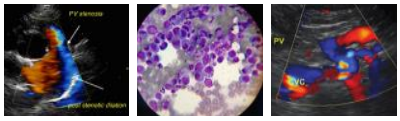
IMAGING PERFORMED BY

IntraPet.com



SonoPath
Clinical Sonography & Telecytology
EDUCATIONAL TELECONSULTATION SERVICES™
1-800-838-4268 info@sonopath.com SonoPath.com

PATIENT
Niko Rosinsky

SPECIES
Canine

BREED
West Highland Terrier

SEX
Male Intact

AGE
5.15.10

WEIGHT
13.9lbs

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

HOSPITAL NAME
Friendly Paws Vet Clinic

REFERRING VET
Dr. Price

INVOICE
32157

DATE
8.4.23

PRESENTING CLINICAL SIGNS

History: Recently adopted pet from shelter with history of polydipsia. PE: skin turgor poor. Bilateral mature cataracts with probable blindness. Grade 2/6 systolic murmur on the R, regular rhythm, pulses full. Fullness in the caudal abdomen. Scrotum empty. Neutered 5/26/23 at shelter. Prostate not palpable. Recent episode of hematuria with possible rod bacteriuria at ER. Tx with Enrofloxacin 06/13/23. On 6/26/23 hematuria continues with possible clumps of metaplastic renal cells.
-Pertinent abnormal PE/Chem/CBC/UA Results: ALT 175 (10-125), ALK 319 (23-212), WBC 26.7, neut 22.3, monocytes 2.0, USG 1.025 pH 6.5 URBC 21, UWBC 2. Other urine, hematology, chemistry normal
-Current medications: Fluoxetine 10mg 1/2 pill SID, Carprofen 25mg Tablets 1/2 tablet BID, Enrooxacin 68mg Tablets 1 tablet SID.
-Sedation used: Patient sedated with Torbugesic.
-Pertinent previous ultrasound results: No previous.
-STAT: Declined.
-Imaging performed by: Andi Parkinson, BS, RDMS.

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. Mild mitral regurgitation with mild left atrial dilation. Normal LV diameter with adequate myocardial function. Subtle flattening in systole noted. The tricuspid valve appears thickened with septal prolapse and severe tricuspid regurgitation. Moderate right atrial enlargement; moderate right ventricular hypertrophy and dilation. TR velocity consistent with severe pulmonary hypertension. The pulmonic and aortic valves are normal in morphology and mobility. Main PA and branch dilation. Trace pulmonic and no aortic insufficiency. No pericardial or pleural effusion. Ascites noted by the Sonographer. 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	4.5	4.4	NM	1.6	37	69	NM
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	160	0.7	0.5	6.3	2.1	2.5	1.6
*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)
				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)

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

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Severe pulmonary hypertension (PAH) is present, as evidenced by severe TR, an elevated TR velocity and right heart/ MPA changes. The estimated systolic pulmonary arterial pressure is >80mmHg (TR velocity underestimated), with normal being <25mmHg. This is causing hypertrophy and dilation of the right ventricle (indicating severe right-heart pressure overload). The left heart is mildly affected with mild MR and mild LA enlargement. No additional issues are identified.

Clinical signs of weakness, heavy breathing, cyanosis, ascites and syncope are attributed to severe PAH.
The underlying genesis of PAH is poorly understood in cases other than heartworm infestation, though it occurs with increased frequency in a variety of forms of chronic lung disease and in patients with idiopathic pulmonary fibrosis. A heartworm test should be considered if not recently performed. This breed is predisposed to primary pulmonary fibrosis, which must also be considered. CXR are recommended for further pulmonary evaluation.

Patients with this degree of PAH can develop right-sided congestive heart failure (ascites, pleural effusion) as is seen in this case, debilitating cyanosis/labored breathing and exertional syncope if poorly controlled. The prognosis is guarded to poor with an MST of <1 year after the onset of CHF.

Medical management of PAH and CHF is indicated as below and initial therapeutic dosages are indicated. We must be cautious with diuretics, as maintaining preload with PAH is important while keeping fluid retention at bay. A therapeutic abdominocentesis should be repeated if or when the patient is inappetant or uncomfortable going forward. Our goal is to control the effusion as it is unlikely to completely resolve.

We must also address any respiratory disease in this case, as this is the underlying cause of PAH.

Omega fatty acid supplementation and mild salt restriction may be of some long-term benefit.

Monitor for development of a labored breathing, exercise intolerance or collapse episodes.

PLAN

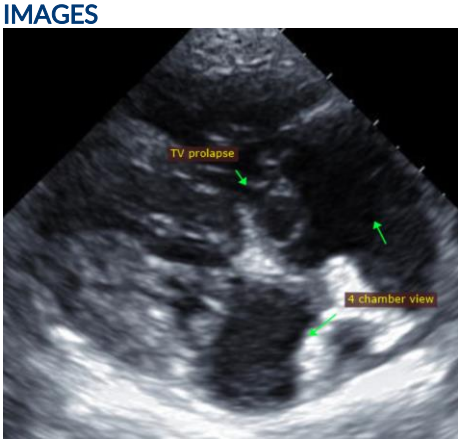
Heartworm test recommended. Baseline CXR is recommended. Institute sildenafil 1-2mg/kg PO TID. Institute spironolactone 1-2mg/kg PO BID. Institute low-dose Lasix 1mg/kg PO q12h. Institute Pimobendan 0.3mg/kg PO BID. Further address the respiratory disease as dictated by the clinical picture, history and clinical signs.

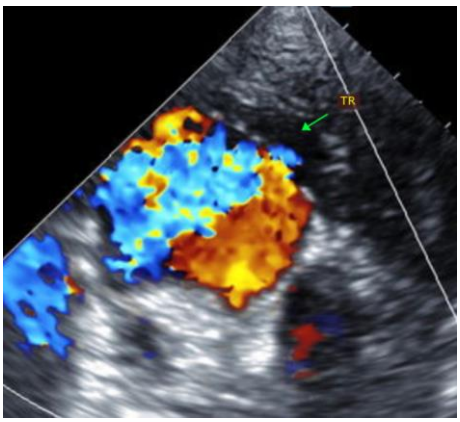
Recommend renal panel and BP in 10-14 days, then every 3-4 months lifelong on diuretics. If BP is >130mmHg and patient is doing well at home, institute ACE-I 0.5mg/kg PO q12h.

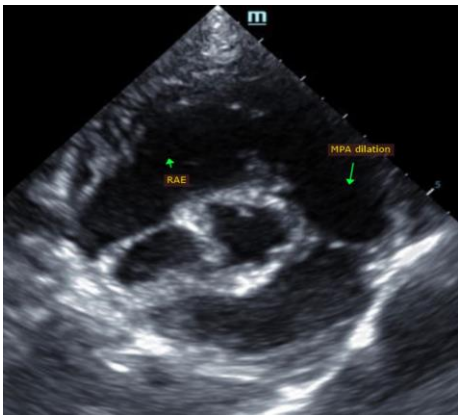
Going forward, abdominocentesis is recommended PRN to maintain comfort and appetite.

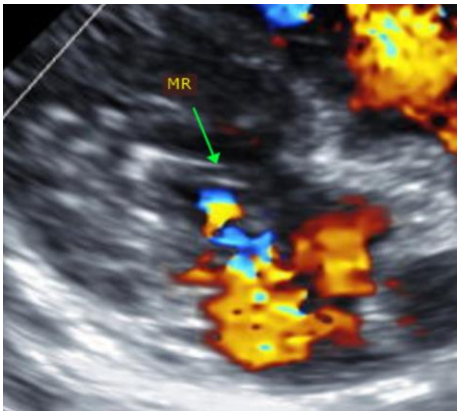
Once stabilized, recommend recheck echocardiogram in 6 months to reassess structure and function, sooner if any development of clinical signs.

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