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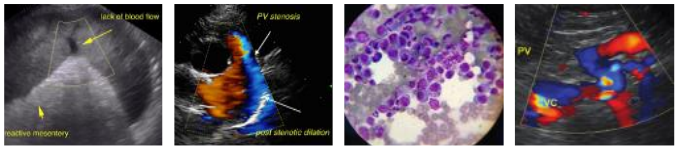


PATIENT
Sammy McElroy

SPECIES
Canine

BREED
Minature Poodle

SEX
Male Neutered

AGE
13 years

WEIGHT
24lbs

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

IMAGING PERFORMED BY
Jessica Miller

HOSPITAL NAME
Ho Ho Kus Veterinary Hospital

REFERRING VET
Dr. Gannon

INVOICE
23128

DATE
3/16/22

PRESENTING CLINICAL SIGNS

History: Recheck echo. Had splenectomy- no evidence of neoplasia. nodular lymphoid hyperplasia.
-Current medications: Vetmedin 25mg BID, Gabapentin 10mg BID.
-Pertinent previous echo findings (10/2021 MML): Moderate MR, moderate LAE, mild LVE, mild TR. LA: 2.2, LV: 3.6.

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, 50mm/mV. The average heart rate is 100bpm (range 50-125bpm). The underlying rhythm is sinus in origin, with a p for every QRS. Blocked P waves are noted throughout, consistent with 2nd degree AV block. Singles only (low-grade). No ectopic beats, pauses or other dysrhythmias observed.
ECG diagnosis: Sinus rhythm with 2nd degree low-grade AV block.

ECHOCARDIOGRAM FINDINGS

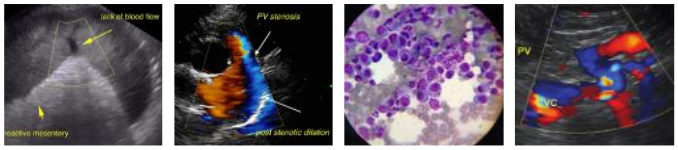
2D, m-mode, color flow and doppler imaging is available. Diffuse thickening of mitral valve leaflets (anterior>posterior) with no prolapse into the left atrial lumen. Moderate eccentric mitral regurgitation with moderate left atrial dilation. Normal MR velocity. Mildly increased LV diameter with adequate myocardial function. The tricuspid valve appears thickened with mild tricuspid regurgitation. Normal right atrial and ventricular diameter. The pulmonic and aortic valves are normal in morphology and mobility. Normal pulmonic and aortic 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	5.4	NM	1.2	1.6	43	80	0.3
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	130	1.7	1.2	10.9	2.2	3.5	2.0
*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)
Note: All measurements based upon multi-modal images and methods. An average value is reported.				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)
Adapted from June Boon, Veterinary Echocardiography, 1998				25	2.18 (2.4)	4.48 (2.9)	3.10 (2.5)
Rishniw M and Hollis NE, J Vet Intern Med 2000; 14:429-435				30	2.33 (3.3)	4.83 (3.9)	3.39 (3.4)
Hansson et al, Vet Rad and Ultrasound 2002				35	2.48 (4.3)	5.17 (5.0)	3.69 (4.5)
Bonagura et al. Echocardiography: principles of interpretation, Vet Clin North Am 15:1177, 1995				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

Chronic degenerative valve disease persists with evidence of stability. Moderate mitral and mild tricuspid regurgitation are unchanged and the left heart dimensions are similar to previous. No obvious additional issues are identified, such as pulmonary hypertension.



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The ECG does show an arrhythmia, with a sinus bradycardia and low-grade 2nd degree AV block. This implies that there are some non-conducted P waves, however never more than one in a row. Type I block is suspected on this tracing, which implies the PR interval elongates slightly prior to the block. Type I is typically due to high vagal tone and is often physiologic/benign. This is in comparison with type II block, which develops secondary to AV nodal disease. What is seen here is unlikely to cause clinical signs and may resolves with activity or excitement. If the patient was sedated, this can also result from certain anesthetics.

Assuming the patient was not sedated, recommend further evaluation through an atropine challenge (administer 0.04mg/kg atropine IV or IM and assess response); pending a normal response (heart rate >160+bpm and maintains for 10-15 minutes) high vagal tone is diagnosed which is a benign cause. High vagal tone can be a normal variant or be secondary to a variety of systemic issues such as neurologic or respiratory disease. If the atropine challenge is normal, consider further evaluation for causes of high vagal tone. An abnormal response would indicate electrical dysfunction, and a holter monitor and/or referral should be considered.

Given these findings, continue Pimobendan going forward. No obvious indication for additional medications. Continued assessment of progression in the future will help predict long term outcome, however prognosis remains guarded at this stage (B2).

Omega fatty acid supplementation and mild salt restriction may also be of some long-term benefit. Monitor for development of a progressive cough, labored breathing, exercise intolerance or collapse episodes.

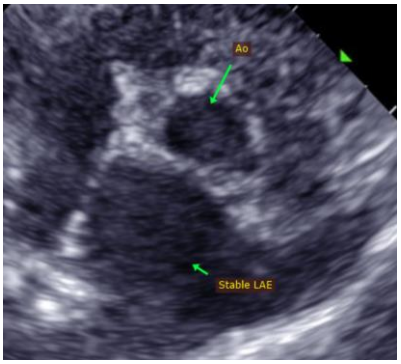
Anesthesia is not advised prior to an atropine challenge.

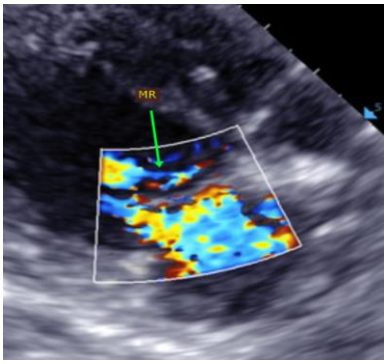
PLAN

Baseline BP recommended. Continue Pimobendan as prescribed. Atropine challenge: Administer 0.04mg/kg IV and assess response; record a second ECG 10 min following the injection. Normal would be a HR >>160+bpm for 10-15 minutes. If abnormal, referral to a local Cardiologist is recommended.

Recommend monitor for progression with a recheck echocardiogram in 6 months, sooner if any development of clinical signs.

IMAGES





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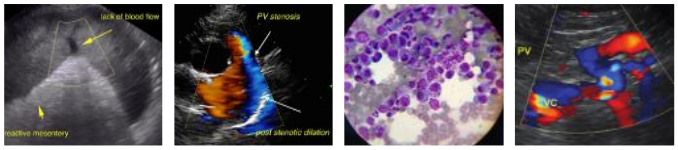

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The information and recommendations provided are based on the images presented by the referring veterinarian. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

Thank you for this referral. 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