



PATIENT

Simon Rosario

SPECIES

Canine

BREED

Shih Tzu

SEX

Intact Male

AGE

12 Years

WEIGHT

17.4 Pounds

INTERPRETED BY

Sara Brethel DVM,
DACVIM (Cardiology)

IMAGING PERFORMED BY

Dr. Gabriel Ferrer, DVM

HOSPITAL NAME

Pulse Pet Ultrasound
Services

REFERRING VET

Dra. Lillian Maldonado
Santiago

INVOICE

35161

DATE

12/30/25

PRESENTING CLINICAL SIGNS

History: Presented as a referral for an echocardiogram to evaluate chronic cough. History. Pt has Hx of Chronic airway disease managed with flovent bid and tussionex bid prn. In the past 2 months (since 11/1/2025), cough had progressed and a 2/6 L apical HM was appreciated on PE. Xrays revealed interstitial to alveolar lung pattern on perihilar region with no cardiac enlargement and cardio brp was abnormal (5101). P was started on furosemide @ 2.2mg/kg po bid which initially responded to but had to slowly start tapering close to 1mg/kg po sid and added spironolactone @2mg/kg po sid due to affected renal values. Recommended echocardiogram due to unusual presentation as no cardiomegaly was appreciated on xrays and concerned for affected renal values. Xrays were sent for radiology consult and interpretation pending.

Abnormal PE/Chem/CBC/UA Results: Radiology report attached as supporting documents.

ULTRASONOGRAPHIC EXAMINATION OF THE HEART

CANINE CARDIAC PARAMETERS	MR VMAX (m/s)	TR VMAX (m/s)	LA/AO (M-Mode)	LA/AO (Heart Base; Swe)	FS (%)	EF (%)	EPSS (cm)
NORMAL PARAMETER	4.5-5.5	<2.7	1.3	Up to 1.6	28-40	40-100	<0.6
PATIENT	Underest	--	NM	1.25	52.38	--	NM
CANINE CARDIAC PARAMETERS	HR (BPM)	AV VMAX (m/s)	PV MAX (m/s)	BODY WEIGHT (kg)	LAD LA MAX 4 Chamber	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				
PATIENT	--	0.69	0.68	7.9	2.8	2.1	1.0

Cardiac Presentation

The mitral valve leaflets are mildly thickened with mild mitral regurgitation posteriorly directed. There is no prolapse of the mitral valve leaflets. The left atrial size is normal. There is evidence of left ventricular underloading and portions of the left ventricular wall appear hypertrophied. There is a focal region of the anterior papillary muscle that has an irregular appearance, as highlighted on the images provided. There is normal right atrial size without tricuspid regurgitation. There is no prolapse of the tricuspid valve leaflets and no evidence of pulmonary hypertension based upon tricuspid regurgitant velocities. The right ventricle subjectively appears normal in structure and function. The aortic and pulmonic valves have normal morphology and the corresponding outflow velocities are within normal limits. There is no evidence of pulmonic or aortic insufficiency. The aorta appears normal. The



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pulmonary artery and associated branches appear normal. There is no evidence of pleural effusion, pericardial effusion, or intracardiac masses.

ULTRASONOGRAPHIC FINDINGS

- Degenerative valve disease, ACVIM stage B-1
- Normal left atrial size
- Left ventricular underloading
- Left ventricular concentric hypertrophy
- Irregular anterior papillary muscle

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

The patient has degenerative valve disease, ACVIM stage B-1. The left atrial size is normal. Diuretic therapy is not recommended at this time. The furosemide is likely causing left ventricular underloading and could be contributing to the appearance of the thickened left ventricle, creating pseudohypertrophy, however, left ventricular walls do measure mildly thickened for the patient's size. The coughing does not appear to be primarily cardiac, and continued investigation for respiratory cause, or other differential for coughing should be considered. There was likely an initial response, as furosemide does have mild anti-inflammatory effects, and can help if there is an inflammatory process contributing to the coughing. The cause of the concentric hypertrophy is unknown for the left ventricle. Recommend ensuring the patient is normotensive. The aorta does not appear dilated, however, to rule out hypertension, a blood pressure is needed. The irregular appearance of the papillary muscle significance is unknown. The area that is most concerning is in oblique image, and we could just be catching a slice of the papillary muscle, and since there's some thickening of the left ventricle, and there's underloading that could create this irregular appearance. Additional considerations include referral to a veterinary cardiologist or considering a thoracic CT to obtain more information.

At this time, no cardiac therapies are recommended. If there is evidence of high blood pressure, recommend following ACVIM guidelines for systemic hypertension. If not moving forward with referral, recommend a recheck echo in 3-4 months, sooner if the murmur is worsening or the patient's clinical signs are progressive. Recommend ensuring there are no airway irritants at home, i.e., smoking, vaping, scented candles, aerosols, diffusers, incense, etc. Can consider a purifier where the patient spends most time/sleeping and a humidifier, if the clients aren't already doing so.



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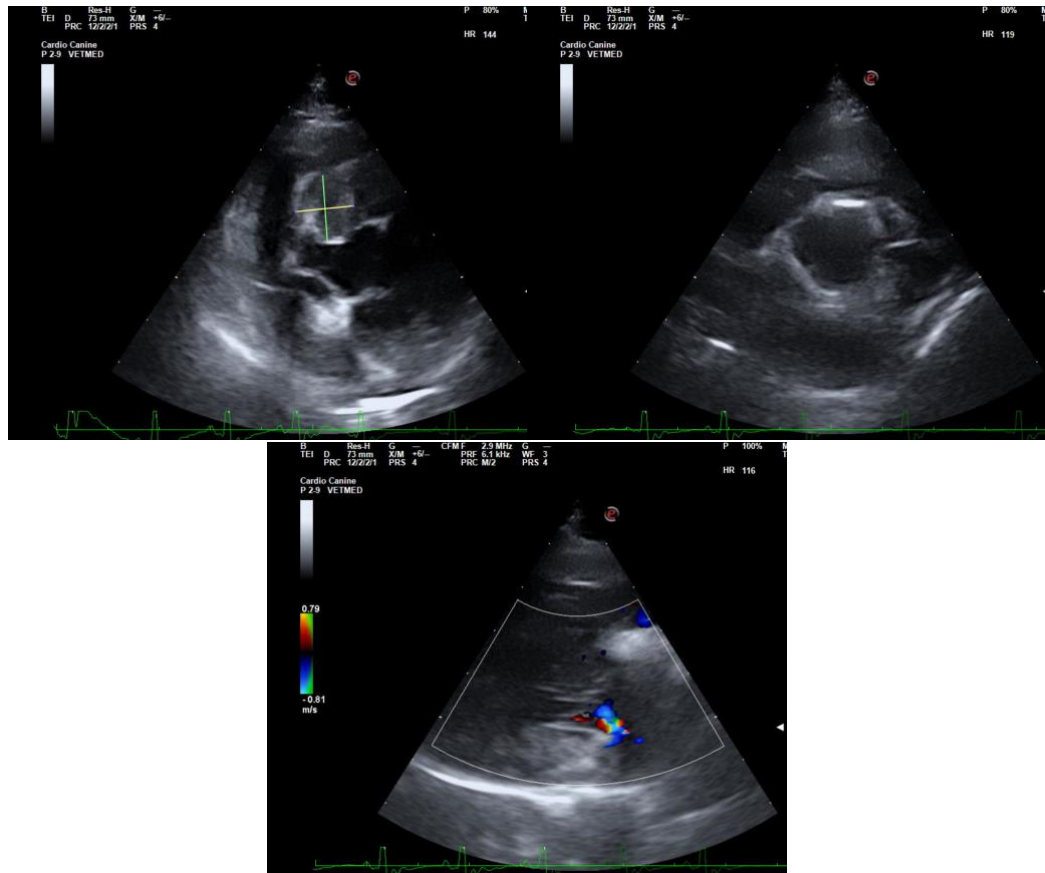
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The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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.

Sara Brethel DVM, DACVIM (Cardiology)

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