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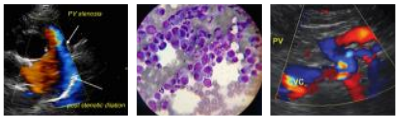

SonoPath
Clinical Sonography & Telecytology
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**PATIENT**
Tippy Smith

**SPECIES**
Canine

**BREED**
Chihuahua

**SEX**
Male Neutered

**AGE**
9.1.10

**WEIGHT**
8.8lbs

**INTERPRETED BY**
Maggie Machen Lamy, DVM, DACVIM (Cardiology)

**HOSPITAL NAME**
Pet Wellness Center

**REFERRING VET**
Dr. Twardus

**INVOICE**
27683

**DATE**
11.29.22

## PRESENTING CLINICAL SIGNS

History: 10/10/22 exam- cough, heavy breathing. Grade 5/6 murmur. 10/15/22- improved breathing with medications.
-Radiographs: Enlarged heart with very narrow trachea, one area at hilus of opacity- concern of aspiration.
-Current medications: Vetmedin 1.25mg BID, Calvamox drops 1mL BID.
-Sedation used: Not required to complete full diagnostic ultrasound.
-Pertinent previous ultrasound results: No previous.
-STAT: Approved.
-Imaging performed by: Stephanie Warga RDCS, RVT.

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

Marked cardiomegaly without obvious evidence of CHF.

## ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. The mitral valve is diffusely thickened with mild prolapse into the left atrial lumen. There is severe mitral regurgitation present. There is severe left atrial enlargement. There is severe left ventricular dilation. Left ventricular systolic function is hyperdynamic. There is normal systolic flow velocity across the aortic valve. The aortic valve appears trileaflet with normal mobility. The main pulmonary artery is mildly dilated. No aortic insufficiency. Mild right atrial and right ventricular dilation. The tricuspid valve is thickened with moderate tricuspid regurgitation. Velocity consistent with moderate to severe pulmonary hypertension. No pulmonic insufficiency. Scant pericardial effusion. No 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) |
|---|---|---|---|---|---|---|---|
| NORMAL PARAMETER | 4.5-5.5 | <2.7 | 1.3 | <1.6 | 28-40 | 40-100 | <0.6 |
| PATIENT | 6.3 | 4.5 | NM | 2.2 | 48 | 80 | 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 | 150 | 0.9 | 0.64 | 4.0 | 2.6 | 3.3 | 1.7 |
| *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** **Note: All measurements based upon multi-modal images and methods. An average value is reported.* | | | | 5 | 1.40 (4.5) | 2.74 (5.2) | 1.60 (4.7) |
| | | | | 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

## INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Chronic degenerative valve disease causing severe mitral and moderate tricuspid regurgitation. Biatrial and ventricular enlargement in addition to severe MR/TR and pulmonary hypertension indicates the risk for spontaneous congestive heart failure is high. Scant pericardial effusion is concerning for early right-sided congestion, and full cardiac support is recommended, including sildenafil therapy. If the patient appears unstable, highly recommend overnight hospitalization for supportive care at a 24-hour facility. Additionally cough suppression may be useful in the face of normal breathing rates in the future.

Unfortunately, with this degree of heart disease and congestion, the prognosis is guarded to poor with an average survival time of 6-12mo at this point. Most dogs are able to maintain a good quality of life for some time however with medications. Going forward, patient will remain at high risk for recurrent CHF (left or right sided), collapse episodes and/or development of malignant arrhythmias/sudden death in the future.

Omega fatty acid supplementation and mild salt restriction may also be of some long-term benefit once stabilized. Monitor for development of a cough, labored breathing, exercise intolerance or collapse episodes. Monitoring of sleeping breathing rates is recommended as the best way to screen for improvement/recurrent CHF at home.

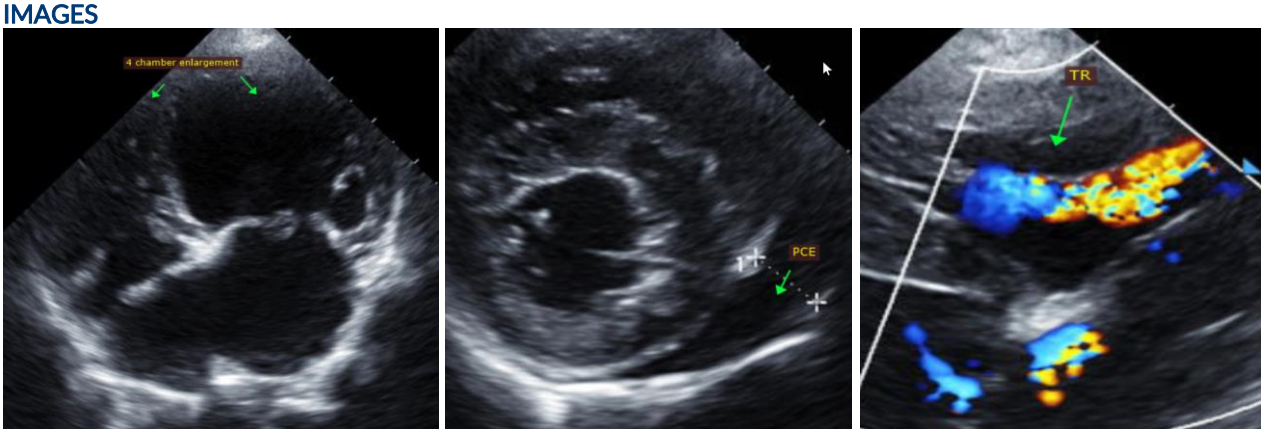
## PLAN

Consider hospitalization if the patient is or becomes unstable. Institute sildenafil 1-2mg/kg PO q8h. Institute spironolactone 1-2mg/kg PO q12h. Administer Pimobendan 0.3mg/kg PO q12h. Institute Furosemide 1-2mg/kg PO q12h. Hydrocodone as needed for cough suppression.

Recheck a kidney panel and BP in 10-14 days, then every 3-4 months. If BP is >130mmHg and patient doing well, institute ACE-I 0.5 mg/kg PO q12h.

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

## 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**
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