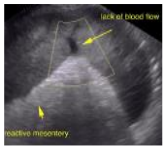
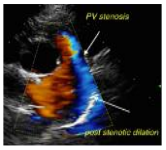
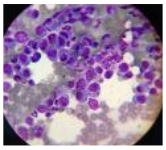
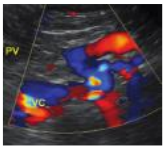
SonoPath
Clinical Sonography & Telecytology
EDUCATIONAL TELECONSULTATION SERVICES™

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

PATIENT
Oscar Crandy

SPECIES
Canine

BREED
Dachshund

SEX
Male Neutered

AGE
13.5 years

WEIGHT
19lbs

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

IMAGING PERFORMED BY
Jennifer Todd, DVM

HOSPITAL NAME
Lambs Gap Animal Hospital

REFERRING VET
Dr. Campbell

INVOICE
24500

DATE
6/1/22

PRESENTING CLINICAL SIGNS

History: He recently presented for his annual exam, and his owner reported he has been coughing for the last year, he had increased respiratory effort, and he had a Grade IV/VI systolic heart murmur. His cardiopet ProBNP was 7098 (range 0-900). He also had a mildly elevated ALT (141, 18-121) and moderately elevated ALP (448, 5-160). Blood pressure today was 149/107, 138/90, 145/75mmHg.

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; 25mm/s, 10mm/mV. The average heart rate is 100bpm (range 83-107bpm). The rhythm is sinus in origin, with a p for every QRS complex and vice versa. The P and QRS morphologies are positive. A single APC is identified. No VPCs, pauses or other dysrhythmias observed.
ECG diagnosis: Normal sinus rhythm with a single APC.

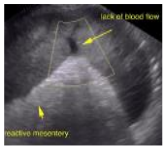
ECHOCARDIOGRAM FINDINGS

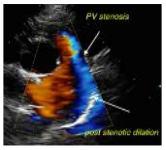
2D, m-mode, color flow and doppler imaging is available. The mitral valve is diffusely thickened with prolapse into the left atrial lumen. There is severe anterior-directed mitral regurgitation present. There is severe left atrial enlargement. The PV are dilated as they enter the LA lumen. There is minimal left ventricular dilation. Left ventricular systolic function is adequate. 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. Suspicion for early tamponade based upon movement of the RA wall. The tricuspid valve is mildly thickened with trace tricuspid regurgitation. Normal TR velocity. No pulmonic or aortic insufficiency. Small to moderate volume pericardial effusion. Fibrinous material is seen within the pericardial space, most consistent with a clot. No obvious pleural effusion. Dilated hepatic vessels with scant ascites. No cardiac masses are seen.

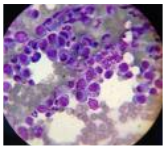
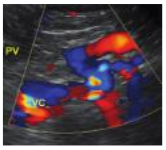
CARDIAC CHART

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	NM	1.5	1.7	2.3	56	90	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	NM	0.6	0.4	8.6	3.2	3.4	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)

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





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Bonagura et al. Echocardiography: principles of interpretation, Vet Clin North Am 15:1177, 1995	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)

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Severe chronic degenerative valve disease is present causing severe mitral and trace tricuspid regurgitation. Significant left heart enlargement indicates the risk for spontaneous decompensation is elevated. No concurrent issues such as pulmonary hypertension is identified.

The ECG shows a sinus rhythm with a single APC. Given the current clinical crisis, an APC is not surprising. What is concerning is the resting heart rate is low in a situation that certainly warrants sympathetic drive. If this is independent of sedation and persists, further evaluation of the low resting heart rate may be warranted (atropine challenge, etc).

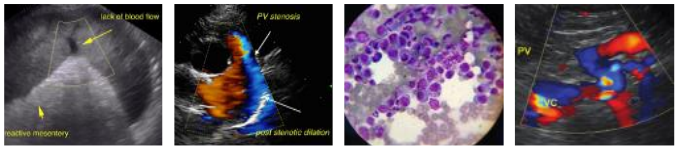
As a complicating factor there is significant pericardial effusion, with suspicion for early cardiac tamponade. Pericardial effusion in a patient with this degree of heart disease is most commonly due to a small left atrial tear (leading to hemorrhage into the pericardial space) or right ventricular failure. A pericardial bleed or other hemorrhagic effusion is considered much less likely. Given the degree of LA enlargement and suspicion for a clot within the pericardial space, an LA tear is suspected. What is unusual is there is no history of collapse (typical of an acute rupture) and evidence of possible early cardiac tamponade (rare with LA tears), which puts the patient in a highly unstable position. I rarely recommend tapping suspect LA tear effusions; however, this case may need the procedure in the near future despite the risk. Other possibilities for these findings should be considered, such as a bleeding disorder.

In total recommend hospitalization for IV Lasix and oxygen support and stabilization if needed. Ideally, I would treat this patient with diuretic therapy and supportive care and monitor the amount of effusion prior to deciding to tap. Certainly, if it increases, or the patient further decompensates this will become emergent. If the practitioner is comfortable with small volume effusions, this can alternatively be attempted sooner, however the risk of either course of action should be stressed to the owner. A tap would help relieve pressure within the pericardium, and also definitively diagnose the underlying cause. Clotting times are strongly recommended as well in search of alternative explanations. Finally, given the complexity of this case and unstable situation, consider referral to a Multispecialty Center as the gold standard approach.

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.

Unfortunately, even if we are able to stabilize the situation, the long-term prognosis is poor to grave given the severity of disease and complexity of issues, with risk for recurrent spontaneous decompensation, fulminant heart failure, development of arrhythmias and/or sudden death in the future.

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.



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PLAN

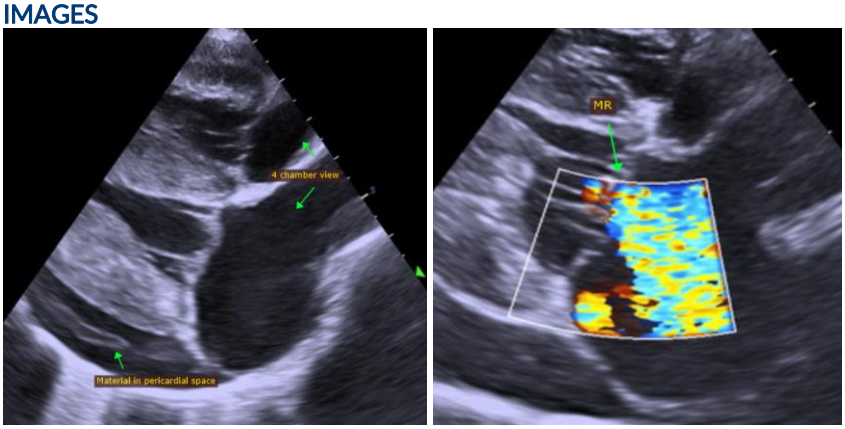
Consider referral as discussed. As an alternative, consider hospitalization overnight as discussed, with close monitoring of degree of pericardial effusion/need for centesis, continuous ECG evaluation, diuretic therapy and O2 support. Assessing clotting times is strongly recommended. Institute Pimobendan ASAP 0.3mg/kg PO q12h.

Once stabilized, discharge on the following: Institute furosemide 1-2mg/kg PO q12h. Institute spironolactone 1-2mg/kg PO q12h; Pimobendan 0.3mg/kg PO q12h.

A renal panel, ECG, blood pressure and (if possible) reassessment of pericardial effusion is recommended in 1-2 weeks following discharge, then every 3-4 months going forward. Once stable and doing well at home, institute ACEI 0.5mg/kg PO q12h.

A recheck echocardiogram is recommended in 4-6 months to screen 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
Diplomate of the American College of Veterinary Internal Medicine (Cardiology)
info@sonopath.com