



PATIENT

Nugget Willis

SPECIES

Canine

BREED

Pomeranian

SEX

Female Spayed

AGE

10 years

WEIGHT

16lbs

INTERPRETED BY

Maggie Machen Lamy,
DVM, DACVIM
(Cardiology)

IMAGING PERFORMED BY

Rachel Runnells, RVT

HOSPITAL NAME

SVS Imaging KC

REFERRING VET

Dr. Mulloy

INVOICE

22896

DATE

3/2/22

PRESENTING CLINICAL SIGNS

History: Adopted from shelter recently. Gets winded then coughs. Also coughs when lying flat on stomach. Grade 4/6 murmur, lungs clear but some effort noted. HWT negative.
-Radiographs: Cardiomegaly.

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. Lack of coaptation in systole. Severe eccentric mitral regurgitation with severe left atrial dilation. LV dilation with hyperdynamic myocardial function. The tricuspid valve appears mildly thickened with moderate tricuspid regurgitation. TR velocity is normal; however, this is sought to be an underestimation. Right heart is mildly dilated. The pulmonic and aortic valves are normal in morphology and mobility. Normal pulmonic and aortic outflow velocities. No aortic and trace pulmonic insufficiency. No pericardial or pleural effusion noted. No obvious cardiac tumors observed.

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 | 5.0 | 2.6 | 2.0 | 2.5 | 53 | 85 | 0.22 |
| 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 | 157 | 1.3 | 0.83 | 7.3 | 2.8 | 3.4 | 1.9 |
| *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) |
| <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
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

The murmur is due to chronic degenerative valve disease causing severe mitral and moderate tricuspid regurgitation. Significant left atrial and ventricular enlargement indicate the risk for spontaneous congestive heart failure is elevated. Mild pulmonary hypertension is suspected, which is likely secondary to a reported cough and elevated LA pressure. No obvious additional issues are noted.

A cough in this patient with severe heart disease is likely multi-factorial in origin, including mainstem bronchi compression and/or potentially some degree of upper or lower airway disease. Early CHF/pulmonary edema should also be considered; however, this is less likely based upon

**PATIENT**

Nugget Willis

the reported history. Recommend institute cardiac supportive medications including a weak diuretic (spironolactone) and advise close monitoring at home for need for Lasix therapy. Pending response, cough suppression (up to q4-6 hours) may also be helpful for mechanical cough. Monitoring of sleeping breathing rates is recommended as the best way to screen for CHF at home.

SPECIES

Canine

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. Long term prognosis is guarded to poor, with an average survival time of 8-9mo for canine patients with active pulmonary edema on medications, however they generally are able to maintain a good quality of life for that period. Patient will always be at risk for recurrent CHF, development of arrhythmias/LA tear, syncope and/or sudden death in the future.

BREED

Pomeranian

SEX

Female Spayed

PLAN

Institute Pimobendan 0.3mg/kg PO q12h. Institute Spironolactone 1-2mg/kg PO q12h. Baseline BP recommended. If >130mmHg, institute ACE-I (benazepril or enalapril) 0.5mg/kg PO q12h. Consider hydrocodone with homatropine for QOL (0.2-0.4mg/kg PO up to q4-6 hours PRN for cough; available in 5/1.5mg tabs and 5mg/5ml liquid suspension).

AGE

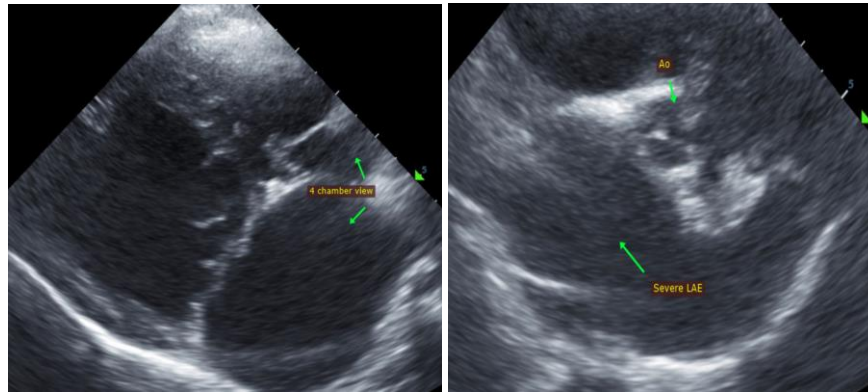
10 years

A renal panel is recommended in 1-2 weeks, then every 3-4 months lifelong.

WEIGHT

16lbs

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

IMAGES**INTERPRETED BY**

Maggie Machen Lamy,
DVM, DACVIM
(Cardiology)

IMAGING PERFORMED BY

Rachel Runnells, RVT

HOSPITAL NAME

SVS Imaging KC

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.

REFERRING VET

Dr. Mulloy

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.

INVOICE

22896

Maggie Machen Lamy, DVM
Diplomate of the American College of Veterinary Internal Medicine (Cardiology)
info@sonopath.com

DATE

3/2/22