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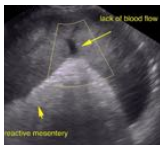
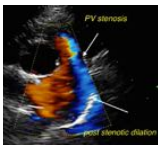
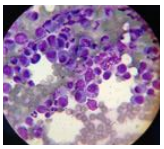
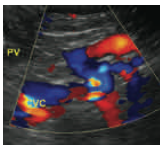
Clinical Sonography & Telecytology
EDUCATIONAL TELECONSULTATION SERVICES™

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

PATIENT
Lola Rouwendal

SPECIES
Canine

BREED
Brittany Spaniel

SEX
Spayed Female

AGE
14 years

WEIGHT
33.2 lbs

INTERPRETED BY
Lisa Carioto, DVM, DVSc, Diplomate ACVIM

IMAGING PERFORMED BY
Jessica Miller, RDMS

HOSPITAL NAME
Advanced VC

REFERRING VET
Dr. Gas

INVOICE
30890

DATE
6/7/22

PRESENTING CLINICAL SIGNS

History: Murmur IV/VI, on lasix and benazepril, coughing increased at night. Current meds: Lasix 12.5 BID, Benazepril 5mg BID

ULTRASONOGRAPHIC EXAMINATION OF THE HEART

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	6.43	3.03	1.62	1.61	48	NM	0.14
CANINE CARDIAC	**HR (BPM)**	**AV VMAX (m/s)**	**PV MAX (m/s)**	**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	138	1.4	1.32	15.1	3.84	3.58	1.87

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

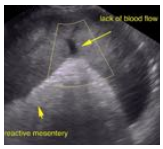
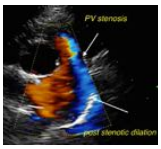
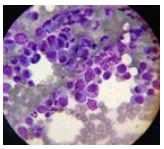
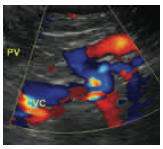
Echocardiographic findings

Mitral valve

- Mild (posterior) to moderate (septal) myxomatous degeneration of both leaflets.
- Moderate prolapse of both leaflets.
- Severe mitral regurgitation.
- Moderate left atrial enlargement
- Moderate left auricular enlargement.
- Mild increase of LA: Ao ratio
- LA normalized for BW (LAN = 1.5); moderate enlargement
- LVIDd normalized for BW (LVIDND = 1.6); within normal limits
- LVIDs normalized for BW (LVIDNs = 0.79); low end of normal

Aortic valve

- Very mild thickening and irregularity of valve leaflets (no signs of vegetative lesions)
- Very mild aortic insufficiency (rapid velocity = 1.94 m/s)

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Tricuspid valve

- Mild myxomatous degeneration of the tricuspid valve
- Moderate prolapse of both leaflets.
- Moderate to severe tricuspid regurgitation.
- Very mild pulmonary hypertension
- No right ventricular or atrial enlargement.
- RV = 0.53 cm (M-mode)

Pulmonic valve

- No abnormalities
- No pulmonary insufficiency.
- Main pulmonary artery within normal limits.
- Pulmonary artery - bifurcation, no abnormalities.
- No signs of heart worm.

Other

- No signs of pericardial or pleural effusion
- Pulmonary veins, no abnormalities.
- No evidence of pulmonary edema.
- No obvious signs of a mass.

ULTRASONOGRAPHIC FINDINGS

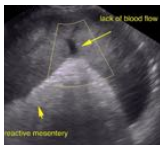
- Myxomatous degeneration of the mitral (moderate) and tricuspid (mild) valves, ACVIM stage C (i.e. failure assumed if currently on furosemide). Moderate left atrial enlargement. The left ventricle is at the high end of the normal reference range. These findings are with the administration of furosemide and benazepril.
- Systolic function at low end of normal reference range.
- Very mild pulmonary hypertension
- Aortic insufficiency, likely secondary to age-related valvular changes.

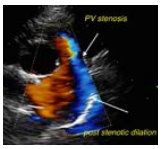
INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

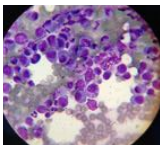
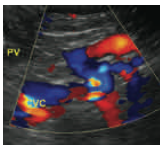
Treatment with pimobendan (Vetmedin) is recommended (see below).

Other suggestions/recommendations include:

- Evaluation of blood pressure





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- Treatment with pimobendan (Vetmedin) at 0.25-0.30 mg/kg PO every 12 hours. 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.
- benazepril - Continue 0.5 mg/kg PO every 12-24 hours
- furosemide - Administer the minimum dose effective in controlling clinical signs, including the cough. A larger dose may be required at night, or dosing three times a day may be required to decrease risk of nocturia)
- An antitussive, codeine or hydrocodone, may help control the cough if the latter is not associated with pulmonary edema
- spironolactone (0.5-1 mg/kg) is helpful in decreasing the dose of furosemide required to control one's cough and is potassium sparing. It also has anti-fibrotic effects.
- 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.
- 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.
- Moderate salt restriction is suggested (between 0.4-0.5 grams/1000 kcal of food). Monitor salt content in treats.
- Omega-3 fatty acids may be helpful (EPA = 40 mg/kg/day and DHA = 25 mg/kg/day); gradual uptitration of the dose is suggested to decrease risk of gastrointestinal effects. However, they should not be introduced at the same time as pimobendan.
- Blood work, CBC, serum biochemical profile, including a SDMA, and arterial blood pressure, are recommended at least twice a year to monitor renal parameters. If cost prohibitive, a PCV/TS may be performed instead of a full CBC.
- Re-evaluation of an echocardiogram is suggested in 6 months, or sooner depending on clinical signs.

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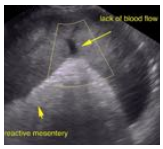
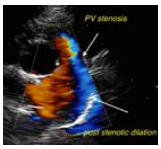
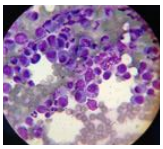
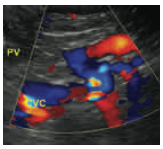

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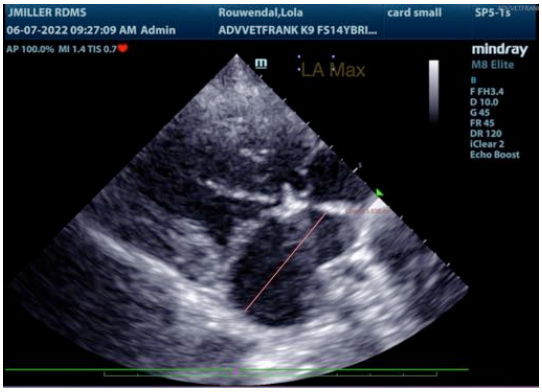

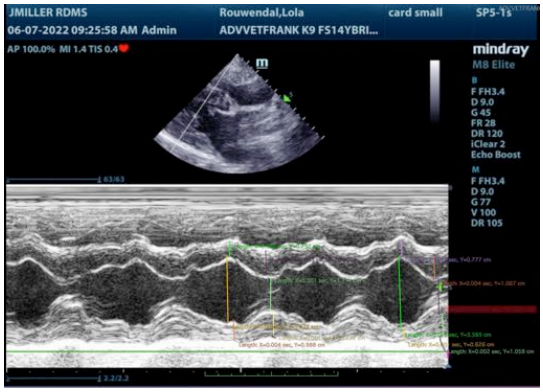

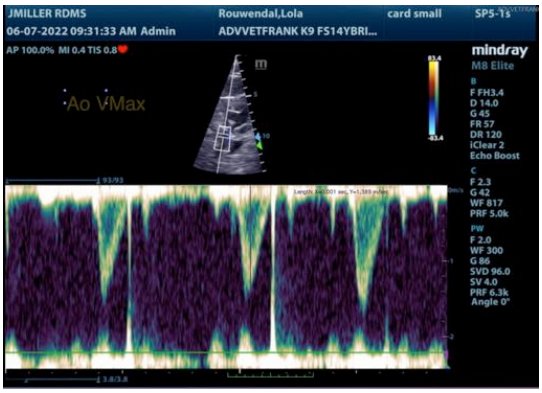

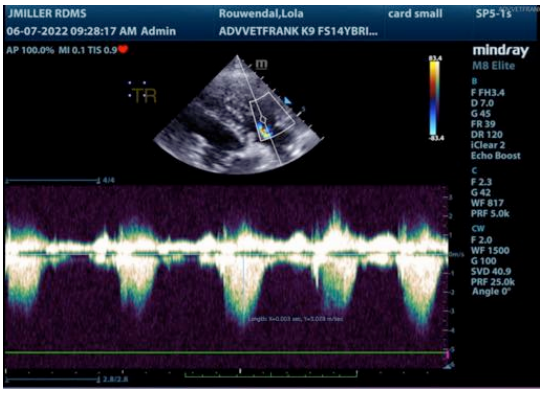

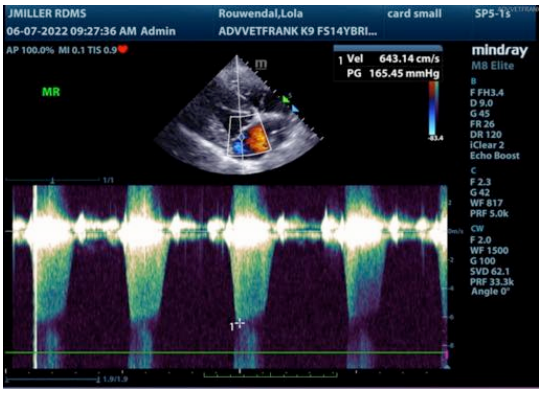

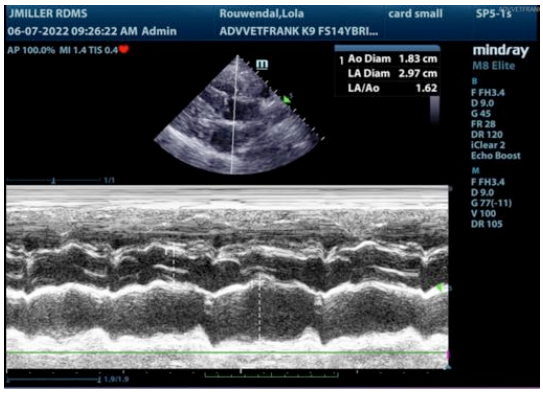

The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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.

Lisa Carioto, DVM, DVSc, Diplomate ACVIM

Lisa.Carioto@sonopath.com