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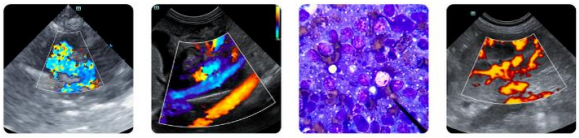

Clinical Sonography & Telecytology

Educational Teleconsultation Services™

**PATIENT**

Piper Phillips

**SPECIES**

Canine

**BREED**

Boston terrier

**SEX**

Female Spayed

**AGE**

7 years

**WEIGHT**

26lbs

**INTERPRETED BY**

Maggie Machen Lamy, DVM, DACVIM (Cardiology)

**IMAGING PERFORMED BY**

A. Nicastro, DVM

**HOSPITAL NAME**

Salt Marsh Animal Hospital

**REFERRING VET**

Dr. Thompson

**INVOICE**

45790

**DATE**

11/18/25

## PRESENTING CLINICAL SIGNS

History: Recheck echo. On Pimobendan and Lasix (20mg BID). Yesterday, increased RR, which was also apparent on presentation today. CXR suggestive of CHF. Arrhythmia ausculted. Grade 5/6 heart murmur. Received 40mg Lasix twice so far today – RR improving.
-Pertinent previous echo findings (9/2025 DVM STAT): stage C CVD. LV: 4.7, FS: 36%, LA/AO: 2.4, TR velocity: normal. ECG at that time: NSR with APCs. CXR report: CHF.

## RADIOGRAPHIC FINDINGS *NOTE: Images submitted for supplemental cardiac information only.

Severe cardiomegaly with evidence of CHF.

## ELECTROCARDIOGRAPHIC FINDINGS

A six lead ECG is available at 25mm/s; 10mm/mV. The average heart rate is 200bpm (range 150-250bpm). Irregularly irregular rhythm with no identifiable P waves consistent with atrial fibrillation. No VPCs, pauses or other dysrhythmias observed.
ECG diagnosis: Rapid atrial fibrillation.

## ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. Diffuse thickening of mitral valve leaflets with mild prolapse into the left atrial lumen. Severe eccentric mitral regurgitation with severe left atrial dilation. Moderate LV dilation with mildly depressed myocardial function. The tricuspid valve appears thickened with mild tricuspid regurgitation. Velocity consistent with mild pulmonary hypertension. Mild right heart dilation. The pulmonic and aortic valves are normal in morphology and mobility. Normal pulmonic and aortic outflow velocities. Trace aortic and mild pulmonic insufficiency. Scant pericardial and no pleural effusion noted. No cardiac tumors observed. Irregular rapid rhythm throughout.

## 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) |
|---|---|---|---|---|---|---|---|
| NORMAL PARAMETER | 4.5-5.5 | <2.7 | 1.3 | <1.6 | 28-40 | 40-100 | <0.6 |
| PATIENT | 5.2 | 3.0 | NM | 2.5 | 34 | 60 | 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) |
| NORMAL PARAMETER | 50-100 | 0.7-1.7 | 0.7-1.6 | BELOW | BELOW | BELOW | BELOW |
| PATIENT | NM | 0.7 | 1.2 | 11.8 | 3.9 | 4.4 | 2.9 |
| *Normal chamber parameters expressed as a mean value (SD) | | | | 3 | 1.27 (5.3) | 2.46 (2.46) | 1.36 (5.5) |
| **BODY WEIGHT DEPENDENT PARAMETERS** | | | | 5 | 1.40 (4.5) | 2.74 (5.2) | 1.60 (4.7) |
| **Note: All measurements based upon multi-modal images and methods. An average value is reported.* | | | | 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
Rishniw M and Hollis NE, J Vet Intern Med 2000; 14:429-435
Hansson et al, Vet Rad and Ultrasound 2002
Bonagura et al. Echocardiography: principles of interpretation, Vet Clin North Am 15:1177, 1995

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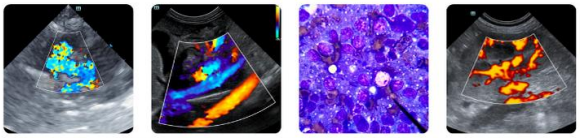

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## INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Chronic degenerative valve disease persist with severe mitral and mild tricuspid regurgitation. Severe CVD has progressed to 4 chamber dilation and consequently rapid atrial fibrillation (AF) and congestive heart failure. Pericardial effusion is due to right heart failure secondary to tachycardia/AF and there is high risk for left-sided failure as well. Mild pulmonary hypertension has developed (not seen previously), which is likely secondary to active congestion. No additional structural issues are identified. Comparing to the prior report, the findings are actually quite similar. **The likely cause of recurrent decompensation is development of the arrythmia, as is typical of atrial fibrillation.**

AF is characterized by disorganized contractions of the atria leading to an irregular heart rhythm. The irregular heart rhythm rarely causes clinical signs in dogs. However, atrial fibrillation also usually causes an increase in the heart rate, and this leads to clinical signs and CHF as we see here. Development of AF and CHF requires lifelong diuretics and management of the structural disease in addition to the arrhythmia.

Unfortunately, dogs with CHF and AF are at high risk for complications such as recurrent congestive heart failure, malignant arrhythmias, left atrial tear and sudden death. Medications and close monitoring will help give the best prognosis possible, however the average survival time with this condition is <6 months.

Goals of therapy include correcting water retention, improving myocardial contractility, afterload reduction, and heart rate control. Full cardiac support including continued diuresis is indicated, due to the high risk for decompensation with rapid arrhythmias and severe disease. Continued hospitalization is recommended until the patient is stabilized. The target heart rate is 140-160bpm in hospital.

Please monitor at home for cough, lethargy, inappetence, collapse/fainting episodes or increase in respiratory rate or effort. Monitoring of sleeping breathing rates is recommended to screen for recurrent CHF at home. Moderate activity restriction is advised. Omega fatty acid supplementation and mild salt restriction may be of some long-term benefit.

## PLAN

Continued hospitalization for IV diuretic/rate control therapy if needed. DISCHARGE on the following: Institute Spironolactone 1-2mg/kg PO q12 hours. Increase Lasix/Furosemide to 1-2mg/kg PO q8h for 3-5 days, if doing well at that time decrease to q12h going forward. Continue Pimobendan 0.3mg/kg PO q12 hours. Institute Diltiazem 1-2mg/kg PO q8 hours. Once eating well at home and BP is documented >130mmHg, institute Benazepril 0.5mg/kg PO Q12h.

Recheck heart rate in 5-7 days with target being 140-160bpm in hospital (stressed). If persistently >180bpm, institute Digoxin 0.005mg/kg PO q12h.

Screening renal panel and digoxin level in 5-7 days (6-8 hours post-am dose) to ensure tolerance of medications.

Recommend conservative monitoring with a recheck echocardiogram in 6 months.

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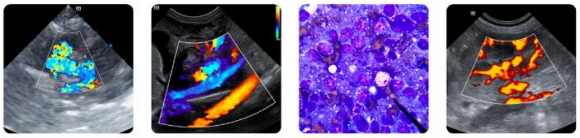

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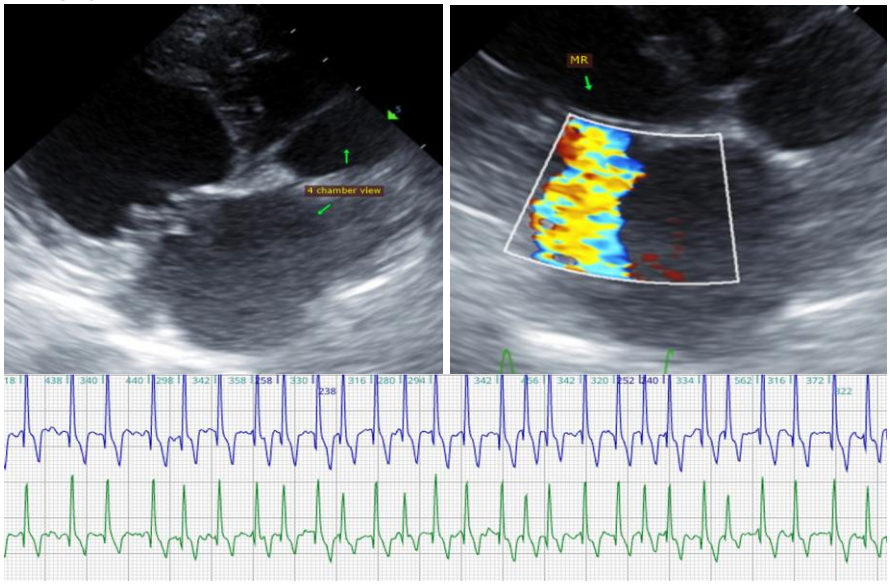
## IMAGES




**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)**
info@sonopath.com

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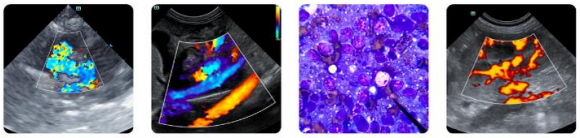

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