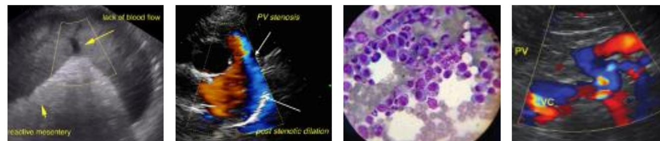
SonoPath

Clinical Sonography & Telecytology

EDUCATIONAL TELECONSULTATION SERVICES™



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

PATIENT

Ava Sapunarich

SPECIES

Canine

BREED

Chihuahua

SEX

Spayed Female

AGE

8 Years 5 Months

WEIGHT

10.9 Pounds

INTERPRETED BY

Lisa Carioto, DVM, DVSc, Diplomate ACVIM

IMAGING PERFORMED BY

Shari Reffi, CVT

HOSPITAL NAME

Long Valley AH

REFERRING VET

Dr. Welch

INVOICE

16330

DATE

6/24/22

PRESENTING CLINICAL SIGNS

History: Grade III/VI murmur (new)-noted under general anesthesia for dentistry-PMI L side

ULTRASONOGRAPHIC EXAMINATION OF THE HEART

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	<1.3	28-40	40-100	<0.6
PATIENT	5.72	2.51	1.8	1.65	*LAx=35	LAx=66.4	0.29
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				
PATIENT	126	0.94	0.80	4.95	2.59	2.78-LAx 3.02-SAx	1.80-LAx 1.73-SAx

Cardiac Presentation

*LAx = long axis; SAx = short axis

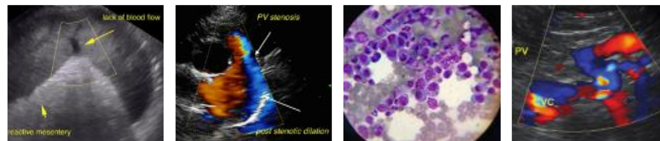
Echocardiographic findings

Mitral valve

- Moderate (posterior leaflet) to severe (septal) thickening and irregularity; consistent with myxomatous degeneration
- Moderate to severe prolapse of the posterior and septal leaflets, respectively.
- Partial rupture of a chordae tendinae of the septal leaflet
- Severe mitral regurgitation, some of which enters the pulmonary veins.
- Moderate to marked left auricular enlargement.
- Mild increase of LA: Ao ratio
- LA normalized for BW (LAN = 1.50); moderate to marked left atrial enlargement
- LVIDd normalized for BW (LVIDND = 1.9); moderate left ventricular enlargement
- LVIDs normalized for BW (LVIDNs = 1.04); within normal limits (WNL)

Aortic valve

- No abnormalities



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- No aortic insufficiency

Tricuspid valve

- Mild thickening and irregularity; consistent with myxomatous degeneration
- Very mild prolapse of posterior leaflet.
- Mild to moderate tricuspid regurgitation, eccentric jet
- No right ventricular or atrial enlargement.

Pulmonic valve

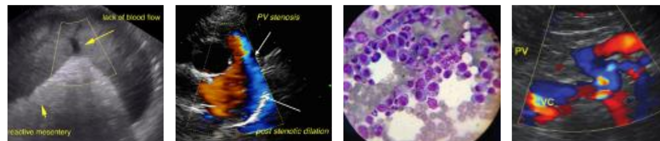
- No abnormalities
- Trivial pulmonary insufficiency.
- Main pulmonary artery within normal limits.
- Pulmonary artery - bifurcation, no abnormalities.
- Pulmonary artery: aortic ratio within normal limits.
- No signs of heart worm.

Other

- No signs of pericardial or pleural effusion
- Pulmonary veins: subjectively, they are dilated.
- No evidence of pulmonary edema.
- No obvious signs of a mass.
- Hepatic veins: no signs of congestion
- Gallbladder sludge (minimal amount)

ULTRASONOGRAPHIC FINDINGS

- Myxomatous degeneration of the mitral (moderate to severe) and tricuspid (mild) valves, ACVIM stage B2, with marked left atrial and moderate left ventricular enlargement.
- There are no obvious signs of congestive heart failure based on the ultrasound findings, however, advanced changes are present. Therefore, treatment with pimobendan (Vetmedin) is recommended to help slow the progression of Ava's disease.
- If possible (i.e. if Ava is not painful), it would be preferable to postpone the dentistry for approximately 2-4 weeks while initiating therapy with pimobendan, as this will help stabilize Ava's heart prior to the procedure.
- There are increased risks associated with general anesthesia, however, it is best to pursue general anesthesia while Ava's heart disease is stable and prevent her from experiencing pain associated with periodontal disease. however, the risks vs. benefits of the procedure should be discussed with the client. An anesthesia protocol will be suggested to minimize the risks.



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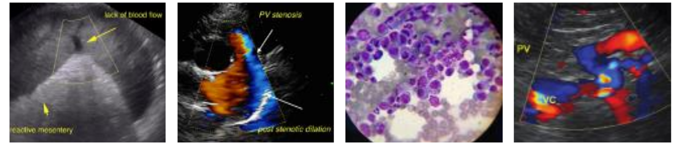
INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Other suggestions/recommendations include:

- Evaluation of blood pressure
- Treatment with pimobendan 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.
- 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, ideally 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.
- 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.
- As mentioned above, the dentistry should be postponed, if possible if Ava is not painful, for approximately 2-4 weeks while initiating therapy with pimobendan, as this will help stabilize her heart prior to the procedure. Analgesics and antibiotics may be considered during this time to improve her comfort.

Example of general anesthesia protocol for a dentistry

- Premedication with an opioid, such as hydromorphone, butorphanol, or methadone, +/- *low dose* of midazolam. Avoid dexmedetomidine (label indications).
- Avoid acepromazine, atropine and glycopyrrolate. The latter two drugs should only be considered if a patient becomes bradycardic during the procedure.
- Preoxygenation for 10-15 minutes (minimum 5 minutes).
- Induction with alfaxalone, or propofol, if alfaxalone is not available. Avoid ketamine, if possible.
- Monitor arterial blood pressure during the procedure. The mean blood pressure should be between 90 - 100 mm Hg. If the patient’s blood pressure is decreased, dobutamine is suggested, i.e. fluid boluses should *not* be administered to avoid volume overload and congestive heart failure.



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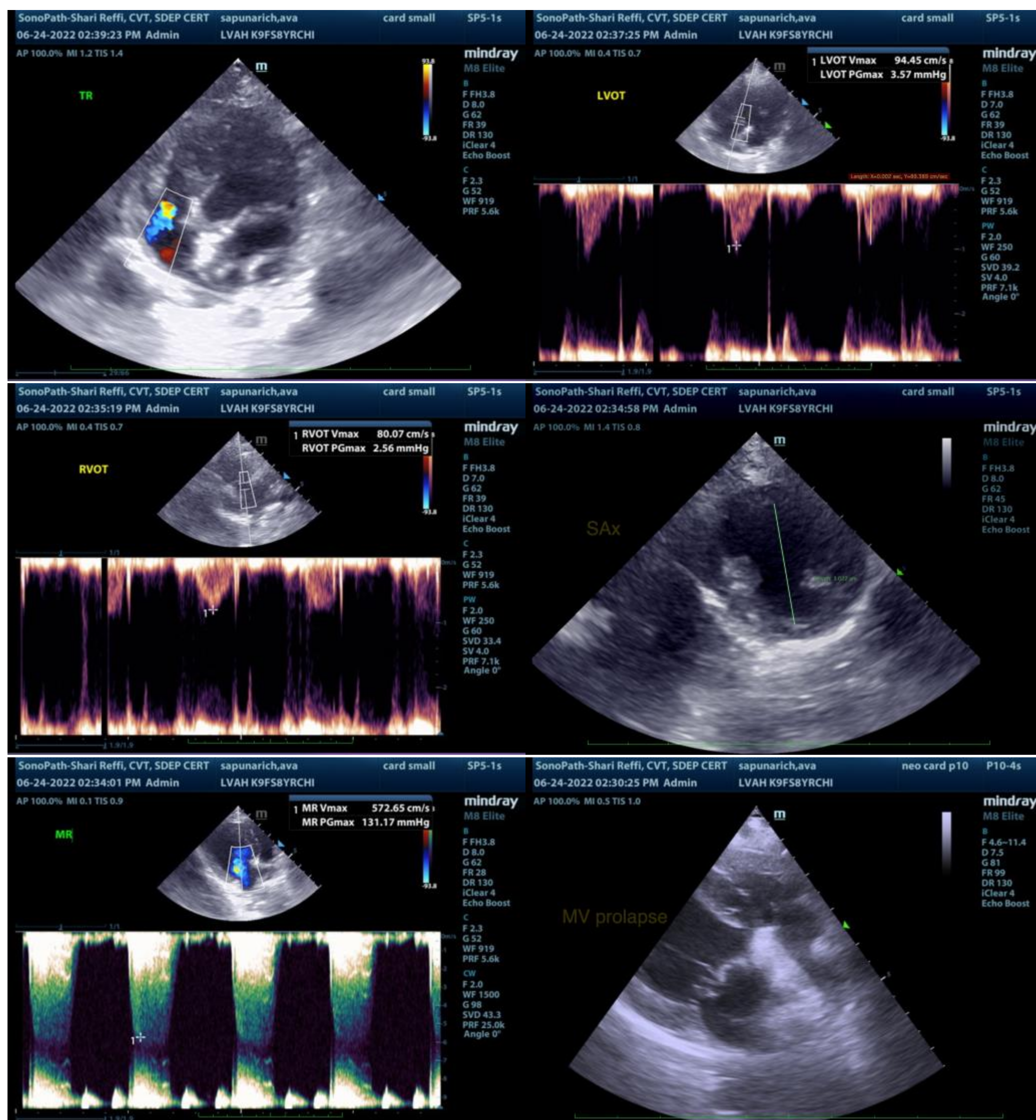
- The intravenous fluid rate should be approximately ¼ of the DAILY maintenance requirements, or 1.75-2 ml/kg/hour to avoid fluid overload.
- Dental blocks are *strongly* recommended to decrease MAC and the amount of isofluorane necessary, as the latter tends to cause hypotension, particularly in cardiac patients.
- *Two shorter procedures are preferable to performing one long procedure, if the dentistry will take longer than originally expected.
- One could consider sending the patient home with *furosemide in case of an emergency* (1-2 mg/kg every 8-12 hours pending communications with a veterinarian).
- Monitoring the patient's resting respiratory (breathing) rate twice a day for 4-6 weeks following general anesthesia is suggested to monitor for signs of decompensation of heart disease.

Do **not** administer the pimobendan (Vetmedin) the morning of general anesthesia.



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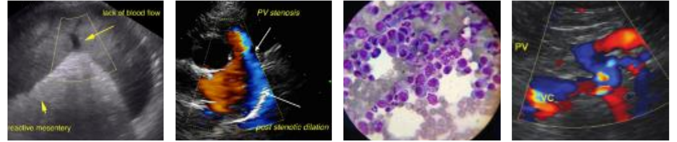

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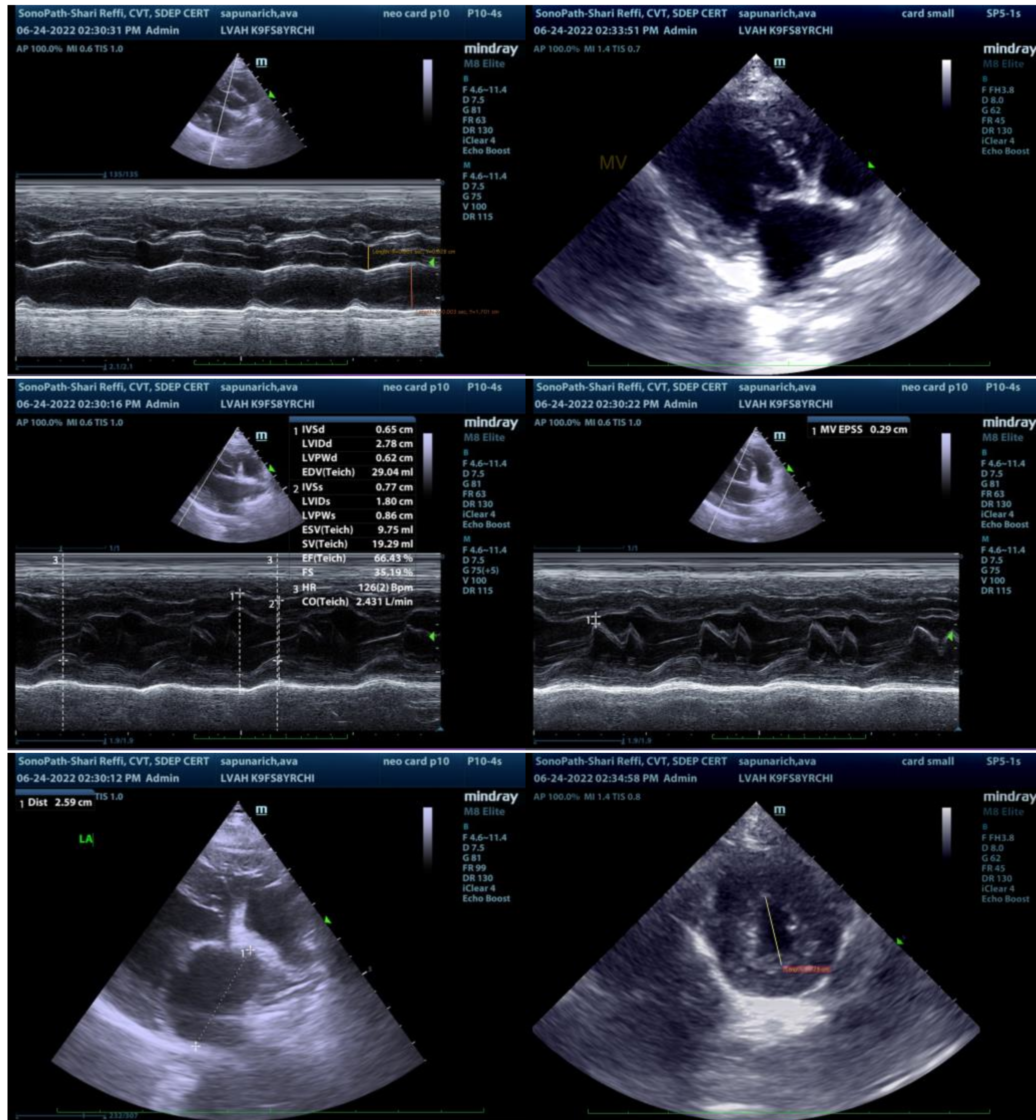

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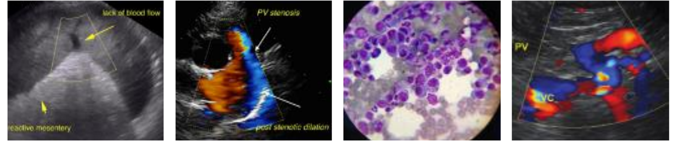

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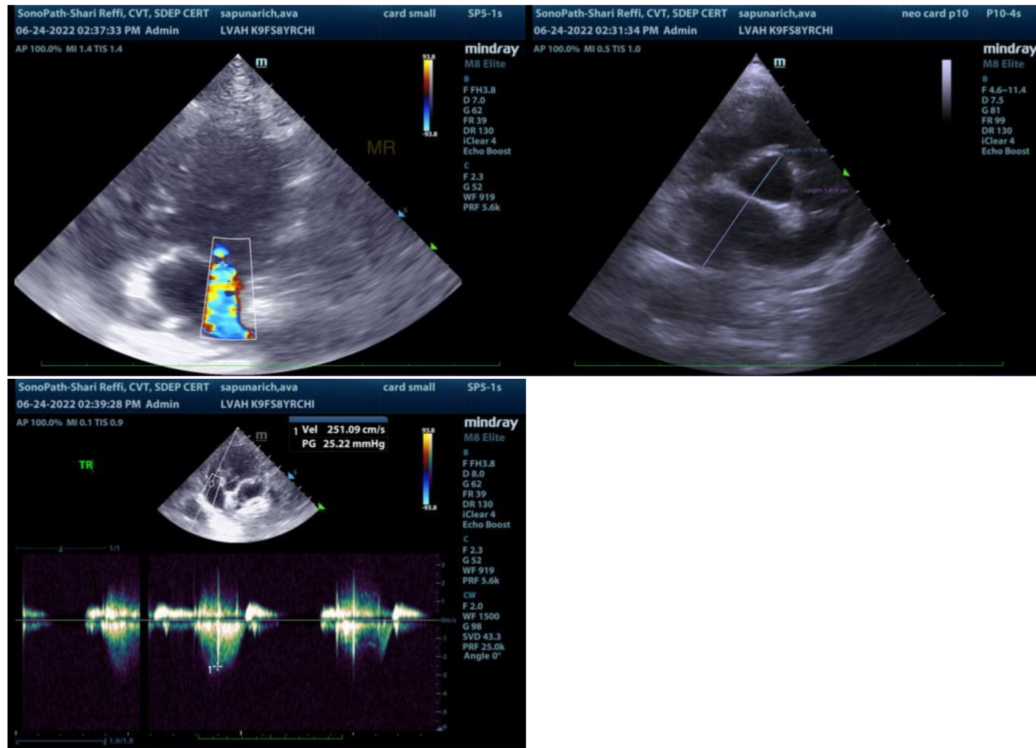

The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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

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