

**PATIENT**

Bebe Assalone

**SPECIES**

Canine

**BREED**

Yorshire Terrier

**SEX**

Female Spayed

**AGE**

12 years

**WEIGHT**

7.56lbs

**INTERPRETED BY**

Maggie Machen  
Lamy, DVM, DACVIM  
(Cardiology)

**HOSPITAL NAME**

Everhart Veterinary  
Center

**REFERRING VET**

Not provided

**PRESENTING CLINICAL SIGNS**

History: Long history of murmur w/ recent diagnosis of CHF; started on Lasix and Pimobendan at emergency hospital 7/25; recheck w/rDVM 7/28 and added in enalapril; CS improved per owner  
-Current medications: Pimobendan 2.5mg 1/2 tab PO q12h , Lasix 12.5mg 1/2 tab PO q12h, Enalapril 2.5mg 1/2 tab PO q12h, started on 07/28/2021 evening.  
-Blood pressure: Reported BP the day of the scan was 120mmHg.  
-Sedation used:  
-STAT: Not requested

**ECHOCARDIOGRAM FINDINGS**

2D, m-mode, color flow and doppler imaging is available. The mitral valve is thickened with significant prolapse into the left atrial lumen. There is a suspect ruptured chordae tendinae. There is severe eccentric mitral regurgitation present. The MR velocity is low normal. There is marked left atrial enlargement. There is moderate left ventricular dilation. Left ventricular systolic function is hyperdynamic. There is normal systolic flow velocity across the aortic valve, velocity normal. The aortic valve appears trileaflet with normal mobility. No aortic insufficiency. The main pulmonary artery is prominent. Mild right atrial and right ventricular dilation. The tricuspid valve is thickened with moderate to severe tricuspid regurgitation. The tricuspid regurgitant velocity is consistent with moderate PAH. No pericardial/pleural effusion or cardiac masses are seen.

**CARDIAC CHART**

| CANINE CARDIAC PARAMETERS  | MR VMAX (m/s) | TR VMAX (m/s) | LA/AO (Boon method) | LA/AO (Heart Base; Swe) | FS (%)                          | EF (%)                                   | EPSS (cm)                                |
|--|---------------|---------------|---------------------|-------------------------|---------------------------------|--|--|
| <b>NORMAL PARAMETER</b>  | 4.5-5.5       | <2.7          | 1.3                 | <1.6                    | 28-40                           | 40-100                                   | <0.6                                     |
| <b>PATIENT</b>   | 4.8           | 4.2           | NM                  | 2.8                     | 49                              | 82                                       | NM                                       |
| 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) |
| <b>NORMAL PARAMETER</b>  | 50-100        | 0.7-1.7       | 0.7-1.6             | BELOW                   | BELOW                           | BELOW                                    | BELOW                                    |
| <b>PATIENT</b>   | 145           | 1.3           | 1.7                 | 3.4                     | 2.5                             | 3.4                                      | 1.7                                      |
| *Normal chamber parameters expressed as a mean value (SD)  |               |               |                     | 3                       | 1.27 (5.3)                      | 2.46 (2.46)                              | 1.36 (5.5)                               |
| <b>BODY WEIGHT DEPENDENT PARAMETERS</b>  |               |               |                     | 5                       | 1.40 (4.5)                      | 2.74 (5.2)                               | 1.60 (4.7)                               |
| <i>*Note: All measurements based upon multi-modal images and methods. An average value is reported.</i>  |               |               |                     | 10                      | 1.50 (3.8)                      | 3.27 (3.5)                               | 2.06 (3.1)                               |
|  |               |               |                     | 15                      | 1.83 (2.0)                      | 3.71 (2.4)                               | 2.43 (2.1)                               |
|  |               |               |                     | 20                      | 2.02 (1.9)                      | 4.14 (2.2)                               | 2.80 (2.0)                               |
|  |               |               |                     | 25                      | 2.18 (2.4)                      | 4.48 (2.9)                               | 3.10 (2.5)                               |
|  |               |               |                     | 30                      | 2.33 (3.3)                      | 4.83 (3.9)                               | 3.39 (3.4)                               |
|  |               |               |                     | 35                      | 2.48 (4.3)                      | 5.17 (5.0)                               | 3.69 (4.5)                               |
|  |               |               |                     | 40                      | 2.62 (5.2)                      | 5.48 (6.1)                               | 3.96 (5.4)                               |
|  |               |               |                     | 50                      | 2.88 (7.1)                      | 6.07 (8.3)                               | 4.46 (7.4)                               |
| Adapted from June Boon, Veterinary Echocardiography, 1998<br>Rishniw M and Hollis NE, J Vet Intern Med 2000; 14:429-435<br>Hansson et al, Vet Rad and Ultrasound 2002<br>Bonagura et al. Echocardiography: principles of interpretation, Vet Clin North Am 15:1177, 1995 |               |               |                     |                         |                                 |  |  |

**INVOICE**

20687

**DATE**

8/23/21

## **INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS**

The cause of the murmur is chronic degenerative valve disease causing severe mitral and moderate tricuspid regurgitation. Severe left atrial and ventricular enlargement indicates the risk for spontaneous congestive heart failure is elevated. There is also concurrent pulmonary hypertension, which is likely secondary to chronically elevated LA pressure (primary respiratory issues cannot be ruled out). Finally, a ruptured chord is visualized which is likely the cause of decompensation. Continued full cardiac support is recommended at this time as below, given the history and severity of disease seen here. No obvious indication for Sildenafil assuming the patient is doing well at home. Should any exertional syncope or dyspnea develop this can be added in the future.

Pending response to current medications, cough suppression (up to q4-6 hours) may also be helpful for QOL. Monitoring of sleeping breathing rates is recommended as the best way to screen for CHF at home.

The average survival of canine patients with this severity of disease and concern for CHF is 8-9 months on medications, however they generally are able to maintain a good quality of life. Going forward the risk will remain high for CHF, development of arrhythmias/syncope and sudden death, and close monitoring is advised.

Elective anesthesia is not advised, as there is high risk for complication. Risk: benefit ratio should be considered. Consider consultation with and/or referral to a facility with an anesthesiologist. Should you elect to proceed, cardiac protective drug choices (opioid/benzodiazepine premedication, propofol or alfaxalone induction, iso or sevoflurane gas) are recommended. Pre-oxygenate for 5-10 minutes prior to induction and recover in O<sub>2</sub> cage. Monitor for arrhythmias, hypotension, and hypoxia both intra and post-operatively and intervene as necessary. Moderate IV fluid restriction is recommended to avoid fluid overload, while considering comorbidities, hydration status, BP, etc. Avoid heart rate stimulating drugs such as atropine unless clinically indicated.

Omega fatty acid supplementation and mild salt restriction may also be of some long-term benefit. Monitor for development of a worsening cough, labored breathing, exercise intolerance or collapse episodes.

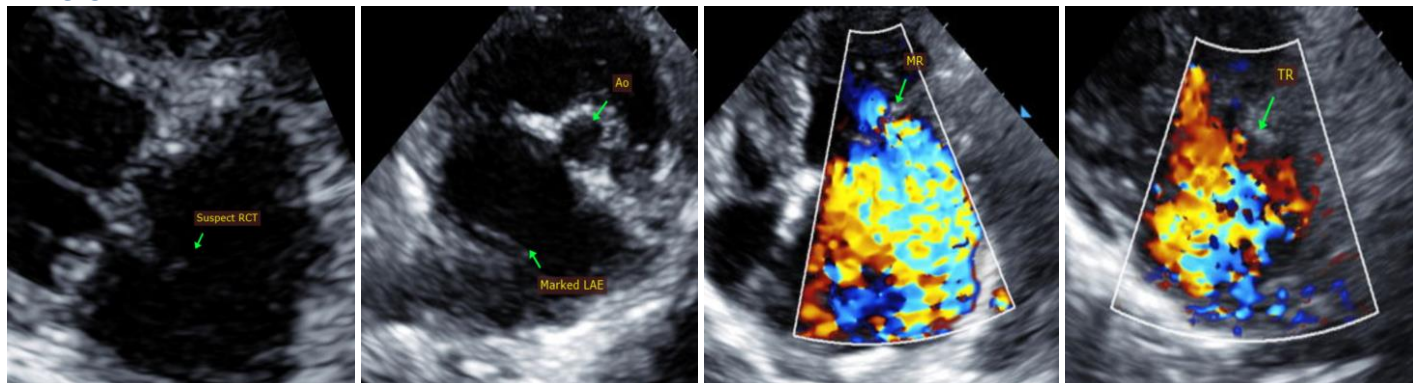
## **PLAN**

Continue Lasix as prescribed (3.75mg/kg per day). Continue Pimobendan as prescribed. Continue Enalapril as prescribed. Institute spironolactone 1-2mg/kg PO q12h. If indicated, consider hydrocodone with homatropine, 0.2-0.4mg/kg PO up to q4-6 hours PRN.

Monitor renal panel and BP every 3-4 months going forward.

A recheck echocardiogram is recommended in 6 months to screen for progression, sooner if clinical signs arise/persist.

## **IMAGES**



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

Thank you for this referral. This report was generated using transcription software, and minor dictation errors may be present. If the clinical or image interpretation does not parallel your findings or if I can be of any further assistance, please contact me.

**Maggie Machen Lamy, DVM**

**Diplomate of the American College of Veterinary Internal Medicine (Cardiology)**

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