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Clinical Sonography & Telecytology
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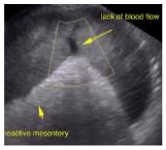
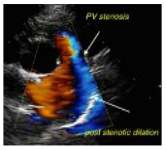
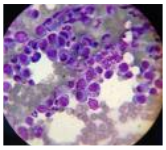
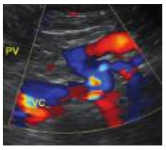

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1-800-838-4268 info@sonopath.com

PATIENT
Tuff Meyer

SPECIES
Canine

BREED
Pomeranian

SEX
Male Intact

AGE
10 years

WEIGHT
4.2lbs

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

IMAGING PERFORMED BY
Kelly Romero, DVM

HOSPITAL NAME
FC Veterinary Emergency Hospital

REFERRING VET
Dr. Romero

INVOICE
25509

DATE
7/24/22

PRESENTING CLINICAL SIGNS

History: History of reverse sneezing and tracheal collapse. Not on any meds chronically. Coughing a lot on Friday and went to rDVM. Grade V/VI systolic heart murmur L>R but bilateral, mild crackles heard ventrally bilaterally R>L. Tense abdomen. Blood pressure 132 systolic w/ doppler.
-Radiographs at rDVM: Showed cardiogenic edema and cranioventral pulmonary consolidation. Was started initially on Cefazolin, then changed to Unasyn. Also, on furosemide 3.125 mg BID and pimobendan 0.625 mg initially q8h, now BID. Has been on maintenance IVF for suspected aspiration pneumonia. Repeat radiographs were read by a cardiologist - cardiomegaly, no venous congestion, suspected bronchopneumonia (moderate to marked bronchoalveolar pattern affecting all lung fields but ventral more than dorsal with a marked alveolar pattern right middle lobe with L>R).
-Blood work: Shows BUN 43, creat 0.5 (WNL). ALT was 457, Na/K/Cl mildly decreased. I have written a script to start sildenafil 1mg q8h (compounding or suspension from human pharmacy)

ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. Mild thickening of mitral valve leaflets with mild prolapse into the left atrial lumen. Trace eccentric mitral regurgitation with no left atrial dilation. Normal LV diameter with adequate myocardial function. The tricuspid valve appears thickened with mild to moderate tricuspid regurgitation. Velocity consistent with moderate pulmonary hypertension. Mild right atrial and ventricular enlargement consistent with pulmonary hypertension. The pulmonic and aortic valves are normal in morphology and mobility. Normal pulmonic and aortic outflow velocities with laminar flow. Mild MPA and branch dilation. No obvious aortic and trace pulmonic insufficiency. No pericardial or pleural effusion noted. No obvious cardiac masses.

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	4.9	4.0	1.4	1.3	51	85	0.2
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	1.4	1.9	1.38	1.5	0.7
*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)
**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)

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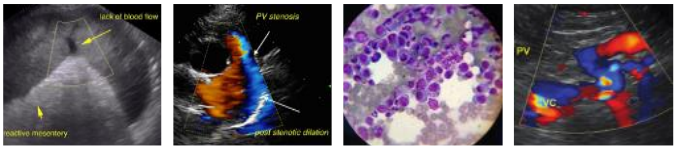

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INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Chronic degenerative valve disease causing trace mitral and mild to moderate tricuspid regurgitation. Lack of left atrial enlargement indicates the current risk for complication is low. Moderate pulmonary hypertension is noted which is more clinically significant in this patient. Mild right-heart/MPA enlargement supports this may be a progressive issue in this predisposed breed. No additional issues are noted in this study.

With no left atrial enlargement, generally no cardiac medications are clearly indicated. That being said, the finding of concurrent pulmonary hypertension in this case warrants continuation of Pimobendan at this time. These findings would make prior CHF highly unlikely, and Lasix can be safely discontinued. Additionally, Sildenafil is reasonable in this patient due to significance of presumed primary airway disease and finding of pulmonary hypertension.

Monitor for signs associated with progressive pulmonary hypertension including exertional dyspnea or collapse. This particular breed is predisposed to lower airway disease as a likely contributing factor and cause of crackles. It is important to note that cough/crackles are not caused by pulmonary hypertension; rather PAH is a result of a chronic cough. If a cough develops in the future, cough suppression may be indicated

Assessment of progression in the future will help predict long term prognosis, which is guarded at this stage. Omega fatty acid supplementation and mild salt restriction may be of some long-term benefit. Monitor for development of a cough, labored breathing, exercise intolerance or collapse episodes.

Anesthetic risk is considered mild. Cardiac protective drug choices (opioid/benzodiazepine premedication, propofol or alfaxalone induction, isoflurane gas) are recommended. Pre-oxygenate for 5-10 minutes prior to induction. Monitor for arrhythmias, hypotension, and hypoxia both intra and post-operatively and intervene as necessary. Mild IV fluid restriction is recommended to avoid fluid overload. Avoid heart rate stimulating drugs such as atropine unless clinically indicated.

PLAN

Continue Pimobendan 0.3mg/kg PO q12h. Discontinue Lasix as discussed. Institute Sildenafil 1-2mg/kg PO q12h. Consider primary pulmonary workup/treatment if indicated (Hydrocodone, Baytril, Theophylline, etc.).

Recommend conservative monitoring with a recheck echocardiogram in 6 months, sooner if any development of clinical signs.

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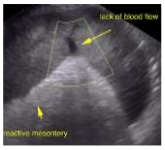
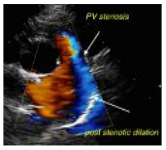
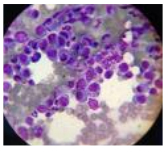
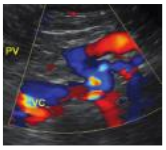

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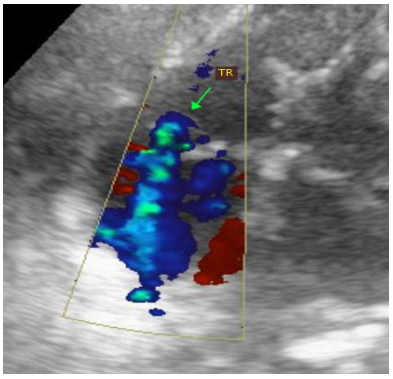
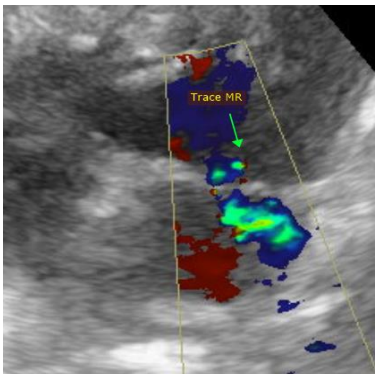
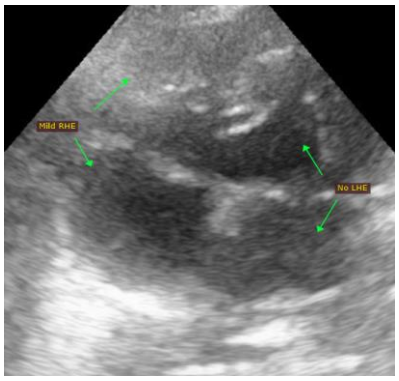
IMAGES







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