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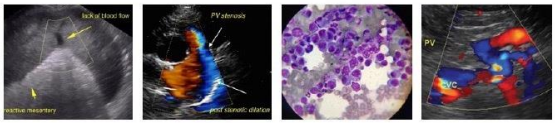

THE FOCAL ZONE
IMAGING PERFORMED BY
289-808-2608 info@thefocalzone.com

PATIENT
Cullen Gallant

SPECIES
Canine

BREED
Cavalier

SEX
Male Neutered

AGE
9 years

WEIGHT
24.3lbs

INTERPRETED BY
Maggie Machen Lamy, DVM DACVIM (Cardiology)

IMAGING PERFORMED BY
Kelly Reschny, RVT

HOSPITAL NAME
Snelgrove Veterinary Services

REFERRING VET
Dr. Gunsinger

INVOICE
22571

DATE
2/15/22

PRESENTING CLINICAL SIGNS

History: History of coughing for 2 months. On PE patient BAR. Tachycardic, V/VI murmur with thrill palpated. Lungs appear clear. Pulses strong and synchronous with heart. No cough on physical examination today. Periodontal disease, moderate. PE otherwise unremarkable.
-Abnormal PE/Chem/CBC/UA Results: HR - 240, RR - 24, BP - 140 to 160 BW-WNL.

ELECTROCARDIOGRAPHIC FINDINGS *Note: Single lead ECGs are evaluated as a rhythm strip. Morphology/MEA cannot be definitively commented on.

A single lead ECG is available; 50mm/s, 10mm/mV. The average heart rate is 188bpm with a largely regular rhythm. The rhythm is sinus in origin, with a p for every QRS complex and vice versa. The P and QRS morphologies are positive. No ectopic beats, pauses or other dysrhythmias observed.
ECG diagnosis: Normal sinus tachycardia.

ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. The mitral valve is severely diffusely thickened with mildly prolapse into the left atrial lumen. There is marked eccentric mitral regurgitation present. The MR velocity is normal. There is marked left atrial enlargement. PV are dilated as they enter the LA lumen. There is severe left ventricular dilation. Left ventricular systolic function is hyperdynamic. There is normal systolic flow velocity across the aortic valve. The aortic valve appears trileaflet with normal mobility. The main pulmonary artery is mildly dilated. Mild right atrial and right ventricular dilation. The tricuspid valve is thickened with moderate tricuspid regurgitation. Velocity consistent with mild pulmonary hypertension. Mild pulmonic and no aortic insufficiency. Scant to small volume pericardial effusion. No pleural effusion or cardiac masses are seen.

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	5.9	3.3	2.0	2.8	55	94	0.3
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	188	1.7	1.2	11.0	4.3	4.9	2.2
*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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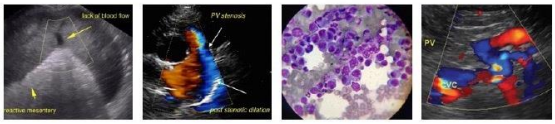

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INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Chronic degenerative valve disease is present causing severe mitral and moderate tricuspid regurgitation. Severe left heart dilation indicates the risk for spontaneous decompensation is elevated. The right heart is also enlarged with evidence of mild pulmonary hypertension. No additional issues are identified. The ECG is unremarkable with a normal sinus tachycardia.

The history and echo findings are consistent with early CHF and full cardiac support should be initiated as below. Due to the severity of disease, consider hospitalization if necessary for IV Lasix and oxygen support. Unfortunately, the long-term prognosis is guarded to poor given the severity of disease, with risk for recurrent spontaneous decompensation, fulminant heart failure, development of arrhythmias and/or sudden death in the future.

Pericardial effusion in a patient with this severe of heart disease is either due to a small left atrial tear (leading to hemorrhage into the pericardial space) or right ventricular failure. The only way to know the difference is to sample the fluid, however the risk of this procedure far outweighs the benefit. In the absence of severe PAH, a ruptured wall is more likely, and patient should be treated as such. A screening blood pressure is recommended, and if hypotension documented then ACE-I should NOT be utilized until resolved. Additionally, strict activity restriction is advised until the fluid is able to reabsorb, as there is a high risk for decompensation if the clot/healing is disrupted. If any syncope/decompensation occurs acutely in the future, then the amount should be reassessed.

Monitoring of sleeping breathing rates is recommended as the best way to screen for CHF 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 collapse episodes.

PLAN

Consider hospitalization. Institute aggressive diuretic therapy; 1-2mg/kg PO q8h for 3 days (i.e., until stable); once RR/RE normalized decrease to q12h for chronic dosage. Institute spironolactone 1-2mg/kg PO q12h. Institute Pimobendan 0.3mg/kg PO q12h.

A renal panel, blood pressure and (if possible) reassessment of pericardial effusion is recommended in 1-2 weeks following the above medications, then every 3-4 months going forward, if >130mmHg and patient is doing well, institute ACE-I 0.5mg/kg PO q12h.

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

IMAGES

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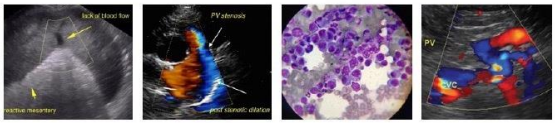

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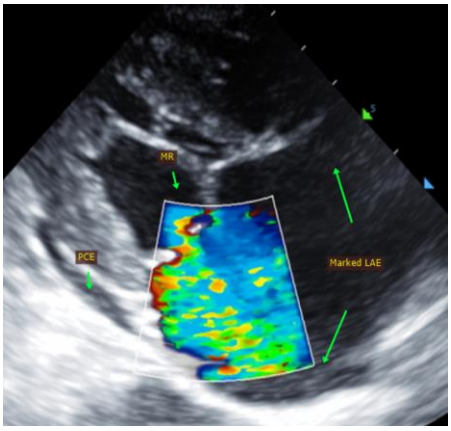

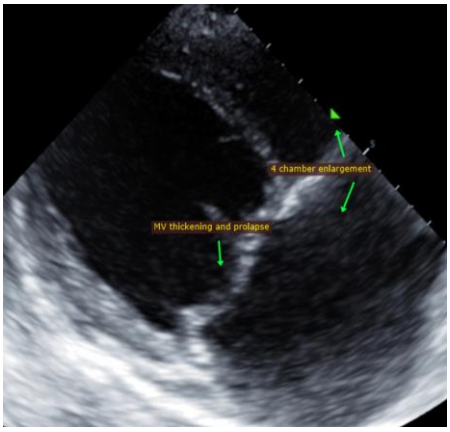

The information and recommendations provided are based on the images presented by the referring veterinarian. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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