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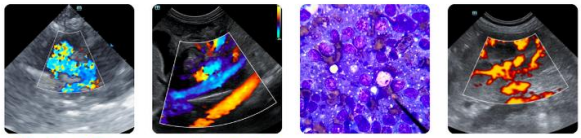

Clinical Sonography & Telecytology
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PATIENT
Cash Khamis

SPECIES
Canine

BREED
Dachshund

SEX
Male Neutered

AGE
7 years

WEIGHT
15lbs

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

IMAGING PERFORMED BY
Loetitia Saint-Jacques, LVT

HOSPITAL NAME
Mountain View AH

REFERRING VET
Dr. Mendoza

INVOICE
46272

DATE
12/18/25

PRESENTING CLINICAL SIGNS

History: Presented to the ER for a 12–18-hour history of labored breathing. Cash had thrown up twice in the last 24 hours both being food from his prior meals. He has been coughing after drinking water. ER noted: - Sustained SVT HR ~225 bpm, QRS wide suggesting left bundle branch block as well - r/o atrial ectopic foci, atrial enlargement, valvular disease, systemic disease, other Responded to diltazem dosing
One run of V tach HR ~250 - lidocaine 2 mg/kg IV --- sinus rhythm with HR ~134 bpm following. When he presented to MV yesterday morning he was not dyspneic or tachycardic; occasional arrhythmia noted. Throughout the day he had sporadic VPCs that resolved on own. After the echo was finished, we did another ecg that showed VT (~200bpm) and responded well to another lidocaine bolus (2mg/kg). By the time he went home, his HR was around 110
Medications: Zonisamide 35mg- 1 capsule BID Trigger seizures. Current Diet: Hills Science diet Adult dry food and Sensitive stomach wet food.
-CXR report: Mild cardiomegaly. No CHF.

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

Mild cardiomegaly. No obvious evidence of CHF.

ELECTROCARDIOGRAPHIC FINDINGS

A six lead ECG is available at 25mm/s; 5mm/mV. The average heart rate is 90bpm with profound heart rate variation. 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. A ventricular rhythm is present throughout the study with an average heart rate of 83bpm, consistent with a ventricular escape rhythm. Occasional isolated VPCs are noted. A rare couplet is observed. No APCs, pauses or other dysrhythmias observed.
ECG diagnosis: Sinus bradycardia with profound respiratory variation. Ventricular escape rhythm during times of bradycardia. Isolated VPCs. Unstable couplets observed.

ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. Mild left ventricular dilation (LIVDdN: 1.71, LVIDsN: 1.31) with moderately decreased systolic function for this signalment. Normal LV wall thickness and mildly increased sphericity. Moderate left atrial enlargement. The mitral valve appears mildly thickened with no obvious prolapse into the left atrial lumen. Mild central mitral regurgitation. Normal velocity. The tricuspid valve appears normal in form and function. No TR. Mild right atrial and ventricular dilation. The aortic and pulmonic valves appear normal in morphology and mobility. No AI or PI. Low normal LVOT/RVOT velocity. No pericardial or pleural effusion noted. 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	4.8		NM	1.9	20	36	0.8
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)

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NORMAL PARAMETER	50-100	0.7-1.7	0.7-1.6	BELOW	BELOW	BELOW	BELOW
PATIENT	NM	1.4	0.8	26.5	2.6	3.0	2.4
*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

Unusual case. The echo findings are most consistent with occult Dilated Cardiomyopathy phenotype (DCM), which is unexpected given the signalment. There is a decline in systolic function, accompanied by mild LV dilation and increased sphericity. Mild MR is noted, which may represent concurrent mild chronic degenerative valve disease or may simply be secondary to dilation. The LA is moderately dilated, indicating there is risk for complication in the future. No additional structural issues are seen.

Systolic failure can be primary in nature (DCM) or secondary to taurine deficiency, certain drugs such as Doxorubicin, myocarditis, hypothyroidism, tachycardia-induced cardiomyopathy, or infiltrative disease such as lymphoma. In an atypical breed with a history of arrhythmias, this may be secondary to a chronically elevated heart rate if that is the case. The current ECG shows a sinus bradycardia with HR's slow enough to stimulate a ventricular escape rate to fire. This is a physiologic response to bradycarduia. Of more concern, VPCs are also noted, with occasional unstable couplets. Based upon this and the history of VT sotalol is recommended as below. This drug will have some benefit for SVT as well, although the resting heart rate is somewhat concerning. If any decline occurs, reassessment is advised.

Given the unusual nature of this case, further workup is certainly indicated and referral should be considered. The chest radiographs do not show CHF, and a primary respiratory insult is suspected. How this relates to the cardiac/ findings is unclear at this time. If there is some infectious or inflammatory insult that is also affecting the heart, a cardiac Troponin level may be warranted. The reported diet is normal, ruling out a diet-related cardiomyopathy.

Given these findings, recommend Pimobendan and Taurine in this case going forward. No additional medications are indicated at this time.

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 in the future. Mild activity restriction is advised. Omega fatty acid supplementation and mild salt restriction may be of some long-term benefit.

Anesthesia is not advised due to the arrhythmia. Follow up and treatment should be dictated by the ECG report.

PLAN

Consider referral. Institute Pimobendan 0.25-0.3mg/kg PO q12h. Institute taurine supplement 1000mg PO q24h. Consider further workup as discussed. Further treatment for respiratory signs

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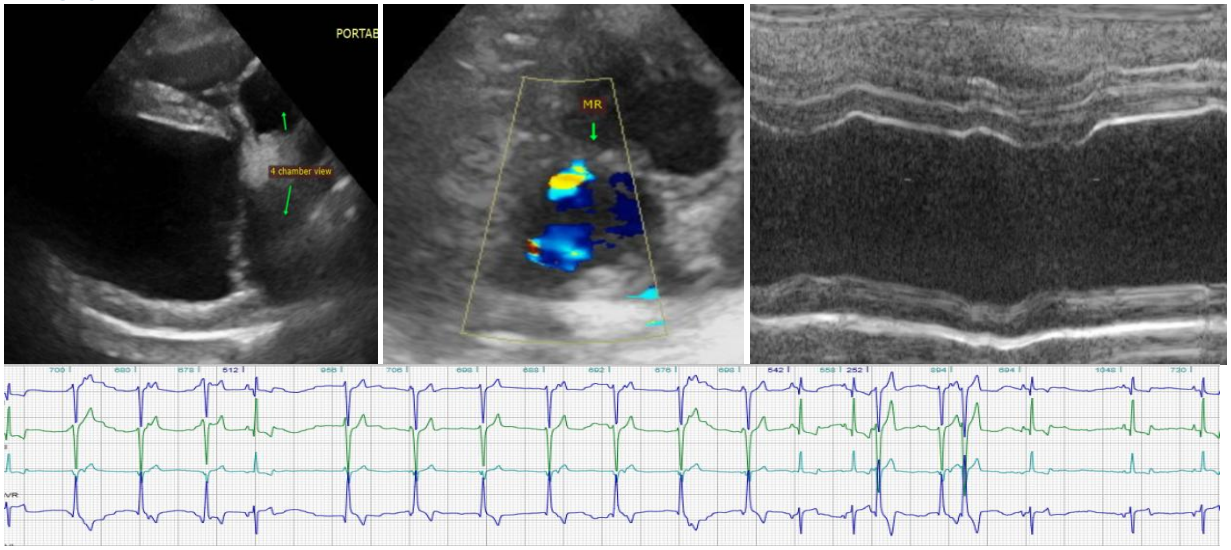
as dictated by the CXR report. Institute sotalol 1-2mg/kg PO q12h (compounding may be necessary).

Recheck ECG or holter in 1-2 weeks.

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

IMAGES



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
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info@sonopath.com