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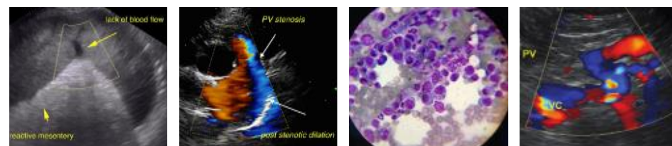
Clinical Sonography & Telecytology

EDUCATIONAL TELECONSULTATION SERVICES™



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

PATIENT
Max Fullerton

SPECIES
Canine

BREED
Shih Tzu

SEX
Male Neutered

AGE
12.6 years

WEIGHT
19.4lbs

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

IMAGING PERFORMED BY
J. Pankatz, DVM

HOSPITAL NAME
Mountain Vista Veterinary Hospital

REFERRING VET
Dr. Pankatz

INVOICE
27390

DATE
11/10/22

PRESENTING CLINICAL SIGNS

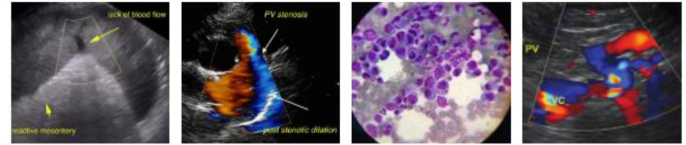
History: Having more trouble on the exhale for a couple weeks now, breathing seems more labored when he is lying down. Grade 6/6 murmur. rDVM started Pimobendan and Enalapril which has helped symptoms. No cough noted
-Abnormal PE/Chem/CBC/UA Results: (CBC, Chem17 w/Lytes, SDMA, T4) Slightly high SDMA, BUN and Alk Phos. Slightly high WBC., Mild neutrophilia. ECG IDEXX: Normal Radiographs Antech: 11/9/22, :No evidence of pulmonary pathology to explain the reported respiratory signs. Pulmonary thromboembolic disease cannot be ruled out on radiographs alone. Extra thoracic causes should also be considered, including metabolic disease/disturbance, pain and discomfort, heat, among others. Left-sided cardiomegaly is consistent with underlying cardiac disease such as degenerative mitral valve disease. There is no evidence of left-sided congestive heart failure. Mainstem bronchial narrowing may be secondary to left atrial enlargement. Hepatomegaly is nonspecific with most likely considerations including metabolic/vacuolar hepatopathy or benign etiologies (nodular hyperplasia, extramedullary hematopoiesis). Congestion, inflammatory etiologies, and neoplasia cannot be ruled out. Suspect right +/- left nephrolithiasis. Marked cystolithiasis. Moderate bilateral stifle osteoarthritis. This region is incompletely included. Superimposition of the right patella and the femoral condyles suggest some degree of patellar instability. Bilateral hip osteoarthritis and bone remodeling.

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. Borderline LV with adequate myocardial function. The tricuspid valve appears mildly thickened with mild tricuspid regurgitation. Velocity consistent with moderate pulmonary hypertension. Mild right ventricular prominence. Mild right atrial enlargement. The pulmonic and aortic valves are normal in morphology and mobility. Normal pulmonic outflow velocities. Normal aortic outflow velocities. No pulmonic or aortic insufficiency. The MPA is prominent. 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	4.6	3.5	1.9	1.9	64	93	0.1
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		1.1	0.9	8.8	2.5	3.3	1.2
*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)



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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	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 mild tricuspid regurgitation. Moderate left and mild right atrial enlargement indicates there is risk for progression to congestive heart failure in the future. Mild TR and moderate PAH are also noted, likely due to respiratory disease in this patient. As is mentioned in the CXR report, a PTE cannot be ruled out. Given the combination of MV disease and moderate pulmonary arterial hypertension I would continue Pimobendan and an ACE-I as prescribed. Sildenafil may or may not be beneficial given the reported respiratory pattern. A trial may be reasonable to assess response. If there is no clinical improvement in breathing comfort, there is no need to continue the medication. Prognosis is guarded at this stage (B2).

Once on the medication for 3-5 days, anesthetic risk is considered moderately elevated. Cardiac protective drug choices (opioid/benzodiazepine premedication, propofol or alfaxalone induction) 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. Pre-oxygenate for 5-10 min prior to intubation and recover in O2 if possible.

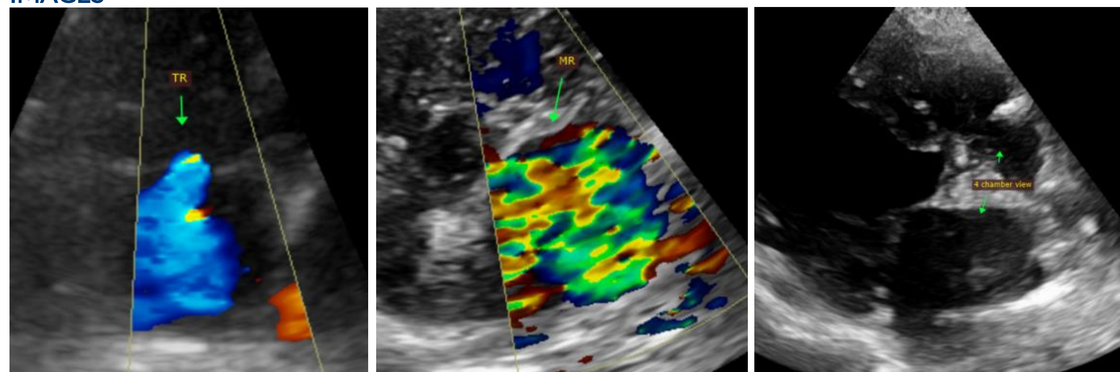
Omega fatty acid supplementation and mild salt restriction may also be of some long-term benefit. Monitor for development of a progressive cough, labored breathing, exercise intolerance or collapse episodes.

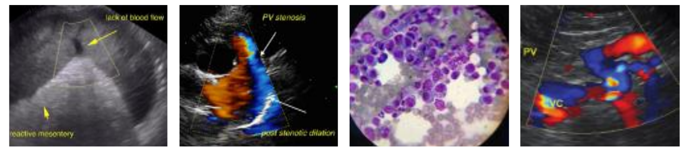
PLAN

Screening BP is recommended. Continue Pimobendan, 0.25-0.3mg/kg PO BID. Continue ACE-I 0.5mg/kg PO q12h. If elected, consider a trial of Sildenafil 1-2mg/kg PO q8h and assess response.

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

IMAGES





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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