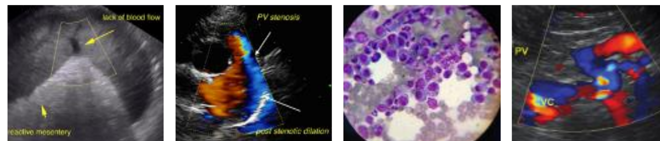

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1-800-838-4268 info@sonopath.com

PATIENT

Tilds Mayo

SPECIES

Canine

BREED

Havanese

SEX

Spayed Female

AGE

12 Years

WEIGHT

15 Pounds

INTERPRETED BY

Lisa Carioto, DVM, DVSc, Diplomate ACVIM

IMAGING PERFORMED BY

Jessica Miller

HOSPITAL NAME

Warren AH

REFERRING VET

Dr. Nicole

INVOICE

16215

DATE

6/21/22

PRESENTING CLINICAL SIGNS

History: Recently noted HM III/VI on recent PE for wellness. O considering dental cleaning. No current meds.

Abnormal PE/Chem/CBC/UA Results: 4DX (-), Alb 4.1, ALP 1179

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	5.30	0.30	2.32	1.92	42	NM	0.23
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	1.48(PW) 1.61 (CW)	0.97	6.82	3.67	3.44	2.01

Echocardiographic findings

Mitral valve

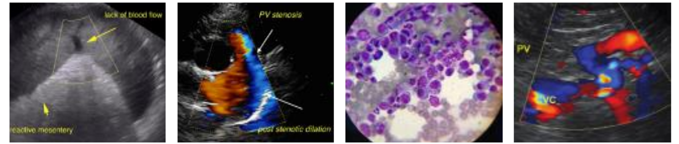
- Mild (posterior leaflet) to moderate (septal leaflet) myxomatous degeneration.
- Moderate (posterior) to marked (septal) prolapse.
- Moderate mitral regurgitation.
- Moderate to marked increase of LA: Ao ratio
- LA normalized for BW (LAN = 1.92); marked left atrial enlargement
- LVIDd normalized for BW (LVIDND = 1.95); moderate to marked left ventricular enlargement
- LVIDs normalized for BW (LVIDNs = 1.10); within normal limits (WNL)

Aortic valve

- No abnormalities
- No aortic insufficiency

Tricuspid valve

- Mild to moderate myxomatous degeneration of both leaflets
- Severe prolapse of septal leaflet, mild prolapse of posterior



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- Mild to moderate tricuspid regurgitation.
- Borderline to very mild pulmonary hypertension
- No right ventricular or atrial enlargement.

Pulmonic valve

- No abnormalities
- No pulmonary insufficiency.
- Main pulmonary artery within normal limits.

Other

- No signs of pericardial or pleural effusion
- No evidence of pulmonary edema.
- No obvious signs of a mass.
- Liver: Multiple hypoechoic nodules of variable size
- Hepatic veins do not appear congested

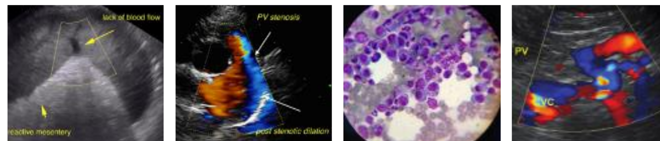
ULTRASONOGRAPHIC FINDINGS

- Myxomatous degeneration of the mitral (mild to moderate) and tricuspid (mild to moderate) valves, ACVIM stage B2, with marked left atrial enlargement and moderate to marked left ventricular enlargement.
- High normal to very mild pulmonary hypertension
- Tilda's echocardiographic results meet the criteria from the EPIC study to begin treatment with pimobendan (Vetmedin) to help slow the progression of her heart disease.
- Spironolactone is also suggested, providing her renal function is within normal limits (see below).
- There are increased risks associated with general anesthesia, however, it is best to pursue general anesthesia while Tilda's heart disease is stable and prevent her from experiencing pain associated with periodontal disease. An anesthesia protocol will be suggested to minimize the risks.

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Other suggestions/recommendations include:

- Evaluation of blood pressure
- pimobendan (Vetmedin) at 0.25-0.30 mg/kg PO every 12 hours. Ideally, the dose should be started at 0.10 mg/kg PO every 12 hours for 3 days prior to increasing to the full dose to decrease the risk of GI side effects. Administer with a *small* amount of food to decrease nausea.



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- spironolactone (0.5-1 mg/kg twice a day) has anti-fibrotic effects. This may be started approximately 5-7 days after initiation of pimobendan, i.e. ensure Tilda is tolerating the pimobendan.

- 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.

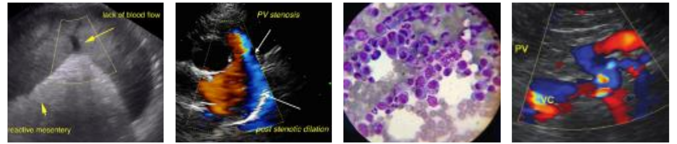
- Blood work PCV/TS, renal profile, SDMA and arterial blood pressure, are recommended 10-14 days after initiation of spironolactone.

- 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 possible (i.e. if not painful), the dentistry should be postponed for approximately 2-4 weeks while initiating therapy with pimobendan, as this will help stabilize Tilda's heart prior to the procedure.

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.
- 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 should consider sending the patient home with *furosemide in case of an emergency* (2 mg/kg PO q12h until able to contact 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.



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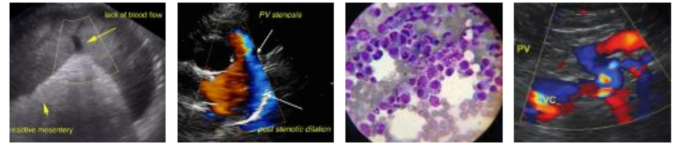
- Do **not** administer the pimobendan (Vetmedin) the morning of general anesthesia.



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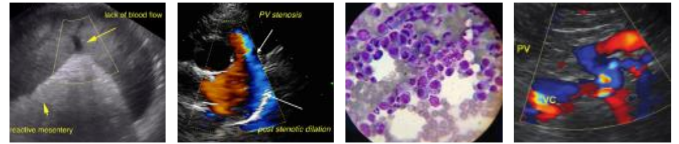
The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.



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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