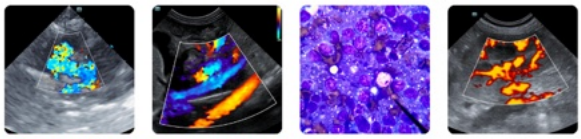


PATIENT

Zoro Yee

SPECIES

Canine

BREED

Doberman

SEX

Neutered male

AGE

2017

WEIGHT

48.25 kg

INTERPRETED BY

Bradley Harris, DVM, DACVECC, DACVIM (cardiology)

IMAGING PERFORMED BY

Loetitia Saint-Jacques, LVT

HOSPITAL NAME

Roundhill AH

REFERRING VET

Dr. Kelly

INVOICE

73437

DATE

3/16/26

PRESENTING CLINICAL SIGNS

Heart rate is 80-200, runs of 5- beaths with a rate of 200+ with a single beat over 1-1 and 1/2 seconds between periods of tachycardia. Femoral pulse is difficult to determine during periods of tachycardia. Respiration rate is 30-40. Normal lung sounds. Doesn't sound like pulmonary edema. Dog has decreased appetite. Lethargy. Short walks and will lie down. Increased RR during the scan and seemed weak.

Contec BP 157-187, PET MAP 175/90

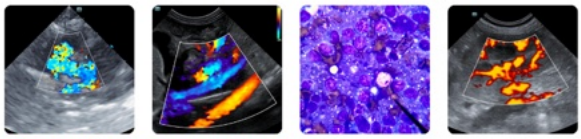
Current medications: -Doxycycline 300mg in pm, 200mg in am and Hydrocodone tablets 1-3 as needed before bedtime

ULTRASONOGRAPHIC EXAMINATION OF THE HEART

The left atrium is mild to moderately enlarged. The left ventricle is mildly enlarged with reduced systolic function. The right atrium and ventricle are normal in dimension with normal systolic function. The anterior and posterior mitral valve leaflets are appropriately thin but do not completely appose during systole due to annular dilation, and there is no significant prolapse. There is mild to moderate mitral regurgitation identified. The tricuspid valve leaflets are appropriately thin with adequate apposition, intact chordae, with mild tricuspid regurgitation and evidence of mild pulmonary hypertension. The left ventricular outflow tract demonstrated normal laminar flow and the visible aorta is unremarkable. The right ventricular outflow tract assessment revealed normal laminar flow and appropriate diameter and distensibility. There is no pulmonic and no aortic valve insufficiency identified. There is no visible pericardial, but moderate pleural, and mild free peritoneal fluid documented. No evidence of hepatic venous congestion is noted. The cardiac chambers, pericardial, and visible extra-cardiac regions were free of masses, spontaneous echo contrast, or thrombi.

CANINE CARDIAC PARAMETERS	Body Weight kg	HR BPM	LAD 4 ch Long	RAD 4 ch Long	La/Ao Heart Base	LVIDd	LVIDs
NORMAL PARAMETER		50-100			<1.6		
PATIENT	48.25 kg	200	6.1	4.39	1.59	6.19	4.85
CANINE CARDIAC PARAMETERS	**FS**	**EPSS**	**PV V MAX (m/s)**	**AV V Max (m/sec)**	**MR Vmax**	**TR Vmax**	**RPA distensibility (normal >30%)**
NORMAL PARAMETER	28-40	<0.6	0.7-1.6	0.7-1.7	4.5-5.5	< 2.7	
PATIENT	22	1.2	0.9	1.3	4.7	3.3	NM

ECG:
The underlying rhythm is sinus in origin with a varying R-R interval and average heart rate of 200 bpm. The majority of the QRS complexes are prolonged in duration (>70ms), suggesting a ventricular origin. There is no evidence of atrioventricular block or atrial ectopy identified. This is most consistent with a ventricular tachycardia with rare sinus complexes.



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ULTRASONOGRAPHIC FINDINGS

These findings are consistent with dilated cardiomyopathy with significant hemodynamic effects. Intrinsic myocardial dysfunction (ie DCM) is a concern. Other possibilities, including primary valve disease with secondary ventricular changes or myocardial depressant effects of systemic disease must also be considered. It would also be important to verify that the owners are not feeding a grain-free, exotic, or boutique diet, as a secondary nutritional cardiomyopathy must also be considered. Given the degree of chamber enlargement and cavitary effusion, congestive heart failure is a likely explanation for the clinical/radiographic signs. Ventricular arrhythmias occur in many clinical settings, generally divided into cardiac and non-cardiac causes. Cardiac conditions include structural heart disease, pericardial effusion/cardiac neoplasia, and rarely myocarditis. Non-cardiac causes are common and include splenic disease, metabolic disease, electrolyte disturbances, tick-borne disease, fever, anemia, trauma, GDV, hepatic disease, GI disease, pancreatitis, DIC, and sepsis.

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Therapy for CHF is recommended, with Lasix bolus (2-4 mg/kg IV PRN up to 10 mg/kg total dose) or a CRI (0.5-1 mg/kg/hr) as needed to resolve any pulmonary edema present. Once oral therapy is started, therapy should include Lasix (2mg/kg BID), enalapril (0.5mg/kg BID assuming normotension and lack of renal insult), Vetmedin (.25-.35mg/kg BID), and spironolactone (1-2mg/kg BID). Due to the presence of ventricular tachycardia, mexiletine (4-6mg/kg TID) is also recommended. Dobutamine (2.5-10 µg/kg/min as a CRI, starting at 2.5 µg/kg/min and increasing the dosage incrementally) may be used in addition to the above treatments to improve the left ventricular function and blood pressure in patients that fail to respond adequately to diuretics, pimobendan, sedation, oxygen, and comfort care measures. If the owners are feeding a grain free diet, an immediate diet change would be necessary, and the addition of taurine (50 mg/kg BID) would be appropriate. If there is any concern for metabolic/systemic disease, additional testing (complete bloodwork including T4 and resting cortisol, abdominal ultrasound) should be considered. Otherwise, a repeat chest X-rays, BP, and chemistry should be performed now for a baseline, and again in 1-2 weeks. A repeat echo is indicated in 3 months. Owners should monitor resting respiratory rate at home. Values above 30 breaths/minute or an increase in respiratory rate 10% above baseline should prompt veterinary re-evaluation.

The following sources for supplemental taurine are recommended:
Mega taurine caps by Twinlab (1000mg capsule)
Taurine by Swanson Health Products (500mg capsule)
Taurine by NOW foods (500mg capsule)
Taurine 500 by GNC (500mg tablet)

Anesthesia considerations:
Anesthesia should be avoided until manifestations of congestive heart failure (edema/effusion/respiratory distress) have resolved. Following that time, if anesthesia is necessary, then alpha-2 agonists, ketamine, high dose acepromazine, and Telazol should be avoided. If an ACE inhibitor (enalapril, benazepril) or spironolactone is being given, it should not be administered on the morning of general anesthesia. Other cardiac medications should be administered per the normal dosing schedule. Anesthetic IV fluid use should be limited to < 3 ml/kg/hr and, if IV fluid therapy is administered during the procedure, a 1 mg/kg dose of IM Lasix should be administered when the patient is awake and standing in recovery. A shorter anesthetic duration will reduce the risk of complications. Pre-oxygenation is advised. Premedication with an opioid (i.e., butorphanol, hydromorphone, oxymorphone) with or without a benzodiazepine is generally the safest protocol. An induction agent such as Propofol, alfaxalone, or diazepam/etomidate can be used to effect. Maintenance of anesthesia with isoflurane or sevoflurane is reasonable. Dobutamine (2.5-10 µg/kg/min as a CRI, starting at

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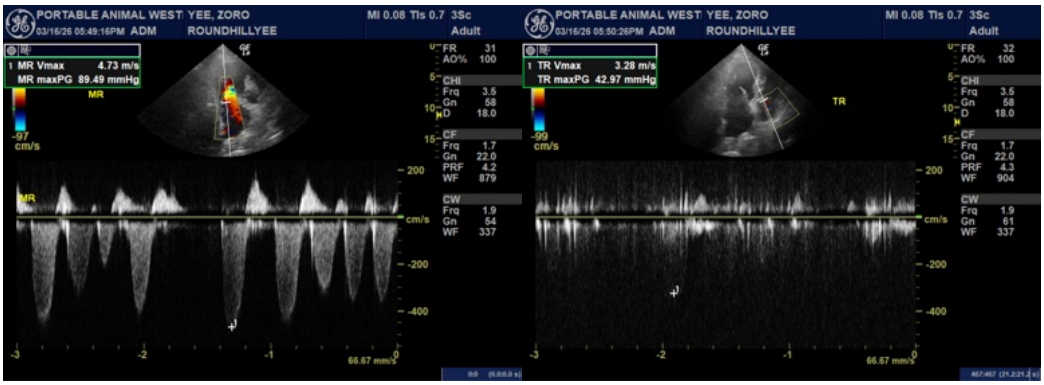
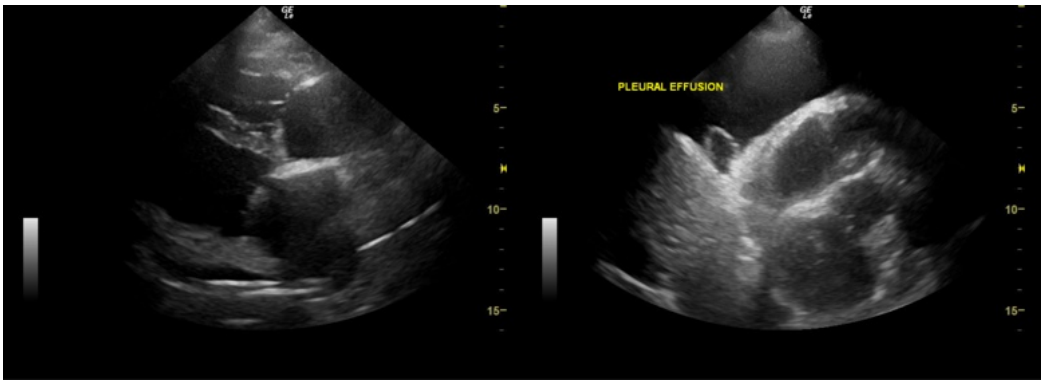
2.5 µg/kg/min and increasing the dosage incrementally) may be used in lieu of fluid boluses to augment systemic blood pressure.

Diet:
A high-quality food from Hills, Royal Canin, Science Diet, Eukanuba, Iams, or Purina that is highly palatable with adequate protein and calories for maintaining optimal body condition with mild dietary sodium restriction (<100 mg/100 kcal) is recommended. Consider omega-3 fatty acid supplementation. Avoid any boutique, exotic, or grain-free diets.

Activity:
Moderate physical activity (meandering walks, exploring the backyard, playing with toys inside, getting excited when family gets home, etc.) is encouraged, but periods of strenuous aerobic activity (jogging, strenuous outdoor ball play, prolonged play at the dog park, etc.) should be avoided, especially during periods of high heat (> 80 F) and humidity. Dogs with heart disease tend to tolerate cool and cold temperatures much better than high temperatures. Avoid sudden increases in activity (e.g. 2 block walks during the week but 2 mile walks followed by 30 minutes at the dog park on the weekends) as this may be difficult for the cardiovascular system to deal with.





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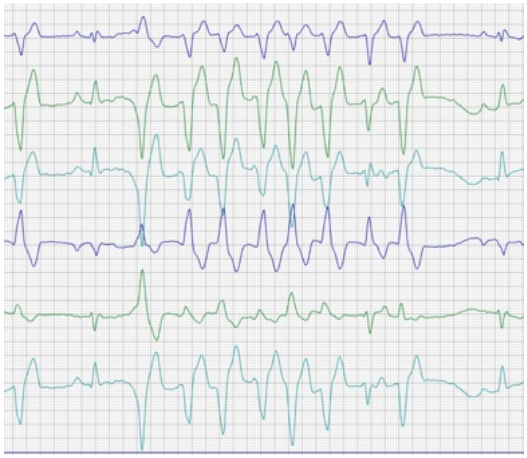

The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

Thank you for this referral. If the clinical or image interpretation does not parallel your findings or if I can be of any further assistance please contact me.

Bradley Harris, DVM, DACVECC, DACVIM (cardiology)

info@SonoPath.com