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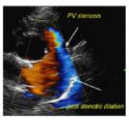
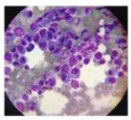
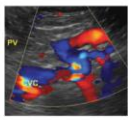

SonoPath
Clinical Sonography & Telecytology
EDUCATIONAL TELECONSULTATION SERVICES™
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PATIENT

Fifi Clark

SPECIES

Canine

BREED

Chihuahua Mix

SEX

Female Spayed

AGE

12 years

WEIGHT

5.8lbs

INTERPRETED BY

Maggie Machen Lamy, DVM, DACVIM (Cardiology)

IMAGING PERFORMED BY

Rachel Runnels, RVT

HOSPITAL NAME

SVS Imaging KC

REFERRING VET

Dr. Mervin

INVOICE

26254

DATE

9/8/22

PRESENTING CLINICAL SIGNS

History: Presented yesterday in respiratory distress and cyanotic x 2 days. Previously dxd with CHF and was on Lasix, enalapril and pimobendan but discontinued by owner. Chronic UR/allergic airway issues. Pet distressed and cyanotic, radiating Grade 5/6 systolic murmur, crackles and wheezes over all fields. Slow improvement in O2 and with Lasix 2 mg/kg x 2 doses. Sent to e-clinic overnight and was in O2 and had another dose of Lasix. Much less effort this a.m. Unable to clearly heart murmur today. No crackles, wheezes present. BP: 136mmHg.
-Abnormal PE/Chem/CBC/UA Results: BW-High WBC's--27 K.
-Radiographs: Severe cardiomegaly. Right sided milliary pattern with perihilar edema. Left side BV pattern.
-Sedation: Butorphanol.

ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. Diffuse thickening of mitral valve leaflets with mild prolapse into the left atrial lumen. Suspicion for severe eccentric mitral regurgitation (unable to be definitively seen) with severe left atrial dilation. Normal MR velocity. No LV dilation with adequate myocardial function. The tricuspid valve appears normal, with trace TR. Mild right heart enlargement. Mild MPA dilation. The pulmonic and aortic valves are normal in morphology and mobility. Normal aortic and pulmonic outflow velocities with laminar flow. No AI and mild PI. No pericardial or pleural effusion noted. No obvious cardiac masses.

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	5.3	NM	2.0	2.3	50	85	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	96	1.3	0.95	2.6	2.0	1.9	1.1
*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

Chronic degenerative valve disease causing severe mitral and trace tricuspid regurgitation. Severe left atrial enlargement indicates the risk for spontaneous congestive heart failure is elevated. Some degree of pulmonary hypertension is suspected, given a dilated main pulmonary artery. Finally, it is of note that the LV is not significantly dilated. While this can be impacted by

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aggressive Lasix therapy, the overall presentation of the case is somewhat unusual without an auscultable murmur. The MR is not well visualized; however, given secondary left atrial enlargement there is suspicion of a significant leak. No additional issues are identified. Given these findings, highly recommend reassess renal values ASAP as these may be markers of over-dehydration.

In light of the prior clinical signs, reported chest radiograph findings and severity of disease on echocardiogram, the diagnosis of congestive heart failure is supported, particularly if the patient responded well to aggressive diuretic therapy. If there is any question, consider repeat chest radiographs for comparison, as respiratory issues may also be at play. If the patient is improved, there is no obvious indication for Sildenafil at this time, given only a presumptive diagnosis. That being said, if any respiratory issues persists, Sildenafil can be utilized. Cough suppression to improve QOL can also be considered (hydrocodone, 0.2-0.4mg/kg up to q4-6h PRN) for any residual mechanical cough in the face of normal sleeping respiratory rates. The average survival time of canine patients with active pulmonary edema is 8-9 months on medications, however they generally are able to maintain a good quality of life for that period. Patient will always be at risk for recurrent CHF, development of arrhythmias/LA tear, syncope and/or sudden death in the future.

Omega fatty acid supplementation and mild salt restriction may also be of some long-term benefit. Monitor for acute progression of the cough, labored breathing, exercise intolerance or collapse episodes in the future.

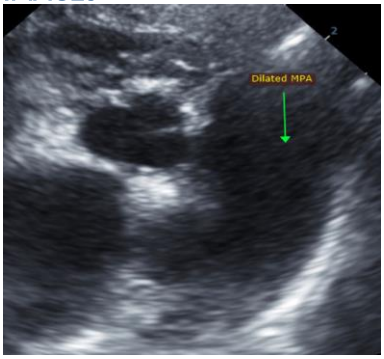
PLAN

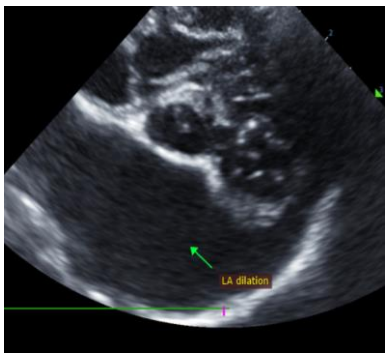
Assess renal values for over-dehydration ASAP. Administer Pimobendan 0.3mg/kg PO q12h. Administer Furosemide 1-2mg/kg PO q12h. Administer Spironolactone 1-2mg/kg PO q12h. If any questions on response to therapy, repeat chest radiographs with a Radiologist review with serial films is strongly recommended, as CHF is a radiographic diagnosis. If any persistent respiratory issues are noted in the absence of CHF, Sildenafil can also be administered 1-2mg/kg PO q12h.

Monitor SRRs at home. Monitor renal values and BP in 10-14 days, then every 3-4 months while on diuretics. If doing well and BP >130mmHg, institute ACEI 0.5mg/kg PO q12h. Consider hydrocodone if needed for QOL.

Recommend conservative monitoring with a recheck echocardiogram in 6 months, sooner if any development of associated clinical signs occurs in the interim.

IMAGES





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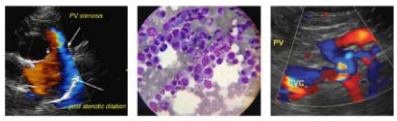

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The information and recommendations provided are based on the images presented by the referring veterinarian. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

Thank you for this referral. 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