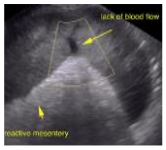
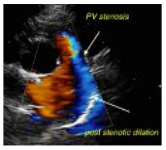
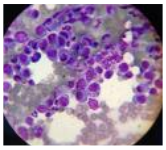
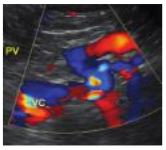
SonoPath
Clinical Sonography & Telecytology
EDUCATIONAL TELECONSULTATION SERVICES™

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

PATIENT
Meggie Brassington

SPECIES
Canine

BREED
Australian Shepherd

SEX
Female Spayed

AGE
13 years

WEIGHT
39lbs

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

IMAGING PERFORMED BY
Jennifer Todd, DVM

HOSPITAL NAME
Lambs Gap Animal Hospital

REFERRING VET
Dr. Todd

INVOICE
26896

DATE
10/14/22

PRESENTING CLINICAL SIGNS

History: Presented to our local ER on 9/25/22 for possible seizure activity. Idiopathic vestibular or otitis was suspected and Cerenia, meclizine, cephalexin and ear medication was prescribed. The ear ointment was finished on 10/5/22 and there was a break in the meclizine from 10/2/22-10/8/22. Meggie has had "stumbling" episodes since her ER visits on 9/25, but these have been intermittent. Meggie has had a chronic grade III/VI systolic heart murmur and screening at a cardiac clinic in June showed LA:Ao =1.4 but no other measurements or complete notes available. On exam on 10/11/22, I did not find any neuro signs such as nystagmus, ataxia, head tilt or abnormal reflexes present. After watching a video of Meggie's intermittent stumbling episodes, I am concerned that these may be cardiac or weakness episodes. Bloodwork showed regenerative anemia (HCT=30%, and in June HCT=47%), albumin mildly decreased at 2.6. Blood pressure on exam on 117/80, 111/84, 111/65mmHg.
AUS: splenic mass

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

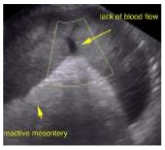
A single lead ECG is available; 25mm/s, 10mm/mV. The average heart rate is 100bpm with a largely regular rhythm. The rhythm is sinus in origin, with a p for every QRS complex and vice versa. The P and QRS morphologies are positive. A single ventricular premature beat is seen. No supraventricular premature beats, pauses or other dysrhythmias observed.
ECG diagnosis: Normal sinus rhythm with a single VPC.

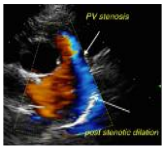
ECHOCARDIOGRAM FINDINGS

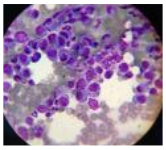
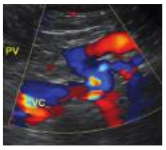
2D, m-mode, color flow and doppler imaging is available. Diffuse thickening of mitral valve leaflets (anterior>posterior) with mild prolapse into the left atrial lumen. Moderate eccentric mitral regurgitation with moderate left atrial dilation. Normal MR velocity. Mildly increased LV diameter with hyperdynamic myocardial function. The tricuspid valve appears subjectively normal, with trace tricuspid regurgitation. Normal right atrial and ventricular diameter. No tumors are seen within or surrounding the right atrium/auricle. The AV groove appears hyperechoic. 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	5.0	NM	NM	1.8	40	72	0.57
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	NM	0.5	17.7	2.6	4.1	1.9
*Normal chamber parameters expressed as a mean value (SD)				3	1.27 (5.3)	2.46 (2.46)	1.36 (5.5)





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BODY WEIGHT DEPENDENT PARAMETERS

**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

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)

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Chronic degenerative valve disease causing moderate mitral and trace tricuspid regurgitation. Moderate left atrial enlargement indicates there is relatively low risk for imminent complication, however risk for progression to spontaneous congestive heart failure in the future is elevated. Presumably this suggests mild progression from the prior exam with reportedly stage B1 disease. No obvious intra or extra-cardiac masses are appreciated; however, the right AV groove is hyperechoic. This is most consistent with fat deposition as the majority of cardiac tumors in this location are hypoechoic. Suspicion is low, particularly in the absence of pericardial effusion; however, monitoring for any progressive changes is reasonable. It is important to note that small masses are easily missed on 2D imaging (particularly in the absence of active effusion) and advanced imaging, such as thoracic CT scan, should be considered. No additional issues are identified.

In light of a reported splenic mass on AUS, this is suspected to be cause of intermittent episodes. The ECG is largely unremarkable with a single VPC (not surprising with splenic disease); however, sustained arrythmias are certainly possible with splenic neoplasia. Suspicion is low in this case; however, follow up is advised if the episodes worsen going forward. A baseline blood pressure is recommended.

Given the risk for progression and results of the EPIC trial, Pimobendan is indicated in this patient as below. Assessment of progression in the future will help predict long term outcome, however prognosis is 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.

Once on the medication for 3-5 days, anesthetic risk is considered mildly elevated. Cardiac protective drug choices (opioid/benzodiazepine premedication, Propofol or alfaxalone induction, iso or sevo gas) are recommended. Monitor for arrhythmias, hypotension, and hypoxia both intra and post-operatively and intervene as necessary. Judicious IV fluid rates are recommended to avoid fluid overload. Avoid heart rate stimulating drugs such as atropine unless clinically indicated.

PLAN

Baseline BP recommended. Institute heart muscle support Pimobendan 0.25-0.3mg/kg PO q12h. If episodes persist undiagnosed, consider a holter monitor and/or further evaluation. Consider advanced imaging if suspicion for a cardiac tumor is high. Reassess in the future, certainly should any pericardial effusion develop.

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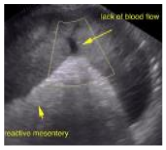
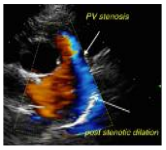
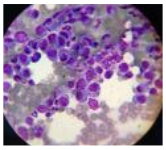
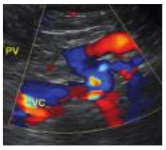

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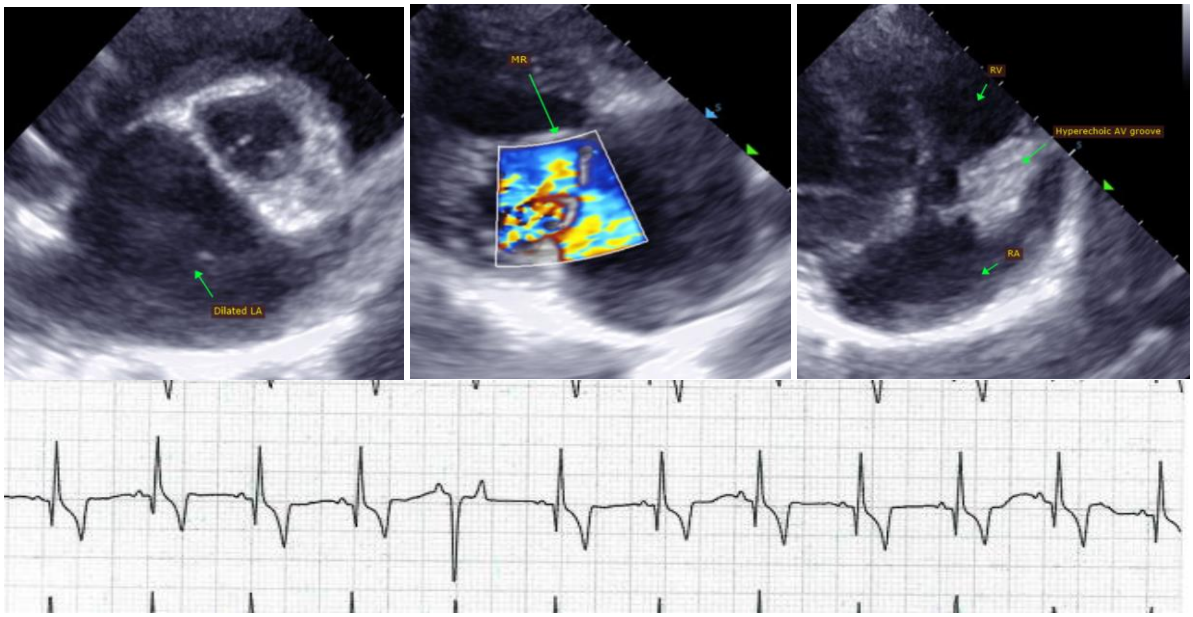
Recommend monitor for progression with a recheck echocardiogram in 6 months, sooner if any development of clinical signs.

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