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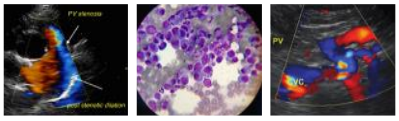

SonoPath
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PATIENT
Bentley Desai

SPECIES
Canine

BREED
Doberman

SEX
MN

AGE
2013

WEIGHT
92 lbs

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

HOSPITAL NAME
Eastern AH

REFERRING VET
Dr. Kaufman

INVOICE
24583

DATE
6/6/22

PRESENTING CLINICAL SIGNS

History: Difficulty breathing, heart murmur, arrhythmia, anorexia.
Current medications: Pimobendan 10mg BID.
Sedation used: Not required to complete full diagnostic ultrasound.
STAT: Requested by DVM.
Imaging performed by: Stephanie Pearce RDCS, RVT.

RADIOGRAPHIC FINDINGS *NOTE: Images submitted for supplemental information only.

A single lateral is included. Severe cardiomegaly with fulminant CHF.

ELECTROCARDIOGRAPHIC FINDINGS

A six lead ECG is available at both 25 and 50mm/s; 2mm/mV. The average heart rate is 160bpm (range 150-166bpm). The rhythm is sinus in origin, with a p for every QRS complex and vice versa. The P wave morphology is positive with a normal dimension. Normal PR. The QRS morphology is positive with normal dimension. MEA is normal. No ectopic beats, pauses or dysrhythmias.
ECG diagnosis: Normal sinus tachycardia.

ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. Significant left ventricular dilation with mildly depressed myocardial function. The LV kinesis is asymmetric, with a hypokinetic free wall and hyperkinetic IVS. Severe left atrial enlargement. The mitral valve appears mildly thickened, with no obvious prolapse into the left atrial lumen. Moderate to severe eccentric mitral regurgitation, normal velocity. Decreased LV wall thickness. Increased LV sphericity. The tricuspid valve appears mildly thickened with mild TR. Velocity consistent with mild to moderate pulmonary hypertension. Mild right atrial and ventricular dilation. The aortic valve is normal in morphology and mobility. No AI, normal LVOT velocity. Normal pulmonic valve with no pulmonic insufficiency seen. No pericardial effusion noted. Scant pleural effusion. Hepatic congestion. No obvious cardiac tumors.

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	4.6	3.3	NM	2.8	21	42	NM
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	155	1.0	0.9	41.8	5.5	5.6	4.5
*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

Unfortunately this patient has significant left heart dilation and dysfunction, with mitral regurgitation and severe LA dilation. The LV function is asymmetric, with a suspected infarcted free wall. The academic diagnosis of chronic degenerative valve disease with an infarct/systolic dysfunction versus true primary cardiomyopathy (DCM, infiltrative dz, etc) could be argued in this case. The severity of MR and eccentric direction would support CVD with an infarct/dysfunction (most likely), and patients with DCM will rarely have clinical signs/CHF with a FS of nearly 20+%. Regardless, the treatment is the same and this patient is at high risk for development of congestive heart failure, malignant arrhythmias (AF, VT), collapse and/or sudden death in the future. No arrhythmias are appreciated here, however this is noted on exam. Suspicion for intermittent ventricular arrhythmias in this patient, and in hospital ECG monitoring may be beneficial.

In light of the clinical signs, chest radiographs and severity of disease on echocardiogram, the diagnosis of congestive heart failure is supported and continued lifelong support is indicated as below. The presence of pleural effusion and hepatic congestion likely supports biventricular failure. The patient is reportedly tachpyneic, and in this particular breed the situation can become unstable quilckly. The gold standard would be referral for overnight intensive care, for injectable Lasix, O2 support, ECG monitoring, etc. If declined oral medications can be attempted as follows; however, any progression at home should warrant reevaluation.

Monitoring of sleeping respiratory rates will be paramount to screen for recurrent congestive heart failure at home in the future. Cough suppression to improve QOL can also be considered once diuretics are on board for any residual mechanical cough in the face of normal sleeping respiratory rates. The average survival time of Dobermans in CHF is <6 months on medications, however they generally are able to maintain a good quality of life for that period.

Monitor for development of a cough, labored breathing, exercise intolerance or collapse episodes in the future. Monitoring of sleeping breathing rates at home is recommended to screen for progression to CHF. Omega fatty acid supplementation (1000mg once to twice daily) and mild salt restriction may be of some long term benefit.

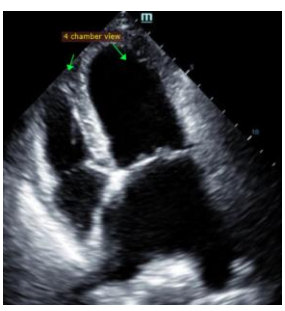
PLAN: Consider referral for hospitalization/ICU care. If declined, injectable Lasix should be used in hospital (2-4mg/kg IV or IM). Dose inc: Administer Pimobendan 10mg PO q8h. Administer Lasix 2mg/kg PO q8h for 3-5 days; if doing well decrease to q12h at that time.. Institute Spironolactone 1-2mg/kg PO q12h.

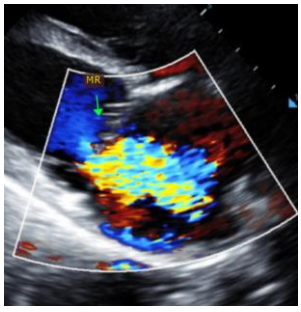
Monitor renal values/BP in 10-14 days, then every 3-4 months lifelong on diuretics. If doing well and BP >130mmHg, institute ACEI 0.5mg/kg PO q12h.

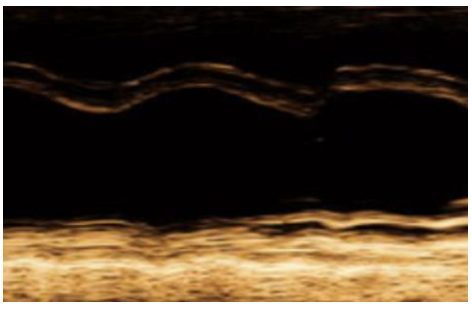
A recheck echocardiogram is recommended in 6 months to assess for progression, sooner if clinical signs arise.

IMAGES

NSR







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.

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