



## PATIENT PRESENTING CLINICAL SIGNS

Kiana Massa No abnormal heart sounds ausculted, no arrhythmia noted, S&S femoral pulses. PE shows moderate OA. Abnormal PE/Chem/CBC/UA Results: 5/21/2020 ProBNP = 2,164 (0-900) 6/5/2020 = Echo, mild changes, mild L sided dilatation 6/12/2021 ProBNP = 2,100 6/17/2022 ProBNP = 1,524

## SPECIES

Canine

## ULTRASONOGRAPHIC EXAMINATION OF THE HEART

## BREED

Labrador Retriever

## SEX

Spayed Female

## AGE

13 Years

## WEIGHT

55.5 Pounds

CANINE CARDIAC PARAMETERS	MR VMAX (m/s)	TR VMAX (m/s)	LA/AO (Boon method)	LA/AO (Heart Base; Swedish)	FS (%)	EF (%)	EPSS (cm)
NORMAL PARAMETER	4.5-5.5	<2.7	1.3	<1.6	28-40	40-100	<0.6
PATIENT	2.72	1.25	1.19	1.08	21	43	0.43
CANINE CARDIAC PARAMETERS	HR (BPM)	AV VMAX (m/s)	PV MAX (m/s)	BODY WEIGHT (kg)	LA (2D long axis Base view (cm))	LVIDd (Avg; 2D and m-mode long axis (cm))	LVIDs (Avg; 2D and m-mode long axis (cm))
NORMAL PARAMETER	50-100	0.7-1.7	0.7-1.6				
PATIENT	--	1.17	0.53	25.2	3.95	4.27	3.39

Adapted from June Boon, Veterinary Echocardiography, 1998  
Sisson D et al. JVIM 1991; 5: 232, and Jacobs et al. Am J Vet Res 1985; 46:1705

## INTERPRETED BY

Lisa Carioto, DVM,  
DVSc, Diplomate  
ACVIM

## IMAGING PERFORMED BY

Sara Hansen

## Electrocardiogram (six-lead)

Sinus arrhythmia. No abnormal contractions noted. Measurements within normal limits.

## Echocardiographic findings

### Mitral valve

- Very mild thickening and irregularity of septal leaflet; consistent with myxomatous degeneration
- No prolapse of leaflets
- Trivial mitral regurgitation
- No left auricular enlargement
- LA: Ao ratio: within normal limits (WNL)
- LA normalized for BW (LAN = 1.32), moderately enlarged
- LVIDd normalized for BW (LVIDND = 1.65), high normal
- LVIDs normalized for BW (LVIDNs = 1.23), high normal

## HOSPITAL NAME

West Hills AH

## REFERRING VET

Dr. Fogarty

## INVOICE

40097

## DATE

8/2/22



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Kiana Massa

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- IVSND = 0.37 = WNL
- IVSNS = 0.47 = low normal
- LVFWND = 0.31 = low normal
- LVFWNS = 0.47 = very mildly decreased

*Aortic valve*

- No obvious abnormalities
- Trivial to mild aortic insufficiency

*Tricuspid valve*

- Very mild thickening and irregularity of septal leaflet; consistent with myxomatous degeneration
- Mild to moderate tricuspid regurgitation

- No prolapse of leaflets
- No right ventricular, atrial or auricular enlargement

*Pulmonic valve*

- No abnormalities with leaflets
- No pulmonary insufficiency
- Main pulmonary artery within normal limits.
- Pulmonary artery - bifurcation, no abnormalities.
- Pulmonary artery: aortic ratio = 0.73 = within normal limits.
- No signs of heart worm.

*Other*

- No signs of pericardial or pleural effusion
- No evidence of pulmonary edema.

**ULTRASONOGRAPHIC FINDINGS**

Trivial myxomatous degeneration of both the mitral and tricuspid (mild) valves. The mitral and tricuspid regurgitation are not severe enough to be causing the mild dilation of the left atrium. The left ventricular internal dimension (LVID) is at the high end of the normal reference range in both diastole and systole, however, the left ventricle is not overtly dilated, which corresponds to a NT-proBNP within the normal reference range.



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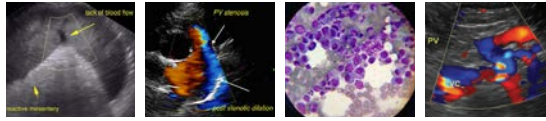
The left ventricular measurements are at the low end of the normal reference range in diastole and systole for the interventricular septum. The left ventricular free wall is low normal in diastole, and mildly decreased in systole. Occult dilated cardiomyopathy may have been present based on previous NT-proBNP measurements, which has since improved if changes have been made in Kiana's lifestyle, for example, dietary changes, supplements, or medication. Another possibility is that Kiana was suffering from an infectious disease that was causing myocarditis and decreased cardiac function.

Further diagnostics are not considered necessary at the moment if Kiana is doing well clinically, and there is no need for medical intervention based on today's results.

**INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS**

Suggestions/recommendations include:

- Evaluation of blood pressure.
- Review of Kiana's diet to ensure she is being fed a well-balanced diet, exercise regimen, supplements, etc. I would not change anything that has been changed since her last NT pro-BNP.
- Monitoring of the resting (sleeping) respiratory rate (RRR) may be started to obtain a baseline, for example, once or twice a month. The RRR should NOT EXCEED 30 breaths per minute (bpm). If the respiratory rate is greater than 30 bpm, or if there is a gradual increase (over a day or two) toward 30 bpm, the patient should be evaluated immediately for congestive heart failure and the appropriate treatment initiated.
- Although unlikely to occur, clinical signs clients should monitor for in case of decompensation of cardiac function, include coughing (particularly at night), fatigue, lethargy, decreased exercise tolerance (i.e., not being able to walk for as long before becoming tired, or "running out of breath" while playing, or going up and down stairs, as well as syncope (collapsing or fainting spells). Restlessness, or agitation during the night, or being unable to find a comfortable position to sleep are also very common clinical signs.
- Mild salt restriction is suggested (less than 0.9 grams/1000 kcal of food). Monitor salt content in treats.
- +/- Omega-3 fatty acids may be helpful (EPA = 40 mg/kg/day and DHA = 25 mg/kg/day); gradual up-titration of the dose is suggested (once every 3-5 days) to decrease risk of gastrointestinal effects. This should also help her osteoarthritis. Another option is to consider a diet that supports joint health, providing it is not too high in salt or kcal; note, Purina's joint diet is ideal and has been approved for weight loss.
- Monitoring for progression of heart disease with a re-evaluation of an echocardiogram in 6 to 8 months, as well as a Holter monitor, is recommended.



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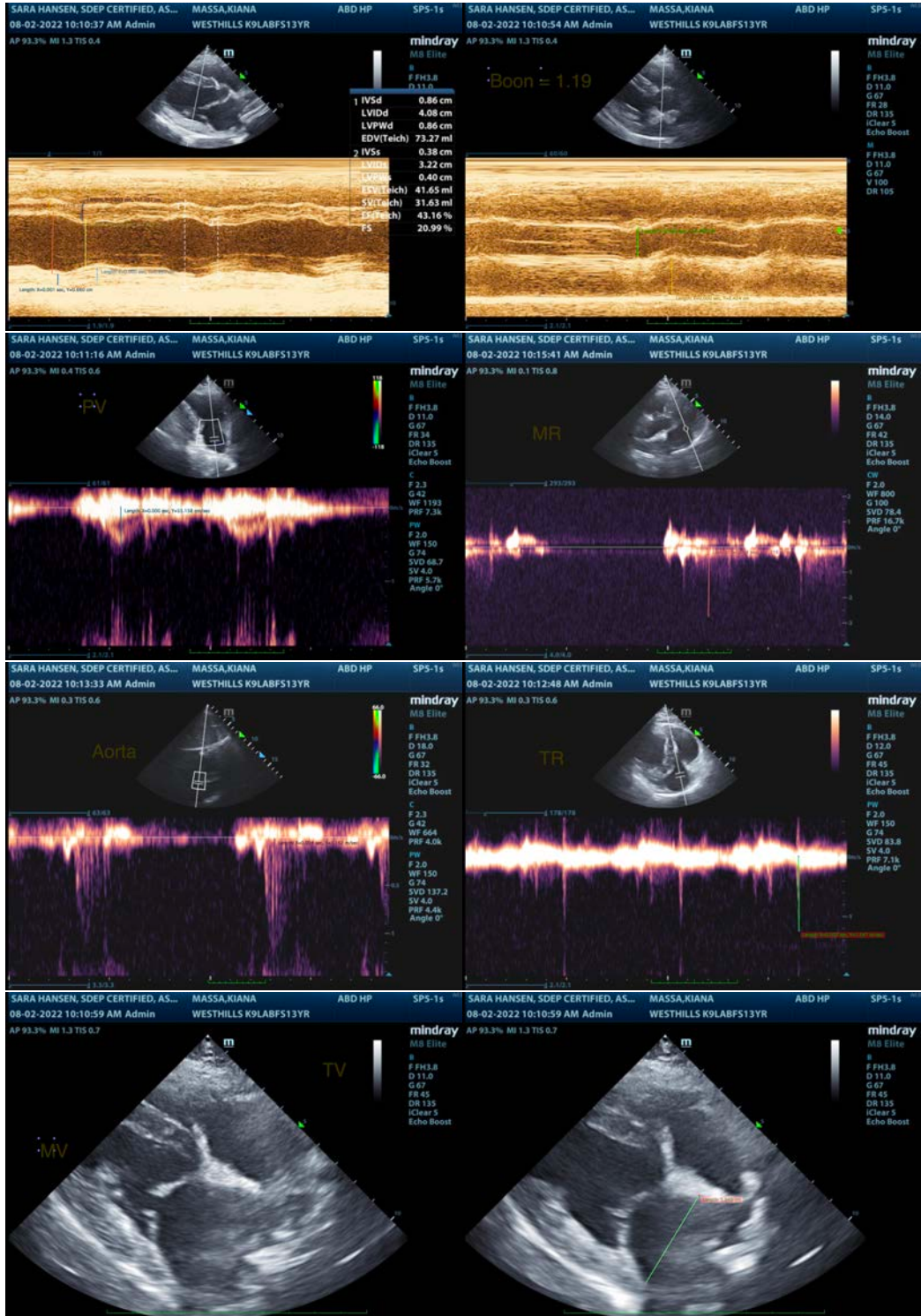
Dr. Fogarty

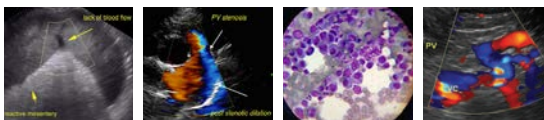
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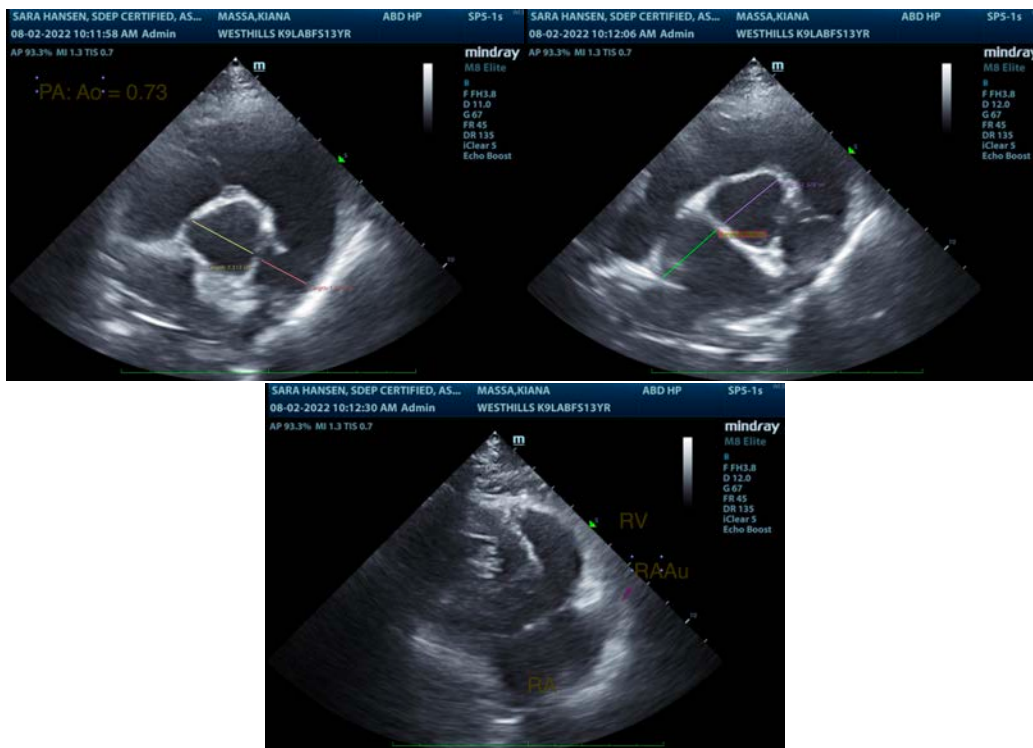
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The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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.

Lisa Carioto, DVM, DVSc, Diplomate ACVIM

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