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Clinical Sonography & Telecytology
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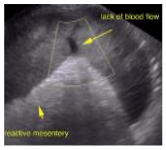
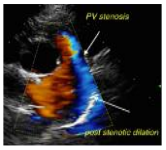
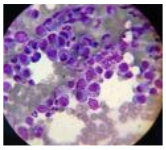
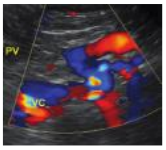





SonoPath.com
1-800-838-4268 info@sonopath.com

PATIENT
Meadow's Pup Miller

SPECIES
Canine

BREED
Labrador Retriever

SEX
Male

AGE
15 weeks

WEIGHT
25lbs

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

IMAGING PERFORMED BY
Diane McFadden

HOSPITAL NAME
Blairstown Animal Hospital

REFERRING VET
Dr. Clegg

INVOICE
21667

DATE
10/22/21

PRESENTING CLINICAL SIGNS

History: Grade 3/6 left sided murmur, poor growth.

ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. Severe anatomic distortion makes extensive visualization difficult, however, the TV leaflets are abnormal with thickening and lack of coaptation in systole. Tethered septal leaflet. Some degree of stenosis is not ruled out. Distorted RV papillary musculature. Marked tricuspid regurgitation with marked right atrial and ventricular dilation distorting normal views. Bowing of the interatrial septum. A PFO is suspected on color flow imaging. The LV diameter is normal with adequate myocardial function. LA dimension is normal. The mitral valve appears normal with trace mitral regurgitation. Normal aortic and pulmonic outflow velocities. The pulmonic valve cannot be well defined in this study; however, no obvious stenosis is identified, and outflow is normal. The aortic valve is normal with no aortic insufficiency. No obvious congenital shunts. No ascites, pleural or pericardial effusion. Hepatic congestion. Rapid irregular rate/rhythm throughout.

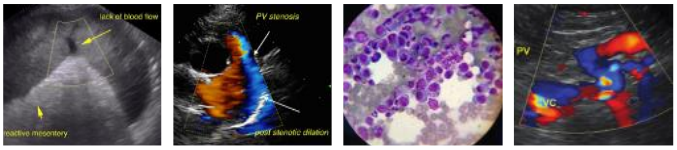
CARDIAC CHART

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		3.4	1.23	1.2	38	70	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	268	1.2	0.7	11.3	1.8	2.6	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 tricuspid valve dysplasia is identified. This is causing marked tricuspid regurgitation and massive secondary RA and RV dilation. There also appears to be some degree of valve stenosis as well, further exacerbating RA dilation. A patent foramen ovale is suspected with R-L flow, although of little hemodynamic consequence and not confirmed. The remainder of the study is normal; however, it is important to note that with this degree of anatomic distortion small additional defects are easily missed (such as an ASD, mild valve stenosis, etc). Highly recommend referral to a local Cardiologist for advanced diagnostics in this case. Finally, **the HR is rapid and**



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irregular and there is great concern for development of atrial fibrillation. Highly recommend a baseline ECG as rate control is likely indicated.

TVD is a relatively uncommon form of inherited heart disease, although common in Labrador Retrievers. Little is known about the long-term effects of medical therapy in patients with severe TVD prior to the onset of congestive failure signs. Patient will always be at high risk for right-sided CHF and/or development of arrhythmias such as atrial fibrillation, collapse and sudden death going forward.

Surgical reconstruction/repair is available as an option, though it requires use of cardiopulmonary bypass, and such procedures are only offered at select universities. Referral is recommended if interested in pursuing surgical options

In a young dog, the finding of massive right heart dilation is concerning, and this condition will no doubt limit life span. **Medical therapy is indicated including diuretics given hepatic congestion**, and close monitoring is advised.

The long-term prognosis is guarded to poor, however outcome varies widely among TVD patients. Activity restriction is advised. Omega fatty acid supplementation and mild salt restriction may be of some long-term benefit.

Elective anesthesia is not advised

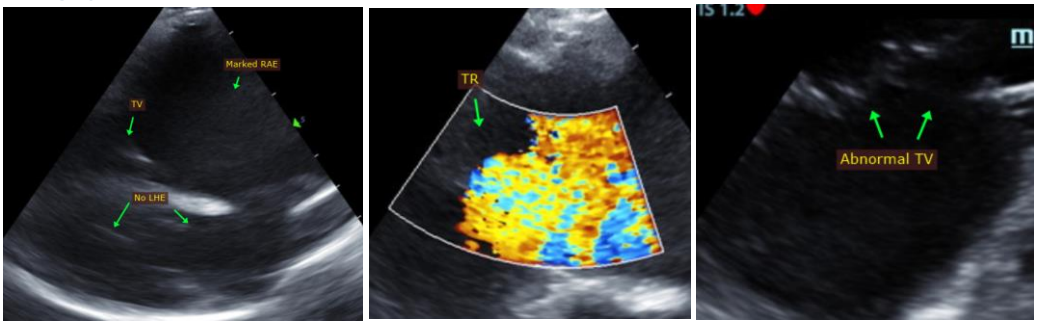
Monitor closely at home for development of any associated clinical signs, including abdominal distention, labored breathing, and/or collapse episodes or lethargy.

PLAN

Consider immediate referral as discussed. Consider baseline chest radiographs, **ECG**, BP. Administer heart muscle support Pimobendan (Vetmedin) 0.3mg/kg PO q12h. Administer vasodilator/anti-fibrotic Benazepril or Enalapril 0.5mg/kg PO q12h (pending BP >130mmHg). Administer diuretic furosemide (Lasix) 1-2mg/kg PO q12h (available in 12.5, 20, 50mg tablets, 10mg/ml solution). Administer aldosterone antagonist Spironolactone 1-2mg/kg PO q12h (available in 25 and 50mg tablets).

A recheck echocardiogram is recommended in 4-6 months to screen for progression, sooner if any clinical signs arise.

IMAGES



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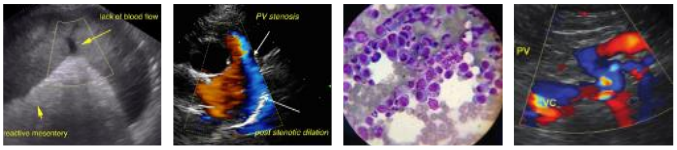

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The information and recommendations provided are based on the images presented by the referring veterinarian. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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