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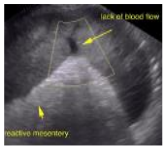
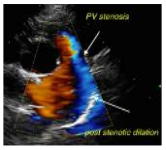
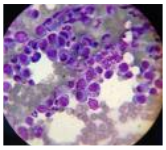
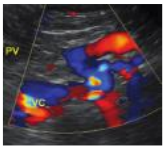

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1-800-838-4268 info@sonopath.com

PATIENT
Kona Fuchs

SPECIES
Canine

BREED
Pomeranian

SEX
Female Spayed

AGE
13 years

WEIGHT
13lbs

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

IMAGING PERFORMED BY
Patti Mayfield, DVM

HOSPITAL NAME
Bend Animal Emergency & Speciality

REFERRING VET
Dr. Stone

INVOICE
23412

DATE
4/3/22

PRESENTING CLINICAL SIGNS

History: Heavy breathing, extremely lethargy. History of upper respiratory infection, collapsed trachea, enlarged heart and grade V murmur. PE: severe dyspnea with signs of shock. Dehydration. Murmur, grade 4-5/6. Respiratory distress.
-Current medications: Prednisone, hydrocodone, Fortiflora, vetmedin.
-CXR: Severe caudodorsal pulmonary edema, dorsally elevated trachea, severe cardiomegaly without globoid appearance, concern for possible pulmonary lobe consolidation on the right but patient was quite rotated due to ongoing respiratory distress during obtainment, mild pleural effusion.

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. Severe eccentric mitral regurgitation with severe left atrial dilation. Normal MR velocity. Mild LV dilation with hyperdynamic myocardial function. The tricuspid valve appears thickened with mild TR. Velocity consistent with moderate pulmonary hypertension. Minimal right atrial and ventricular dilation. The pulmonic and aortic valves are normal in morphology and mobility. Normal aortic and pulmonic outflow velocities with laminar flow. No significant MPA dilation. No AI or 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	5.4	3.6	1.4	2.6	60	90	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	NM	1.3	1.2	5.9	3.0	3.3	1.5
*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 mild tricuspid regurgitation. Severe left atrial enlargement indicates the risk for spontaneous congestive heart failure is high. Moderate pulmonary hypertension is noted, which may be due to a combination of chronic LA pressure elevation and airway disease. No additional issues are identified.

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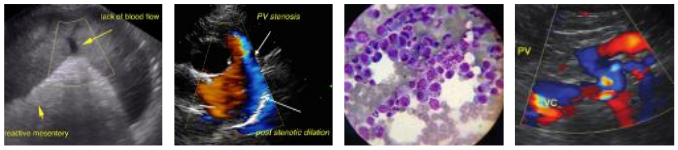

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The reported chest radiograph findings are difficult to interpret, and a Radiologist review of the films is strongly recommended in this case. Cardiogenic shock is uncommon with typical CHF and pulmonary involvement may be present. Both are possible in this case, and it is difficult to know which to treat in the acute phase. In the interim, continuing lifelong cardiac supportive medications is reasonable. It is unclear if Sildenafil is necessary with this degree of pulmonary hypertension; however, if there has been clinical improvement on the medication, it should be continued.

Monitoring of sleeping respiratory rates will be paramount to screen for congestive heart failure at home. 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.

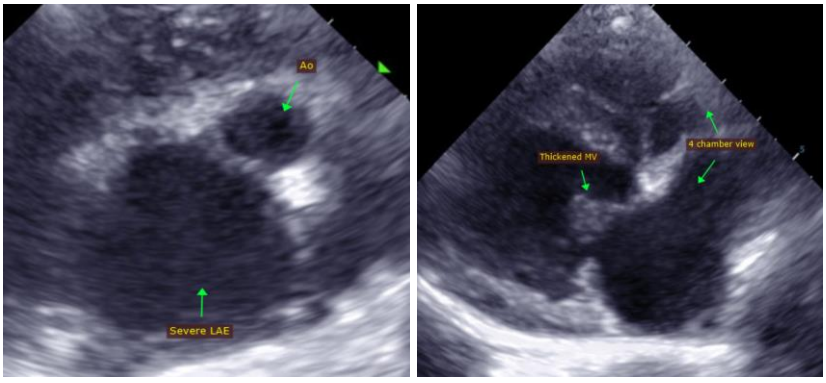
PLAN

Highly recommend a Radiologist evaluation of the films, potentially with serial CXR for comparison if needed. Institute Pimobendan 0.3mg/kg PO q12h. Institute Spironolactone 1-2mg/kg PO q12h. If CHF is confirmed, continue Furosemide 1-2mg/kg PO q12h. If improved on the medication, continue Sildenafil 1-2mg/kg PO q8h.

Monitor SRRs at home. Monitor renal values in 10-14 days, then every 3-4 months while on diuretics. Consider hydrocodone if needed for QOL. If patient exhibits exertional syncope or dyspnea Sildenafil may become warranted in the future. Once BP is documented >130mmHg, consider institution of an ACEI 0.5mg/kg PO q12h.

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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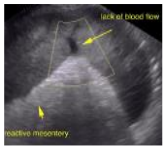

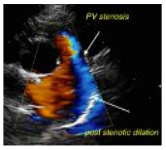

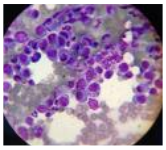
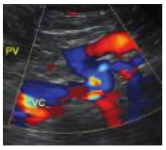

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The information and recommendations provided are based on the images presented by the referring veterinarian. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

Thank you for this referral. 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