



PATIENT PRESENTING CLINICAL SIGNS

Monte Pollaro History: Patient presents for echo due to cyanotic MM following exercise; low grade heart murmur, grade 1-2/6. Current meds: Apoquel.

SPECIES

Canine

ULTRASONOGRAPHIC EXAMINATION OF THE HEART

BREED

Pit

SEX

Neutered male

AGE

10 years

WEIGHT

69 lbs

CANINE CARDIAC PARAMETERS	MR VMAX (m/s)	TR VMAX (m/s)	LA/AO (Boon method)	LA/AO (Heart Base; Swedish)	FS (%)	EF (%)	EPSS (cm)
NORMAL PARAMETER	4.5-5.5	<2.7	1.3	<1.6	28-40	40-100	<0.6
PATIENT	1.7	0.93	1.22	1.50	24-26	50	0.27
CANINE CARDIAC	HR (BPM)	AV VMAX (m/c)	PV MAX (m/c)	BODY WEIGHT kg	LA 2D long axis Base view	LVIDd Avg; 2D and m- mode short axis	LVIDs Avg; 2D and m- mode short axis
NORMAL PARAMETER	50-100	0.7-1.7	0.7-1.6				
PATIENT	94	1.63	1.08	31.4	3.63	4.06	2.82

Adapted from June Boon, Veterinary Echocardiography, 1998
Sisson D et al. JVIM 1991; 5: 232, and Jacobs et al. Am J Vet Res 1985; 46:1705

INTERPRETED BY

Lisa Carioto,
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Echocardiographic findings

Mitral valve

- Mild (posterior) to moderate (septal) thickening and irregularity, consistent with myxomatous degeneration.
- No prolapse of both leaflets.
- Mild to moderate mitral regurgitation.
- Very mild left atrial enlargement
- No left auricular enlargement.
- E and A waves: within normal limits (WNL)
- No increase of LA: Ao ratio
- LA normalized for BW (LAN = 1.12); very mild
- LVIDd normalized for BW (LVIDND = 1.5); WNL
- LVIDs normalized for BW (LVIDNS = 0.95); WNL

Aortic valve

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Kelly Vazquez,
CVT

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PATIENT	<ul style="list-style-type: none"> No abnormalities
Monte Pollaro	<ul style="list-style-type: none"> No aortic insufficiency
SPECIES	<i>Tricuspid valve</i>
Canine	<ul style="list-style-type: none"> *Moderate thickening and hyperechogenicity of the septal leaflet Very mild prolapse of septal leaflet.
BREED	<ul style="list-style-type: none"> Trivial tricuspid regurgitation. No right ventricular or atrial enlargement.
Pit	
SEX	<i>Pulmonic valve</i>
Neutered male	<ul style="list-style-type: none"> No abnormalities No pulmonary insufficiency.
AGE	<ul style="list-style-type: none"> Main pulmonary artery within normal limits. Pulmonary artery - bifurcation, no abnormalities. Pulmonary artery: aortic ratio within normal limits.
10 years	<ul style="list-style-type: none"> No obvious signs of heartworm, but low numbers may not be visualized.
WEIGHT	
69 lbs	<i>Other</i>
INTERPRETED BY	<ul style="list-style-type: none"> No signs of pericardial or pleural effusion No evidence of pulmonary edema. No obvious signs of a mass. The endocardium and myocardium: NAF
Lisa Carioto, DVM, DVSc, Diplomate ACVIM	
IMAGING PERFORMED BY	ULTRASONOGRAPHIC FINDINGS
Kelly Vazquez, CVT	<ul style="list-style-type: none"> Mild to moderate myxomatous degeneration of the mitral valve Moderate thickening and hyperechogenicity of the septal leaflet of the tricuspid valve. Although this may also be consistent with myxomatous degeneration, one cannot exclude the possibility of a vegetative lesion (endocarditis) with the presence of equal thickening and hyperechogenicity of the leaflet. Therefore, it is suggested to evaluate Monte's history for signs of lethargy, depression, decreased activity, and possible intermittent episodes of fever. Also, is this a new murmur that has been recently auscultated? ACVIM stage B2, with <i>very mild</i> left atrial enlargement (i.e. "borderline B2). The left ventricle is within the normal reference range. An obvious cardiac cause of cyanosis is not noted on the images provided to explain Monte's signs.
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PATIENT

Monte Pollaro

- An investigation of a respiratory/pulmonary cause of cyanosis is suggested. If radiographs cannot be performed, deworming for 14 days is suggested (see below).

SPECIES

Canine

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Treatment with pimobendan is not necessary for the moment (see below).

BREED

Pit

Other suggestions/recommendations include:

- Evaluation of systemic blood pressure
- *Not associated with today's findings*, but best to evaluate diet to exclude grain free or all meat diet.

SEX

Neutered male

- An *intermittent arrhythmia* may be causing Monte's clinical signs. Evaluation of his heart rate and rhythm at home, while at rest and following exercise is recommended. This may be done using the palm of one's hand on both sides of the thorax or showing the client how to monitor femoral pulse.

AGE

10 years

- An investigation of a respiratory/pulmonary cause of cyanosis is suggested. If radiographs cannot be performed, deworming for 14 days is suggested, i.e., *fenbendazole*, even if receiving monthly heartworm prevention, at a dose of 50 mg/kg PO once a day for 14 days.

WEIGHT

69 lbs

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- A secondary bacterial infection, such as *Mycoplasma* spp. may be present, therefore, treatment with doxycycline or azithromycin for 4 weeks may be considered depending on his response to fenbendazole.
- A SNAP 4Dx to exclude heartworm disease.

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CVT

- If still showing signs of cyanosis, treatment with pimobendan at 0.25-0.30 mg/kg PO every 12 hours may be tried. If sensitive GI system, the dose should be started at 0.10 mg/kg PO every 12 hours for 3 days prior to increasing to the full dose. Administer with a small amount of food to decrease nausea.

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- Monitoring of the resting (sleeping) respiratory rate (RRR) is highly recommended once a day. The RRR should NOT EXCEED 30 breaths per minute (bpm). If the respiratory rate is greater than 30 bpm, *or* if there is a gradual increase (over a day or two) toward 30 bpm, the patient should be evaluated immediately for congestive heart failure and the appropriate treatment initiated.

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- Other clinical signs clients should monitor for include coughing (particularly at night), fatigue, lethargy, decreased exercise tolerance (i.e., not being able to walk for as long before becoming tired, or "running out of breath" while playing, or going up and down stairs, as well as syncope (collapsing or fainting spells). Restlessness, or agitation during the night, or being unable to find a comfortable position to sleep are also very common clinical signs.

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PATIENT

Monte Pollaro

- Mild salt restriction is suggested (less than 0.9 grams/1000 kcal of food). Monitor salt content in treats.

SPECIES

Canine

- Omega-3 fatty acids may be helpful (EPA = 40 mg/kg/day and DHA = 25 mg/kg/day); gradual up-titration of the dose is suggested to decrease risk of gastrointestinal effects. However, they should not be introduced at the same time as pimobendan or other medications or supplements.

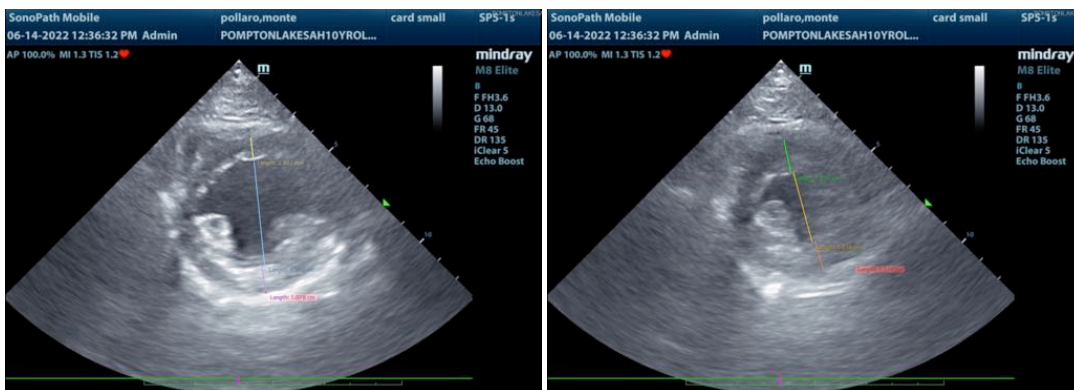
BREED

Pit

- Monitoring for progression of heart disease with a re-evaluation of an echocardiogram every 6 to 8 months, or sooner if clinical signs develop, is recommended.

SEX

Neutered male



AGE

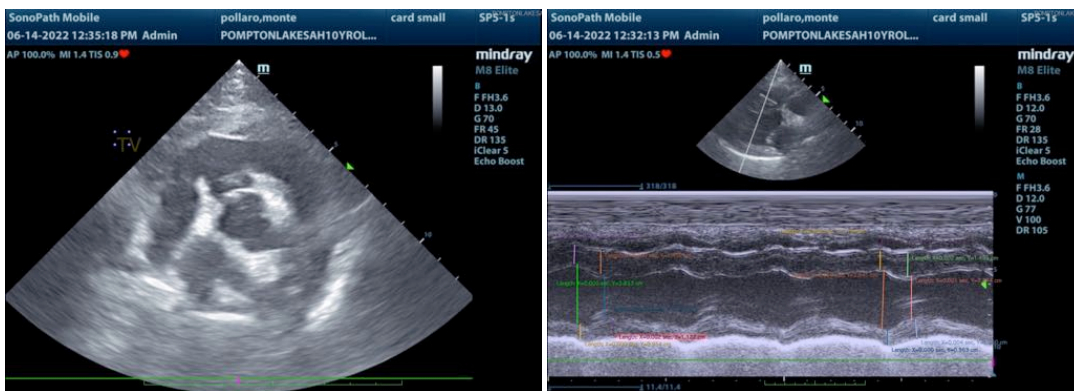
10 years

WEIGHT

69 lbs

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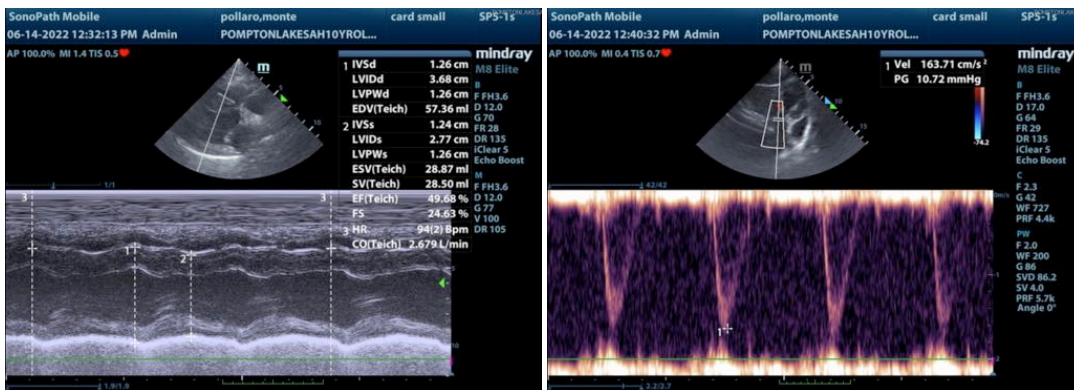


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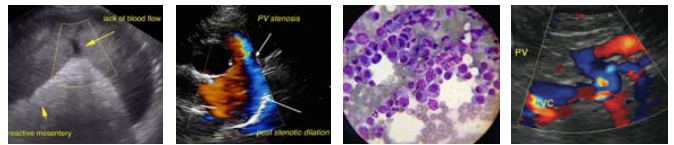
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Monte Pollaro

SPECIES

Canine

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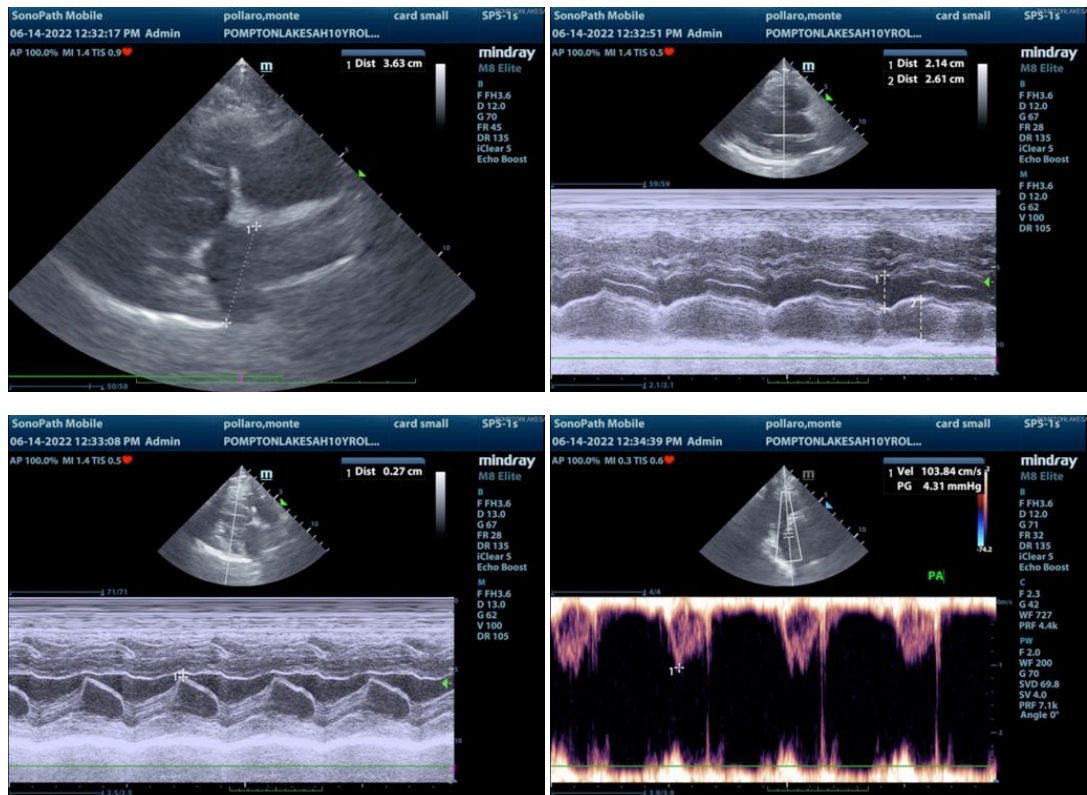
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The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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.

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