



## PATIENT

JJ Rugel

## SPECIES

Canine

## BREED

Shih Tzu

## SEX

MN

## AGE

11 years

## WEIGHT

11.2 lbs.

## INTERPRETED BY

R. McKenzie Daniel,  
DVM, DABVP  
(Canine and Feline)

## IMAGING PERFORMED BY

Diane McFadden

## HOSPITAL NAME

Animal Hospital of  
Roxbury

## REFERRING VET

Dr. Elia

## INVOICE

13162

## DATE

1/26/22

## PRESENTING CLINICAL SIGNS

3-4/6 murmur, worsening cough  
Abnormal PE/Chem/CBC/UA Results: pending

## ULTRASONOGRAPHIC EXAMINATION OF THE HEART

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	5.6	3.5	1.7	1.67	45.6	77.8	0.26
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	139	1.0	0.9		3.8	3.72	

## Cardiac Presentation

The echocardiogram in this patient demonstrated moderately enlarged **left atrial** size based on 3 different LA measurement methods. Subtle deviation of the interatrial septum towards the right atrium suggestive of some degree of elevated left atrial pressure was present. The cranial and caudal **mitral** valve leaflets presented vegetative thickening consistent with endocardiosis with subtle valvular prolapse. Doppler indicated measurable eccentric insufficiency. The **left ventricle** presented thicknesses with linear contour with increased left ventricle volume. The **myocardium** presented normal echogenicity without subjective evidence of significant fibrotic or ischemic disease. **Contractility** of the ventricular walls was adequate and in normal range for this patient evidenced by the fractional shortening measurement and subjective evaluation of the different regions of the myocardium. The **left ventricular outflow** tract demonstrated normal laminar flow and subjective structural integrity. The **right atrium** and auricle revealed normal size, structure and content. No evidence of masses was noted or chamber overload. **Tricuspid** valvular assessment demonstrated mild thickening with mild insufficiency on color doppler. The **right ventricle** was of normal size (1/3 diameter of LV), chordae structure, myocardial echogenicity and thickness. **Pulmonic** tract assessment revealed normal valve structure, laminar flow, and diameter (approx.1:1 pa/ao ratio). No visible **pericardial** or free pleura fluid was noted. No echographically detectable evidence of infiltrative disease was visible. The cranial **mediastinum and pericardial regions** were free of masses in the visible window.



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## ULTRASONOGRAPHIC FINDINGS

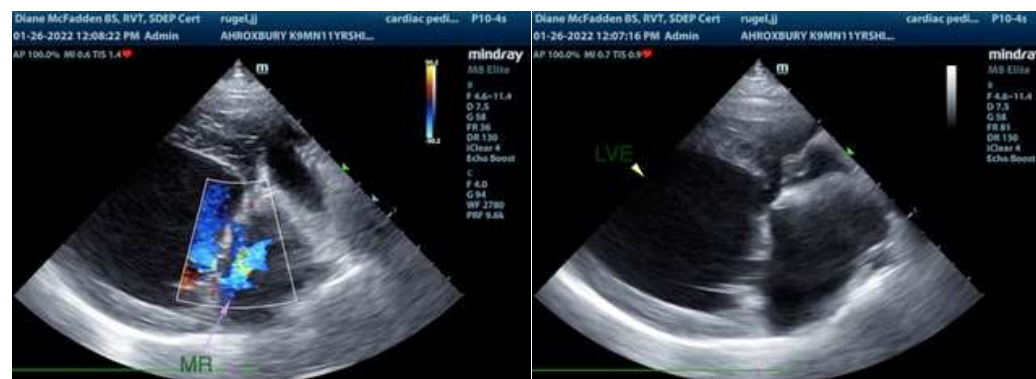
### Primary Findings

- Chronic mitral valve disease (ACVIM B2)
- TV insufficiency - estimated pulmonary pressure gradient (approximately 50 mmHg) consistent with mild to moderate elevated pulmonary pressure

## INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

The cause of the murmur is consistent with chronic degenerative valvular changes with secondary eccentric mitral valve and tricuspid valve insufficiency. The moderate left atrium enlargement, as well as increased left ventricle volume indicate that the risk of current and future complications going forward owing to mitral valve insufficiency is elevated. Estimated pulmonary pressure gradient based on measured TR velocity is consistent with concurrent mild to moderate pulmonary hypertension. The coughing in this patient may be multifactorial in origin.

Three view chest radiographs are suggested to assess for evidence of cardiogenic pulmonary edema or lower airway disease. Pimobendan 0.3 mg/kg PO BID is recommended. If evidence of cardiogenic pulmonary edema, Lasix 1.0-2.0 mg/kg PO BID would be recommended while a weak diuretic such as Spironolactone 1.0-2.0 mg/kg PO BID may be considered if no evidence of cardiogenic pulmonary edema at this time. The potential for some degree of mainstem bronchi irritation owing to left atrium enlargement is possible. Hydrocodone at an appropriate dose may prove effective. Baseline monitoring of resting respiration rate is recommended. Assessment of systemic blood pressure if possible is suggested. Recheck echocardiogram is suggested in 6 months, sooner if clinical signs consistent with heart disease arise or if progressive / persistent coughing is noted.





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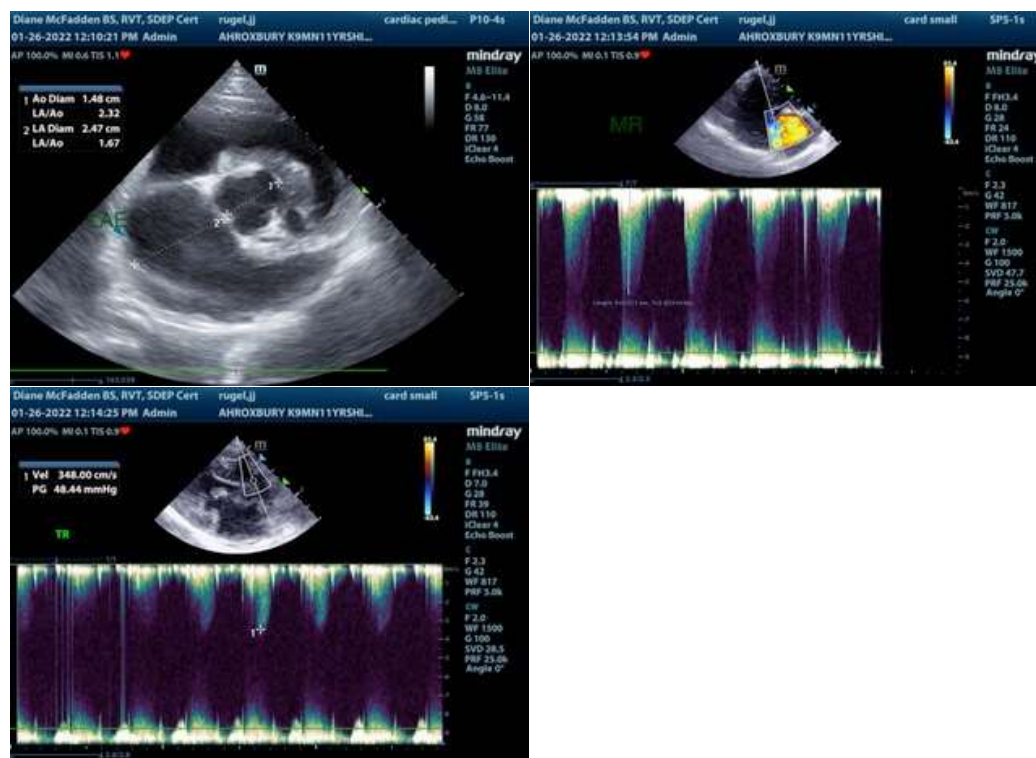
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The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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.

R. McKenzie Daniel, DVM, DABVP (Canine / Feline Practice)  
info@SonoPath.com