



PATIENT

Cutie Perez

SPECIES

Canine

BREED

Chihuahua

SEX

Female Spayed

AGE

5 years

WEIGHT

~9lbs

INTERPRETED BY

Maggie Machen
 Lamy, DVM, DACVIM
 (Cardiology)

IMAGING PERFORMED BY

Sara Hansen

HOSPITAL NAME

Countryside Animal
 Clinic

REFERRING VET

Dr. Cox

PRESENTING CLINICAL SIGNS

History: Grade 5/6 heart murmur. Coughing.

ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. Continuous flow suspected in the distal pulmonary artery in the region of the ductus arteriosus. Max velocity and direction are not assessed. Severe PA dilation; mild pulmonic insufficiency. Marked volume overload of the left heart with increased sphericity and decreased function. Marked LA dilation. Mildly elevated pulmonic outflow velocities. The PV appears normal. Mildly elevated aortic outflow velocity due to volume overload. Moderate to severe MR. Additional congenital defects are not entirely ruled out. No effusions or tumors identified.

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	NM	NA	2.5	2.8	28	50	0.4
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	220	2.8	1.0	4.1	2.8	3.2	2.3
*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)
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				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

The suspected diagnosis is a patent ductus arteriosus (PDA). The diagnosis is suspect as the duct is not visualized, and further interrogation is necessary. This is a congenital condition where a blood vessel present in the fetus remains open after birth. When patent, this allows blood to recirculate through the lungs inappropriately and volume overloads the left heart chambers as is seen here. The left heart appears severely overloaded, with a markedly dilated left heart. There is also moderate to severe MR, which is further overloading the left heart. No additional congenital defects are observed; however, this is not ruled out in this image set.

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Given these findings and a history of coughing, this patient is progressing towards fulminant congestive heart failure. Immediate full lifelong cardiac supportive therapy is warranted as below with immediate consideration of referral due to severity of issues. Long term prognosis is poor to grave with this degree of disease, most dogs are able to maintain a good QOL on medications for an average of less than 6 months **if able to be stabilized**. Oxygen support, IV diuretics and further monitoring will hopefully help safely stabilize the patient. If declined, full cardiac support is recommended as below.

Generally speaking, closure of the PDA is the recommended treatment. That being said this patient's left heart changes are severe, and closure may not be of significant benefit at this point. Recommend stabilize the patient and consider referral for consultation with a local Cardiologist to discuss long-term options if interested in pursuing. Even if the duct is closed, the changes to the left heart will likely not improve significantly and outcome will be limited.

Monitoring of sleeping respiratory rates will be paramount to screen for congestive heart failure at home. Omega fatty acid supplementation and mild salt restriction may also be of some long-term benefit. Monitor for development of a cough, labored breathing, exercise intolerance or worsening collapse episodes in the future. Patient will always be at risk for recurrence, spontaneous congestive heart failure, development of malignant arrhythmias and/or sudden death in the future.

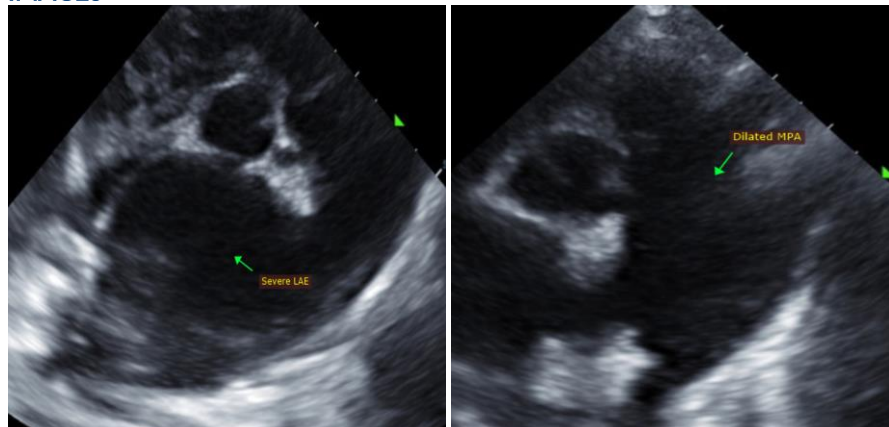
PLAN

Consider referral for overnight care/oxygen support. Baseline BP and ECG are highly recommended. If declined recommend the following oral medications: Institute furosemide 1-2mg/kg PO q8h for 3-5 days, then decrease to q12h if doing well. Administer Pimobendan 0.3mg/kg PO q12h. Administer spironolactone 1-2mg/kg PO q12h. Do not utilize an ACEI at this time.

Monitor renal values and BP in 1-2 weeks, then every 3-4 months while on diuretics. Once stabilized consider consultation with a local Cardiologist regarding future options.

Recheck: Recommend conservative monitoring with a recheck echocardiogram in 3-4 months, sooner if any development of associated clinical signs occurs in the interim.

IMAGES





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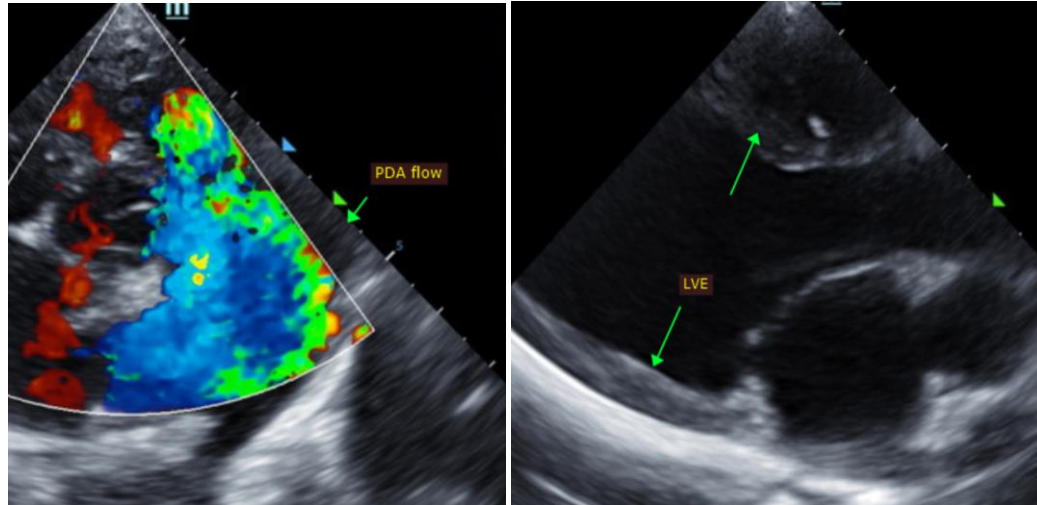
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The information and recommendations provided are based on the images presented by the referring veterinarian. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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

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