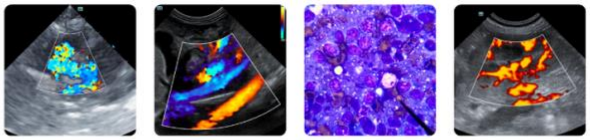


PATIENT

Athenas Isabel Serrano Colon

SPECIES

Canine

BREED

Bull Terrier

SEX

Spayed Female

AGE

10 Years

WEIGHT

60.8 Pounds

INTERPRETED BY

Sara Brethel, DVM, DACVIM (Cardiology)

IMAGING PERFORMED BY

Dr. Gabriel Ferrer, DVM

HOSPITAL NAME

Pulse Pet Ultrasound Services

REFERRING VET

Dr. Jose Ramirez

INVOICE

35149

DATE

12/30/25

PRESENTING CLINICAL SIGNS

History: Presented as a referral for an echocardiogram to evaluate increase episodes of syncopes, collapse and disorientation. Pt presented to rDVM because for the past year she has had 3 episodes where she collapses and then gets up and act normal. They all have been after episodes of excitement or exercise. She has been to the veterinarian every time this happens, but no cause has been found. DX with a heart murmur in 2023. Vaccines are up to date, and she is on Pro-heart. Previous hx of HW disease and was treated in 2022. She eats S/O Urinary.

Abnormal PE/Chem/CBC/UA Results: PE: grade 4/6 heart murmur Bloodwork and Radiographs attached as supporting documents. 4DX: neg to all Blood work showed increase ALP. Radiographs were wnl although I though the trachea seems small for a dog this size.

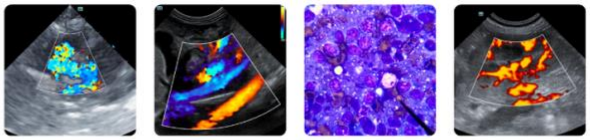
ULTRASONOGRAPHIC EXAMINATION OF THE HEART

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	1.23	34.21	--	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	--	--	1.59	27.64	4.4	3.8	2.5

***AV VMAX was unable to assess.*

Cardiac Presentation

The left atrium is within normal limits. There is mild mitral valve thickening and mild mitral regurgitation that's eccentrically directed. There is no prolapse of the mitral valve leaflets. Left ventricular systolic and diastolic function dimensions are normal. Left ventricular systolic function is preserved in the face of mitral regurgitation. There is no evidence of left ventricular concentric hypertrophy. The right atrium is normal. There is no evidence of tricuspid regurgitation. There is no prolapse of tricuspid valve leaflets and no evidence of pulmonary hypertension based upon the measurements provided. Subjectively, the right ventricle appears normal in structure and function. The pulmonic valve has normal morphology with normal corresponding outflow velocities. There is no evidence of pulmonic insufficiency. There is no evidence of pulmonic insufficiency. The aortic valve appears to have a bicuspid appearance and appears mildly thickened. There is increased turbulence



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within the left ventricular outflow tract. There are varying aortic velocities obtained on the evaluation. There does appear to be a post-stenotic dilation of the aorta. The pulmonary artery and associated branches appear normal. There is no evidence of pleural effusion, pericardial effusion, or intracardiac masses.

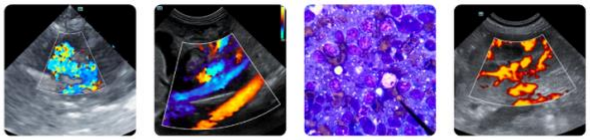
ULTRASONOGRAPHIC FINDINGS

- Mitral valve thickening
- Mitral regurgitation
- Normal left atrial size
- Suspect bicuspid aortic valve
- Post-stenotic dilation of the aorta versus aortic dilation
- Possible elevated aortic outflow velocities

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Given the patient's history, there is concern for a primary abnormality with the aortic valve. The aortic valve appears bicuspid and there does appear to be a dilation of the aorta past the aortic valve, which may represent a post-stenotic dilation. There are varying aortic velocities obtained, ranging from normal, to velocities that are >6 m/p/s. It is difficult to determine if the velocities >6 are the true aortic outflow velocities versus these velocities are measuring eccentric mitral regurgitation. There is no evidence of left ventricular concentric hypertrophy. It is strange for the patient to have primary congenital disease and go undiagnosed with a heart murmur it's entire life. If the murmur is new is 2023, I suspect that's likely secondary to the mitral regurgitation, which likely represents degenerative valve changes. With the new onset of collapse, if this were truly congenital, I would have suspected the patient to collapse earlier on in life. I'm concerned that there is another underlying reason for the collapse. Despite the history of heartworm disease, pulmonary hypertension is not identified on the images provided. With the blood work, I do recommend performing an abdominal ultrasound, and ensuring the patient is normotensive. On the chest radiographs, there is no evidence of cardiogenic pulmonary edema.

Recommend the clients try and obtain a video of the collapse episodes and keep a log, ensuring and making note if there is any excessive salivation or abnormal eye movements, as those would point to a more neurologic direction. Can consider a referral for these collapse episodes. Additional echo images could include highlighting the left ventricular outflow tract and marching the cursor through the left ventricular outflow tract to see where there is an upstroke in velocities, if there is one present to help differentiate if there is true evidence of aortic stenosis. At this point in time, no cardiac medications are recommended. Additional diagnostics to consider include a Holter monitor as well.



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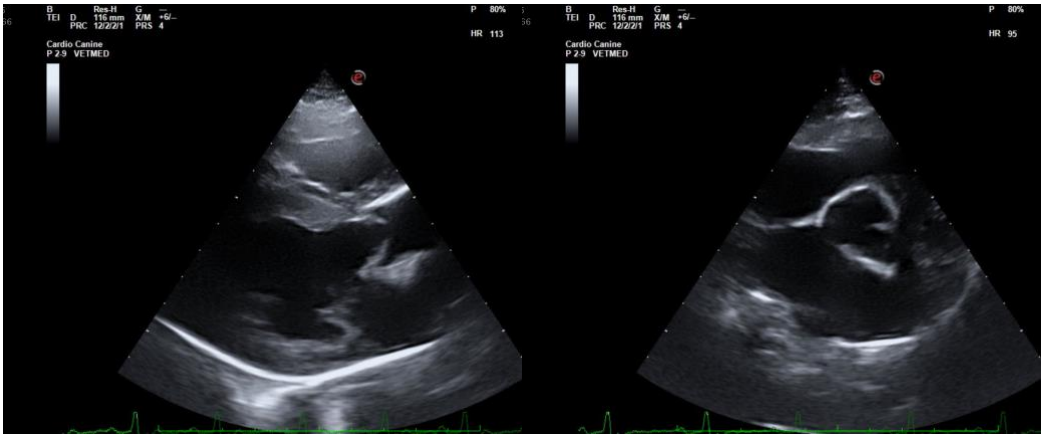

The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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)

info@SonoPath.com