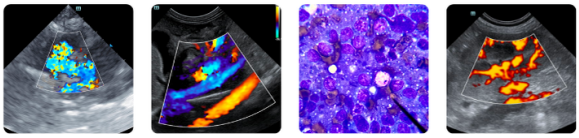

PATIENT

Twinkle Charles

SPECIES

Canine

BREED

Maltese

SEX

FS

AGE

15 years

WEIGHT

11.4 lbs

INTERPRETED BY

Bradley Harris, DVM, DACVECC, DACVIM (cardiology)

IMAGING PERFORMED BY

Kelly Reschny

HOSPITAL NAME

Dog and Cat Clinic of Niagara

REFERRING VET

Dr. Snieder

INVOICE

11828

DATE

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PRESENTING CLINICAL SIGNS

HM II-III/VI. Sporadically will sound like trying to gag/clear throat. Fluid drained twice within two weeks from pericardiac sac at NVEC. NVEC ddx cancer (hematoma base of heart) vs primary heart dz vs other and rc echocardiogram.

Abnormal PE/Chem/CBC/UA Results: After hours clinic report attached.

ULTRASONOGRAPHIC EXAMINATION OF THE HEART

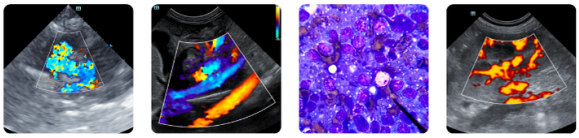
CANINE CARDIAC PARAMETERS	BW	HR BPM	LAD 4 ch Long	RAD 4 ch Long	La/Ao Heart Base	LVIDd	LVIDs
NORMAL PARAMETER		50-100			<1.6		
PATIENT	5.18 kg	NM	3.33	NM	1.12	2.63	1.57
CANINE CARDIAC PARAMETERS	**FS**	**EPSS**	**PV V MAX (m/s)**	**AV V Max (m/sec)**	**MR Vmax**	**TR Vmax**	**RPA distensibility (normal >30%)**
NORMAL PARAMETER	28-40	<0.6	0.7-1.6	0.7-1.7	4.5-5.5	< 2.7	
PATIENT	40	0.4	1.1	0.9	5.3	2.3	NM

Cardiac Presentation

The left atrium is moderate to severely enlarged. The left ventricle is normal in dimension, with normal systolic function. The right atrium and ventricle are normal in dimension, with normal systolic function. The anterior and posterior mitral valve leaflets are thickened and redundant consistent with myxomatous changes, and there is mild prolapse. There is moderate mitral regurgitation identified. The tricuspid valve leaflets are thickened and redundant, with mild to moderate tricuspid regurgitation and no evidence of 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, with appropriate main pulmonary artery diameter and right pulmonary artery distensibility. There is trivial pulmonic and mild aortic valve insufficiency identified. There is no visible pericardial, pleural, or 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.

ULTRASONOGRAPHIC FINDINGS

- These findings are consistent with degenerative mitral valve disease with moderate hemodynamic effects (ACVIM stage B2 or C). The presence of mild pericardial effusion in dogs with significant LA enlargement is supportive for a left atrial split, especially in the absence of any mass lesions. Therefore, it is likely that clinical signs and pericardial effusion are from a rupture of the left atrium due to distension and/or a jet lesion. This is generally not



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a manifestation of congestive heart failure, although it can be (particularly if abdominal effusion is present).

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Pericardiocentesis is generally avoided in these cases, as disruption of the clot can exacerbate clinical signs. Instead, therapy with Vetmedin (0.25-0.35 mg/kg BID) is recommended. Enalapril (0.5 mg/kg BID, assuming normotension and lack of renal insult) and low dose Lasix (1-2 mg/kg BID) can also be used. If the systemic blood pressure is low, these cases are much more challenging to manage, as there is need for both fluids and diuretics. Often, a CRI of Lasix is used; concurrent dobutamine therapy is also required for those cases where BP is especially compromised. A repeat free fluid ultrasound, blood pressure, chemistry and thoracic radiographs are recommended prior to discharge and again in 1-2 weeks. At that time, any necessary medication adjustment can be made. A repeat echocardiogram, thoracic radiographs, blood pressure, and chemistry panel are recommended 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.

Anesthesia considerations:
Anesthesia should be avoided until any signs of CHF and pericardial effusion have resolved. If anesthesia is necessary after that time, 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 (e.g., 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 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. Ensure the patient is not currently receiving a boutique, exotic, or grain-free diet.

Activity:
Light to moderate physical activity (meandering walks, exploring the back yard, playing with toys inside for short periods, 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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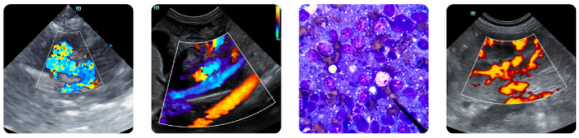

Clinical Sonography & Telecytology
Educational Teleconsultation Services™

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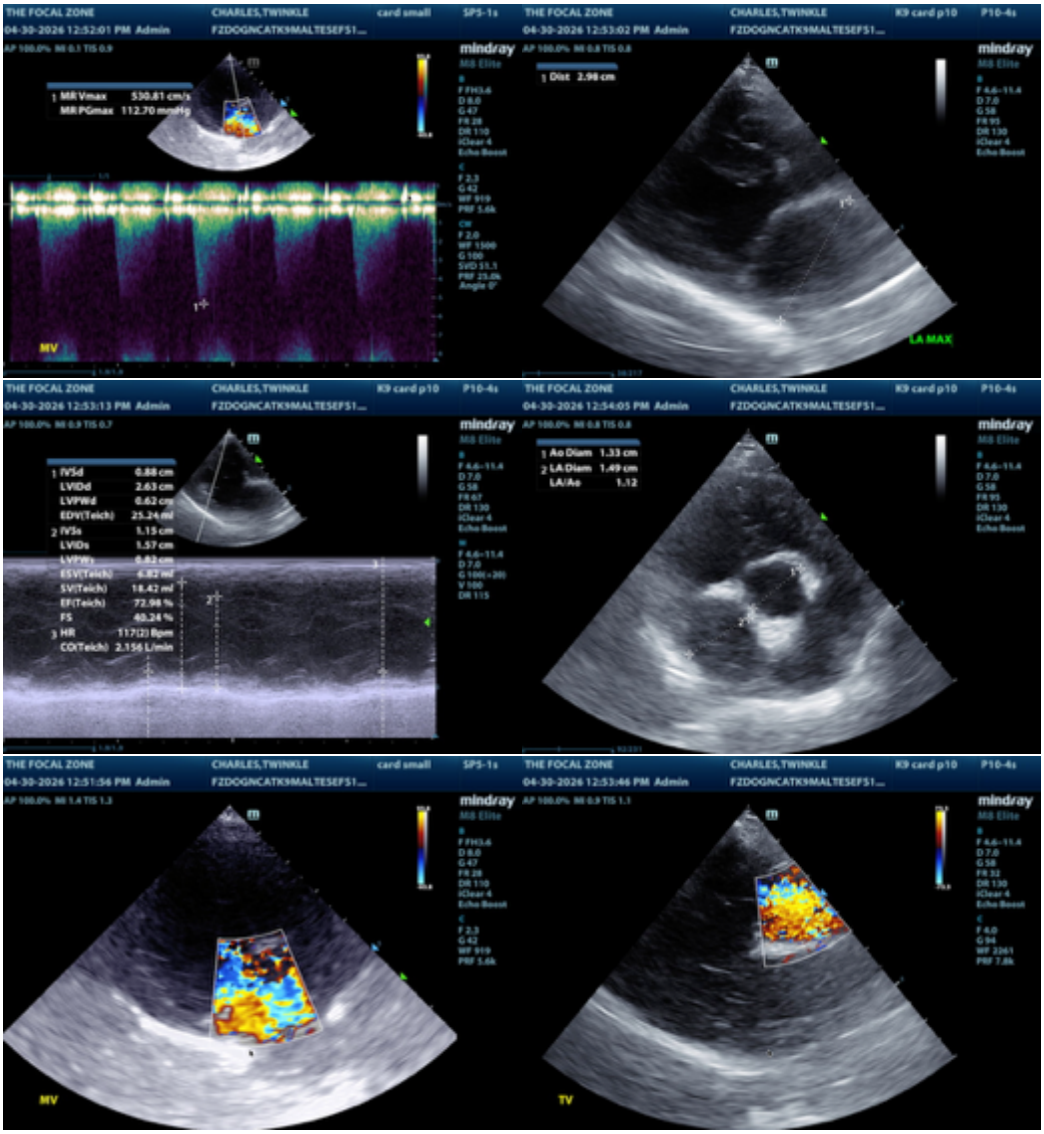

The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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