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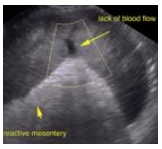
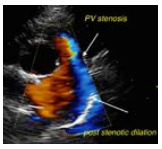
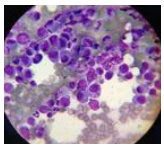
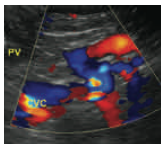
Clinical Sonography & Telecytology
EDUCATIONAL TELECONSULTATION SERVICES™

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

PATIENT
Cici Rivera

SPECIES
Canine

BREED
Chihuahua

SEX
Spayed Female

AGE
9 years

WEIGHT
7.1 lbs

INTERPRETED BY
Lisa Carioto, DVM, DVSc, Diplomate ACVIM

IMAGING PERFORMED BY
Kelly Vazquez , CVT

HOSPITAL NAME
Legacy AH

REFERRING VET
Dr. Pontenzone

INVOICE
30476

DATE
5/17/22

PRESENTING CLINICAL SIGNS

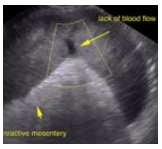
History: Cardiomegaly, heart murmur grade 4/6. History of CHF in her littermates.

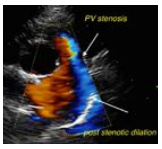
ULTRASONOGRAPHIC EXAMINATION OF THE HEART

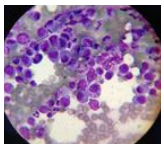
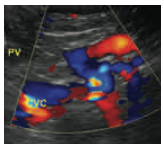
CANINE CARDIAC PARAMETERS	MR VMAX (m/s)	TR VMAX (m/s)	LA/AO (Boon method)	LA/AO (Heart Base; Swedish)	FS (%)	EF (%)	EPSS (cm)
NORMAL PARAMETER	4.5-5.5	<2.7	1.3	<1.6	28-40	40-100	<0.6
PATIENT	5.6	2.2	1.37	1.48	42	Not measured	0.12
CANINE CARDIAC PARAMETERS	**HR** (BPM)	**AV VMAX** (m/s)	**PV MAX** (m/s)	**BODY WEIGHT** kg	**LA** 2D long 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	Not measured	1.3	0.88	3.23 kg	2.0	1.92	1.11

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

- *Mitral valve*: mild to moderate myxomatous degeneration of both leaflets. The septal leaflet is more severely affected compared to the posterior leaflet.
- Mild prolapse of both leaflets.
- Marked mitral regurgitation.
- Mild left auricular enlargement.
- Absence of rounding of the interventricular septum
- LA: Ao ratio = within normal limits
- Moderate to marked left atrial enlargement when normalized for BW (LAN = 1.34)
- LVIDd normalized for BW (LVIDND = 1.4) – no left ventricular enlargement
- LVIDs normalized for BW (LVIDNs = 0.76) - WNL
- *Aortic valve*: no abnormal findings





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- No evidence of aortic insufficiency
- *Tricuspid valve*: very mild myxomatous degeneration of the tricuspid valve
- Very mild prolapse of septal leaflet.
- Very mild tricuspid regurgitation.
- No right ventricular or atrial enlargement.
- *Pulmonic valve*: no abnormalities – thin and regular
- Trivial pulmonary insufficiency (0.84 m/s).
- Pulmonary artery - bifurcation, no abnormalities.
- Pulmonary artery: aortic ratio within normal limits.
- Main pulmonary artery within normal limits.
- No signs of heart worm.
- No signs of pericardial or pleural effusion
- Pulmonary veins: no abnormalities.
- No evidence of pulmonary edema.
- No obvious signs of a mass.

ULTRASONOGRAPHIC FINDINGS

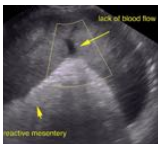
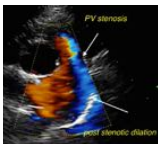
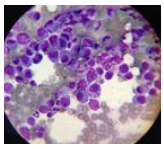
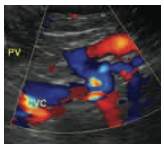
- Myxomatous degeneration of the mitral valve, ACVIM stage B2, with mild left atrial enlargement. The intensity of Cici's heart murmur is due to the prolapse of the mitral valve, the severe mitral regurgitation (MR) and turbulent blood flow of the MR.

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Cici's results do not meet all the criteria of EPIC study, however, given the history of congestive heart failure in her family, it is not wrong to start pimobendan if desired. Another option is to recheck an echocardiogram in 6 months, or sooner, depending on her clinical signs.

Other suggestions/recommendations include:

- Evaluation of blood pressure
- If desired, treatment with pimobendan at 0.25-0.30 mg/kg PO every 12 hours, may be considered. 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.

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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.
- Mild salt restriction is suggested (less than 0.9 grams/1000 kcal of food)
- 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
- 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.
- If general anesthesia is required, the following protocol is suggested. Also, the procedure should be postponed, if possible, for approximately 2-4 weeks while initiating therapy with pimobendan, as this will help stabilize the heart prior to the procedure.
    - Example of general anesthesia protocol
        - 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.
        - The intravenous fluid rate should be approximately ¼ of the DAILY maintenance requirements, or 1.75-2 ml/kg/hour to avoid fluid overload.
        - *Local blocks are strongly recommended to decrease MAC and the amount of isofluorane necessary, as the latter tends to cause hypotension, particularly in cardiac patients.*
        - One could consider sending the patient home with *furosemide in case of an emergency*.
        - 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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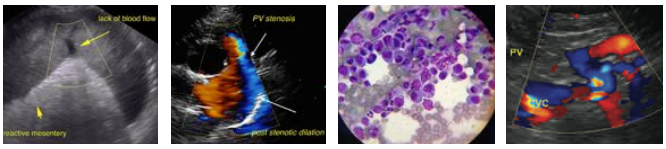

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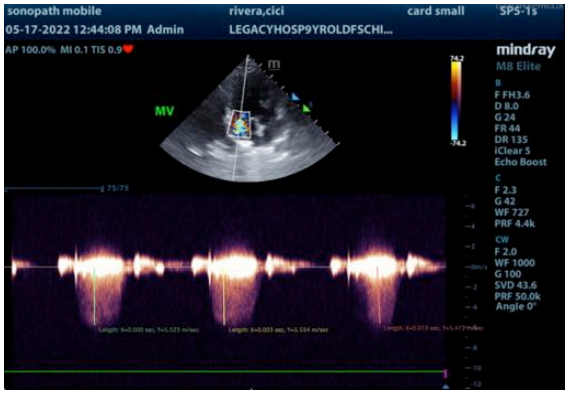

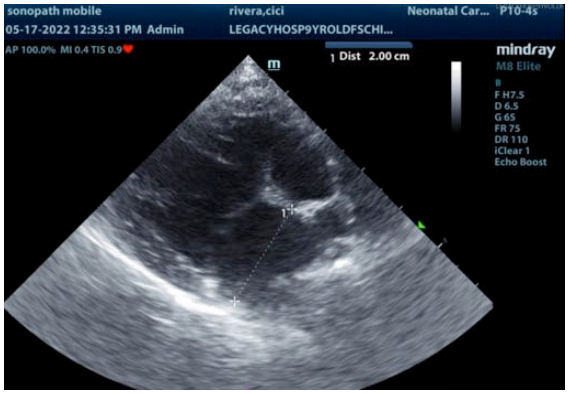

The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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