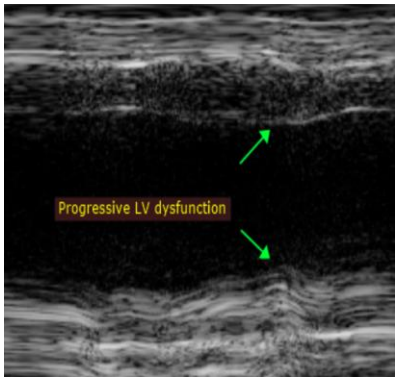
Monitor at home for collapse, exercise intolerance, and/or lethargy. Even with apparent control, the patient is at high risk for sudden death, and this should be expressed to the owner.

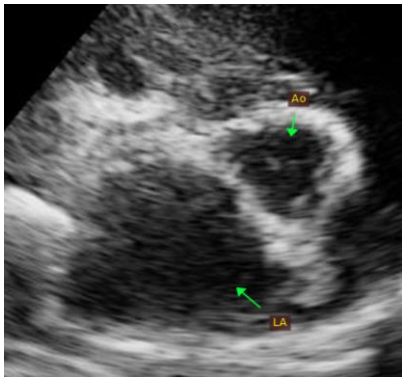
PLAN

Holter monitor recommended every 6 months. Unless respiratory signs dramatically improved on Lasix therapy, this can be safely discontinued. Pending BP assessment >130mmHg, reasonable to continue Enalapril as prescribed. Continue Pimobendan as prescribed. Continue Sotalol 1-2mg/kg PO q12h as was previously recommended.

A recheck echocardiogram is recommended every 6 months to screen for development of dilation/dysfunction.

IMAGES





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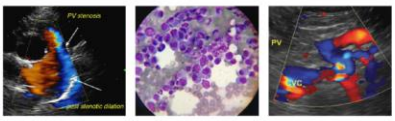

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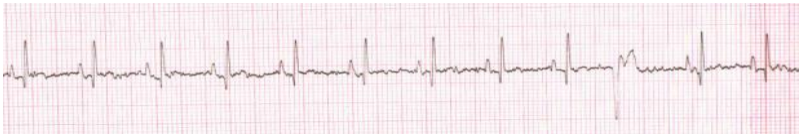

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The information and recommendations provided are based on the images presented by the referring veterinarian. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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.

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