

**PATIENT**

Benson Senesi

**SPECIES**

Canine

**BREED**

Shih Tzu Mix

**SEX**

Male Neutered

**AGE**

11.16.06

**WEIGHT**

19.4lbs

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

Everhart Cross Keys

**REFERRING VET**

Dr. Notarangelo

**INVOICE**

28248

**DATE**

1.11.23

**PRESENTING CLINICAL SIGNS**

History: History of mild CKD for past 2 years, managed on SQF SIW in hospital as owner unable to give at home. Longstanding heart murmur but previous echoes showed stable disease, though not scanned in >2 years per owner. Pet is sedated every few months for grooming. Recent labs showed progression of kidney levels despite 3 days of in-hospital diuresis, concerning increasing hypercalcemia. 2/6 systolic PMI L apex. Intermittent cough at home managed on cough tabs and hydrocodone.

-Pertinent abnormal PE/Chem/CBC/UA Results: 12/22/22: BUN 96, Ca 13.8, phos 6.7, crea 3.3  
12/8/22: BUN 101, crea 3.4, ca 12.5, phos 7.3. 9/27/22: BUN 78, crea 2.8, phos 6.4, ca 12.4

-Current medications: All medications have been given for >3-6 months: hydrocodone 5 mg: 1/4 to 1/2 q 12 h PRN, LRS 200 ml SIW, gabapentin 100 mg: 1 q 8-12 h PRN, cough tabs: 1/4 q 6-12 hours

cerenia 24 mg PRN, aluminum hydroxide 250 mg BID, fluoxetine 10 mg: 1 SID

-Sedation used: Not required to complete full diagnostic ultrasound.

-Pertinent previous ultrasound results:

-STAT: Not requested

-Imaging performed by: Stephanie Warga RDCS, RVT.

**ECHOCARDIOGRAM FINDINGS**

2D, m-mode, color flow and doppler imaging is available. Mild diffuse thickening of mitral valve leaflets with mild prolapse into the left atrial lumen. Mild eccentric mitral regurgitation with mild left atrial dilation. Normal MR velocity. Decreased LV dimension, consistent with volume underloading. Mild LV hypertrophy. The tricuspid valve appears mildly thickened with mild tricuspid regurgitation. Normal velocity. Normal right atrial and ventricular diameter and morphology indicating no overt evidence of pulmonary arterial hypertension. The pulmonic and aortic valves are normal in morphology and mobility. Normal pulmonic and aortic outflow velocities with laminar flow. No obvious aortic or pulmonic insufficiency. No pericardial or pleural effusion noted. No obvious cardiac masses.

**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	5.3	2.6	NM	1.4	37	70	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	100	1.5	1.3	8.8	1.9	2.2	1.4
*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  
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 mild mitral and tricuspid regurgitation. Lack of significant left atrial enlargement indicates the current risk for complication is low. The LV has a volume unloaded appearance, likely secondary to significant azotemia and a baseline blood pressure is strongly recommended. No additional issues are noted in this study.

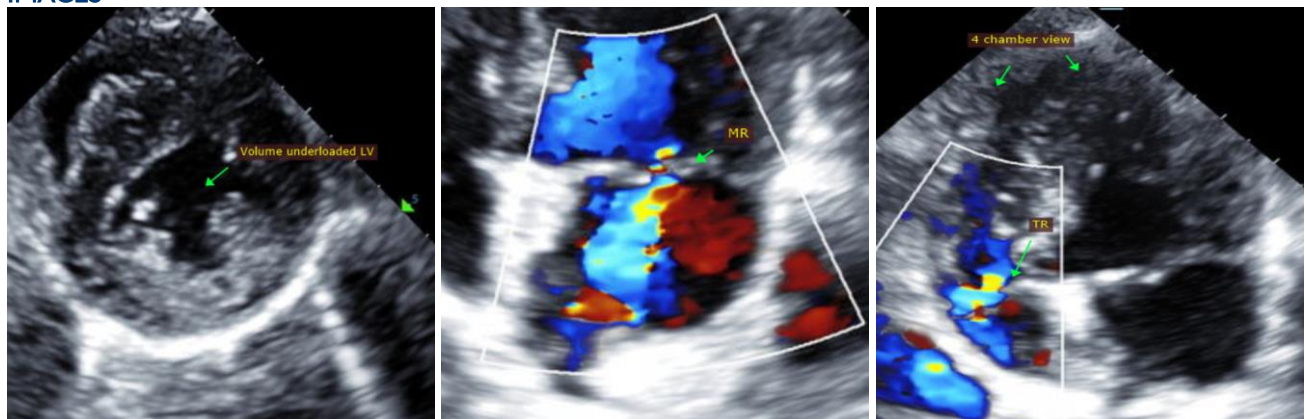
In a dog with no significant left atrial enlargement, no cardiac medications are clearly indicated. Assessment of progression in the future will help predict long term prognosis, which is highly variable at this stage (B1). Omega fatty acid supplementation and mild salt restriction may be of some long term benefit. Monitor for development of a cough, labored breathing, exercise intolerance or collapse episodes.

Anesthetic risk is considered mild if needed. Cardiac protective drug choices (opioid/benzodiazepine premedication, propofol or alfaxalone induction, isoflurane gas) are recommended. Pre-oxygenate for 5-10 minutes prior to induction. Monitor for arrhythmias, hypotension, and hypoxia both intra and post-operatively and intervene as necessary. Mild IV fluid restriction is recommended to avoid fluid overload. Avoid heart rate stimulating drugs such as atropine unless clinically indicated.

With only mild left atrial enlargement, fluid therapy appears to be well tolerated thus far. Close monitoring of breathing rates at home is recommended going forward however, as acute intolerance is difficult to predict. Sedation for grooming would be reasonable with anti-anxiety medications, gabapentin, and/or Butorphanol.

Recommend conservative monitoring with a recheck echocardiogram in 6 months, sooner if any development of clinical signs.

## 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.

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