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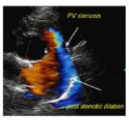
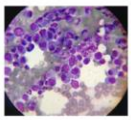
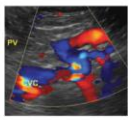

SonoPath
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PATIENT

Eloise Ward

SPECIES

Canine

BREED

French Bulldog

SEX

Female Intact

AGE

4 months

WEIGHT

7.58lbs

INTERPRETED BY

Maggie Machen Lamy, DVM, DACVIM (Cardiology)

IMAGING PERFORMED BY

Tom McNeill

HOSPITAL NAME

SVS Imaging CT

REFERRING VET

Dr. Jochman

INVOICE

26170

DATE

9/2/22

PRESENTING CLINICAL SIGNS

History: 2-day history of intermittent vomiting and diarrhea, inappetance, and lethargy. Grade 3/6 systolic left base murmur. 1/5 pups of litter to survive. 1 DAPP vxn 8/10/22. Unsure deworming history possible ingestion foreign material.
Abnormal PE/Chem/CBC/UA Results: Parvo Neg, BG 98 (full cbc/chem pending), rDVM.
-CXR and AXR: some intestinal gas, decreased serosal detail of abdomen, additional rib on right hemithorax/unclear if hemivertebrae present.
*Ascites on AUS.

ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. Normal mitral valve leaflets with no obvious prolapse into the left atrial lumen. No mitral regurgitation. No left atrial enlargement. Normal LV diameter with adequate myocardial function. The LV wall appears normal. The tricuspid valve appears normal with significant TR seen. The MPA appears dilated with a stenotic abnormal valve, although visualization is limited. Pulmonic outflow velocities are consistent with a moderate stenosis; however, this is suspected to be an underestimation. Mild pulmonic insufficiency. Suspicion for an abnormal coronary (see below). Moderate to severe right atrial enlargement. Suspicion for an ostium secundum ASD with left to right flow seen on color flow imaging. Marked right ventricular enlargement with hypertrophy and remodeling indicative of pressure overload. The aortic valve is normal in form and function. Trace/mild aortic insufficiency. Normal aortic outflow velocity. No pericardial or pleural effusion identified. Ascites documented by the Sonographer.

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	NA	NA	1.4	1.2	45	79	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	130	1.6	3.2	3.4	1.5	2.1	0.9
*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

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INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Complex congenital heart disease is present. The primary cause of the murmur is pulmonic stenosis with an abnormal pulmonic valve. The velocity through the region is likely an underestimation due to the degree of right heart changes, with a significant stenosis suspected. The right heart is significantly enlarged, which suggests hemodynamic significance. An abnormal coronary is suspected, both given the breed and 2D imaging (see below), which would further exacerbate the stenosis. Ancillary RV pathology is possible, given the mistmatch in severity seen here. Additionally, there is concern for a large ASD (0.47cm in diameter). These can be difficult to definitively diagnose on 2D ultrasound and a bubble study may be warranted. Finally a small aortic insufficiency is noted which is of unknown significance. No obvious additional issues are identified and the left heart appears normal.

Regardless of definitive diagnosis, this patient is in right-sided congestive heart failure with cardiogenic ascites. Given this finding and complex congenital disease seen here, **highly recommend referral to a local Cardiologist for advanced imaging.** If declined, medical management can be attempted; however, prognosis is grave. Euthanasia should be considered if QOL suffers.

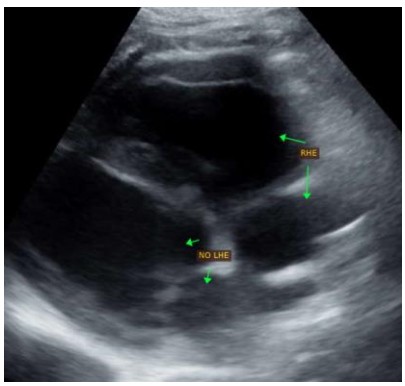
Atenolol is not recommended in a dog this young and in active CHF; however, this may be indicated in the future.

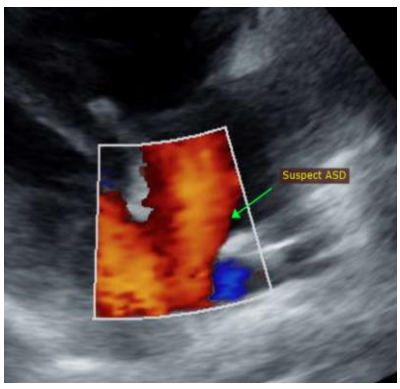
Monitor at home for labored breathing, cough, abdominal distention or fainting episodes. Moderate activity restriction is advised. Regardless of categorical diagnosis, patient's prognosis is poor at this juncture as CHF has developed, with risk for recurrent CHF, arrhythmias, and/or sudden death in the future. Abdominocentesis should be performed as needed, when the patient appears uncomfortable or inappetant.

PLAN

Ideally, recommend referral to a local Cardiologist. If declined, institute Lasix 1-2mg/kg PO q12h. Institute Spironolactone 1-2mg/kg PO q12h. Recheck in 3-4 months, sooner if recurrent clinical signs. Euthanasia should be considered if quality of life suffers.

IMAGES





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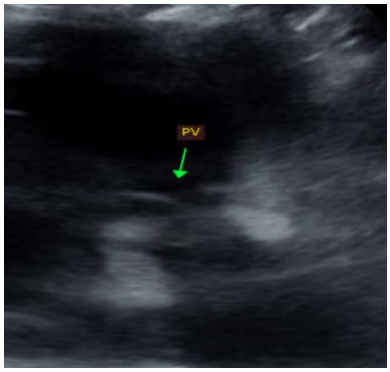

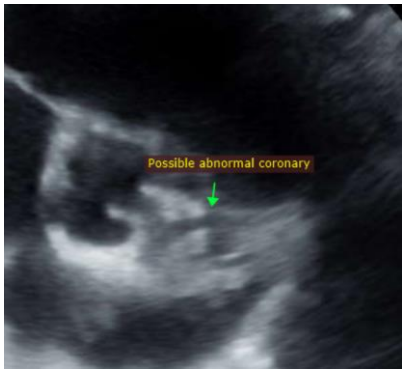

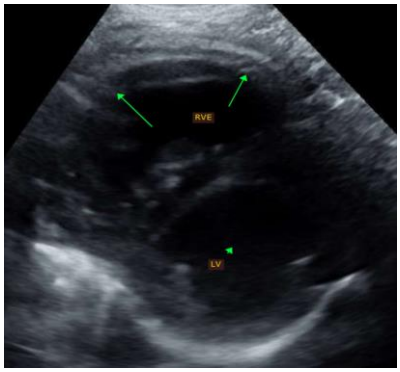

The information and recommendations provided are based on the images presented by the referring veterinarian. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

Thank you for this referral. 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